

**Approaches to the resilience and the potential for adaptation through community-
driven construction projects in the global South**

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A revised thesis submitted in partial fulfilment of the
requirements of the University of Brighton
for the degree of Doctor of Philosophy

February 2018

Declaration

I declare that the research contained in this thesis, unless otherwise formally indicated within the text, is the original work of the author. The thesis has not been previously submitted to this or any other university for a degree, and does not incorporate any material already submitted for a degree.

Signed

A handwritten signature in cursive script that reads "Maria Panta".

Maria Panta

Dated 2 February 2018

Abstract

Historically, architectural research into the resilience and the potential for adaptation tended to put more focus on the physical aspects of the built environment at the expense of the social and cultural values which are embedded in the everyday making of built form and space. This research is interested in accentuating the social and cultural context much more than the mere physical element of the built form. It sets out to explore approaches to resilience and adaptation in the global South through the use of local building materials, and to rethink the idea of what is local in a given context. It is interested in examining how collaborative construction and architectural enterprises in the global South address the existing levels of indigenous knowledge and local skills in order to cope with adverse climatic conditions and poverty. The research investigates the work of community-driven initiatives involved in small-scale adaptation projects primarily through the lens of a construction project for a small community building in rural Ghana. Secondary case studies include initiatives, projects and organisations located in four different countries namely Pakistan, Swaziland, Algeria, and Zimbabwe. Moreover it focuses on themes such as the very central relationship between architectural education and practice on the one hand, and building materials, approaches to resilience and adaptation through the use of local materials, ethnographic approaches to research and design, training and collaborations on the other.

The research uses a methodology, which is based on qualitative data collection, and includes a mixture of creative methods such as, participant observation and participation, semi-structured and unstructured audio-recorded interviews, informal conversations as well as the use of social media such as Facebook as being the second 'virtual site'. It is argued that the syncretism of multi-site ethnographic approach and participatory design methods enables solutions, which can contribute to longer-term sustainable adaptation in this context. Drawing on its main research site and primary fieldwork in Abetenim, a remote village in southern Ghana, and the researcher's role as a community architect and participant in the Earth Architecture construction workshop through a non-profit organisation (NGO), it discusses how the use of ethnography as part of architectural praxis facilitates the holistic understanding of the local context and informs the design process. It feeds off Anthropological research as a typical methodological approach through participant observation and participation, in order to

rethink architecture from a broader cultural perspective. This allows the author to critique local situations and frame questions, which directly inform the design process in this context. Simultaneously it reflects on the need to integrate social, physical and cultural change in order to effect broader changes in the community.

Hence, the research sets out to explore the compromise between the global and local perspectives. It investigates how an NGO's prescriptive narrative of using local materials like earth, in the construction of new projects may be adapted and translated into the local reality, and looks at the process of the 'on the ground' experience through direct involvement in community architecture and building. It considers the relationship between culture and nature; the intimate relationship between nature and architecture and how this challenges architectural education in the West. Finally, the process of selecting building materials addresses distinct layers of collaboration among the local community, the members of the NGO, and local institutions. Thus the value of collaboration with local actors within research in the global South is emphasized, as the very praxis of collaboration is employed as a method in the implementation of such projects.

Acknowledgements

First, I thank God, for giving me the opportunity to go through this journey and become stronger. To my family for their continuous and valuable support and especially my sister Elizabeth who has been there for me at all times, and nephew George who arrived at a very critical point; the transcribing phase. To all my very close friends for the love and support throughout this challenging journey. Also to Rica and Nina.

This thesis appears in its current form due to the guidance, ongoing support and trust in my abilities of several people. I would like to express my gratitude and respect to my lead supervisor Dr. Hocine Bougdah, who has been a mentor and very good friend, for accepting me as a PhD student, and supporting me with his invaluable guidance and encouragement throughout the research. I would also like to thank Professor George Barber, my second supervisor, who has always supported, helped and guided me wisely, as well as Professor Trevor Keeble, who helped me at a difficult time.

I would like to express my gratitude to Blanche Cameron, an inspiring educator, mentor and great friend, who gave me the opportunity to go into research. Many special thanks to Dr. Rachael Marie Scicluna, who introduced me to and sparked my interest in Anthropology, for always 'being there', supporting me throughout the research.

I am also grateful to all the research participants, who were kind and accommodating to share their invaluable experiences, thoughts and precious time with me. Also, special thanks to Barthosa Nkurumeh for giving me the opportunity to be involved with Nka Foundation during my PhD and beyond. I would also like to thank Frank Appiah Kubi, his wife Christie, and the masons in Abetenim for being such beautiful people and friends. They made us feel at home in Abetenim. I am especially grateful to Joseph Danquah and the team at the Building and Road Research Institute in Ghana for their invaluable guidance and support, not only technical but also in other ways. I would like to thank Professor Victor Kootin-Sanwu for inviting me to lecture at KNUST during my fieldwork.

I would also like to express my sincere thanks to the University for the creative Arts, Canterbury School of Architecture, for funding this research. Further thanks go to the UCA research office team, Mary O'Hagan, Sian Jones and Elizabeth Baxter for their help and continuous support. I would also like to thank all my colleagues at UCA, especially Hawra'a Salman and Lynn Settrington for being such good and supportive friends. I would also like to thank Professor Judith Williamson for her insightful help and guidance when she was Chair of the Research Student Forum.

I also highly appreciate the help of Konstantinos Katopodis, and Costas Polyzos for helping me with the presentation, as well as Pytheas Seafood P.C. for the technical support during the last couple of months. And to the future, whatever it holds.

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Chapter 1

Introduction

Chapter 1: Introduction

1.1 Research problem

Historically, architectural research into the resilience and adaptation tended to put more focus on the physical and spatial aspects of the built environment at the expense of the cultural and social values, which are embedded in the everyday making of built form and space. This thesis attempts to accentuate the social and cultural context of the built form much more than its physical and spatial element. It looks at approaches to the resilience and the potential for adaptation through the lens of building materials within community-driven construction projects in the global South; it looks at materials as tools to think about the levels of resilience and empowerment of local communities in the global South, and rethinks the idea of what is local in a given context. The emphasis is placed on the urgency to rethink the use of local materials, including traditional, non-traditional and a combination of both, in order to improve resilience at a community level.

The research and its findings echo Turner's view that materials are interesting for what they can do for society, not for what they are (Turner, 1972), and therefore considers the potential for resilience and adaptation through the use of building materials. Thus, this thesis looks at how the usage of certain materials, and the understanding of their limitations and opportunities through the building process, can impact local communities in meaningful and coherent ways. Moreover, the research highlights the need to blend Western approaches to thinking about materials, designing and building, with indigenous qualities and knowledge in order to achieve long term sustainability in the context of the South. Echoing the voice of Ghanaian architect and educator Joe Osae-Addo (Africatalks 2009) among others, it is argued that it is not a matter of choice between the two; it is rather the syncretism of the two which can contribute to longer-term sustainable adaptation in this context. The investigation shows that there are direct connections between building materials and their long-term resilience, the construction industry, nature, and sustainability, and emphasises the use of the 'local ingredients and materials' instead of focusing on form and space. This investigation has also led to identifying that the discipline of Architecture, and its practice, lacks in considering culture, and its inherent specificities and complexities, as part of the curriculum and

field practice. In addition, it has identified that there is an urgent need and immense potential for combining the ethnographic method with the practice of architecture within design and build community projects undertaken by NGOs in the global South in order to achieve longer term sustainable adaptation. My fieldwork phase started in July 2014 by attending the Development Planning Unit's (DPU) 60th Anniversary Conference at University College London titled, 'Thinking Across Boundaries: Re-Imagining Planning in the Urban Global South'. The conference brought together scholars from across the globe, who debated the critical and diverse issues pertinent to sustainable urbanization in various regions of the global South, such as Africa, Southeast Asia, and Latin America. The contested issues included, but were not limited to, planning in the global South as the title of the conference suggests, informality, regulation, environment, the urgent need for a South-to-South dialogue, and so on and so forth. What this conference really highlighted, which prompted me to reflect and investigate further, is that North-centric understandings, analytical categories and methodologies, previously having been imposed onto the South, have now proved to be obsolete and without context or resonance with the people/communities concerned and affected. It reinforced the idea that our Western way(s) of engagement with the South unapologetically need to be reconsidered and re-imagined. What it brought to the surface is that people matter, that things need to shift, and that 'we' need to listen more and unlearn in order to (re)learn should we wish to contribute to the field in coherent and meaningful ways. We need to shift from a North-centric approach to a more inductive and empirical approach which supports and empowers local communities in a holistic manner.

Further, the thesis puts forth the idea that the empowerment of the local communities must be the highest common factor within community-driven projects in the global South. It examines how collaborative construction and architectural enterprises in this context address the existing indigenous knowledge and local skills in order to cope with poverty and adverse climatic conditions. Visiting the 14th International Venice Architecture Biennale titled, 'Fundamentals' during the fieldwork phase of the research prompted the consideration of the global narratives of modernity and how the phenomenon of globalisation, in relation to building materials and trends, is manifested in the lived realities of the South. Part of this biennale examined key moments from a century of modernization and revealed how the forces of diverse material cultures and political environments transformed a universal or non-specific modernity into a

specific one. More often than not the common perception of the locals is that imported, or western, materials and ways of building, are more modern and much better than their own. Thus, the research draws on the necessity to change people's mindset about the local vernacular architecture and building materials, which are more affordable and suitable for the local climate. It emphasises the priority to create awareness within local communities about the value of the local building materials and methods suitable for the local climate and context, as opposed to western ways of building and concepts of modernisation.

There is increasing emphasis on the role that architects can play in meeting the skill gaps within community development and assisting recovery in post-disaster communities and conflict areas (Aquilino, 2011; Awad et al., 2013; Sinclair and Stohr, 2006). Recently there have been a growing number of architecture practitioners and educators engaged actively in humanitarian aid and community development and even a greater number of architecture students and graduates involved as volunteers in the so-called *social architecture initiatives*, or *socially responsive architecture initiatives*, with the intention to improve the living conditions for people in the global South, as well as to get hands-on experience. These initiatives are independent of formal university training, and usually working in various regions of the global South. The volunteer architecture students and graduates involved in these initiatives provide for everything, from travel expenses to maintenance and sometimes need to contribute towards the purchase of the building materials used for the implementation of the project. Therefore only a certain number of students can afford to participate in such endeavours and gain some hands on experience. Over the last two decades, travelling to volunteer has grown in popularity throughout the developed world and has become an institutionalised and professionalised phenomenon across the globe (Awad et al., 2013). However, the rising phenomenon of design and construction practitioners being involved in community development, mostly as volunteers with non-governmental organisations (NGOs) on community development projects in the global South, without having been trained for diverse circumstances, such as extreme poverty, scarcity of means, ruthless constraints and lack of time, requires close investigation. The latter is necessary because more often than not they volunteer despite their lack of experience or even knowledge of the local culture, materials or the vernacular building techniques of the place they visit and work in. Moreover, as architecture has traditionally been associated with the privileged classes and aesthetics, their work focuses predominantly

on aesthetic qualities, the edifice and construction details as opposed to the priorities and needs of the community at hand, or architecture's social, economic, political, or moral values. The emphasis of their work is on form, space, and the finished artefact as opposed to the process of making the built form, and is hardly exploring the range of the available local materials and their wider connections, the utilisation of local knowledge and labour, the local culture, or collaborations with the local actors, such as universities, research institutes, and stakeholders.

Despite their good intentions, to a large extent the absence of expertise and lack of empirical knowledge about the local culture, values, materials, the struggles, needs, priorities and aspirations of the local communities, leave the latter more vulnerable than before, and even worse, the outcomes of their work are hardly scrutinised. In actuality, the empowerment of the local communities is not the highest common factor within community-driven projects undertaken by NGOs in the global South. On the whole, the narrative of almost all overseas volunteer organisations is framed in terms of the volunteer's own personal development rather than the benefits to the community at hand (Barkham 2006). Maren's book titled, 'The Road to Hell: The Ravaging Effects of Foreign Aid and International Charity' (2002), argues that NGOs are like any bureaucracy; they first and foremost prioritise their own survival over the needs of the affected communities.

Further, Judith Brodie, Director of the Voluntary Service Overseas (VSO), argues that the majority of international volunteer programs are merely another form of colonialism (Barkham, 2006). A lot of the time NGOs 'complete' various projects locally supposedly having involved and 'empowered' the local community through the design and building process, and eventually return to their countries leaving behind buildings which may be either unfinished or almost impossible to repair given the limitations and restrictions of the local conditions and lack of resources. Western-trained practitioners and students to a great degree propose, design and construct buildings which may not be according to the community's needs; very often a building is not even necessary as the community's priorities may lie elsewhere. Therefore, having best intentions does not necessarily guarantee enduring solutions in the field. However, conventional architecture school commonly offers no modules or career paths which may prepare students by teaching them skills to work as design professionals in destitute communities; the kind of skills required for places, which

have almost no infrastructure, and where design is not part of the development agenda discourse; the kind of skills required to deal with the constraints of real world problems, like poverty, scarcity of means, lack of resources and time, inequalities, peripheries, access to sanitation, natural disasters, housing shortage, informality, waste, pollution and so on and so forth. Nevertheless, architecture is expected to engage and respond to these complex issues, and integrate a variety of fields instead of choosing one or another. The thesis argues that architecture's field techniques and methodology for collecting data are insufficient to deal with the complexities of the South in a holistic way, as they rely on and are enacted by learnt strategies, such as observation, site analysis, drawing, photography, model making, rather than disciplinary-drive models of applied methods or articulated methodologies (Askland et al., 2014). In light of this, the thesis questions the discipline's methodology and field techniques in terms of their capacity to engage with and understand the needs of the local communities of the global South. It recognises the urgency to go beyond disciplinary boundaries and engage in empirical processes in order to find new and more relevant analytical concepts and categories for a more holistic understanding of the global South.

Architecture has a role of service to the planet, to each other, and to cities. In this stage of consumerism and capitalism, and the realisation that we cannot rely on market solutions nor on top-down approaches to architecture and development, the current narrative about the discipline holds that '*there is a need to reinvent it and resolve the crisis of its identity*' (Askland et al., 2014: 285). As most of the principles and values that define the profession are initiated within architectural education, this thesis attempts to rethink the role of architecture, both as a discipline and a practice, in addressing the issues of our era, such as climate change, from a broader cultural perspective.

Moreover, part of the problem is the West's deluded understanding of what 'modern' may entail outside the West, as there is commonly a tendency to 'see' the global South at large, for its challenges and shortages, instead of focusing on its strengths and resilience. Furthermore, Western conceptualizations of the types of building methods and materials suitable for regions of the South are largely based on the ways that we have approached and tackled these issues in the North. North-centric understandings about materials and methods of building, analytical categories, and methodologies, which have previously been imposed onto the South, have now proved to be obsolete

and without context or resonance with the communities at hand. This research argues that building materials and practices in this context need to be seen through the lens of questioning about their connections to culture, climate, and governance in order to be considered in their totality.

In light of the above, the thesis brings to the fore urgent questions about the role of architects and other design practitioners in community development projects in the global South. It reinforces the idea that our Western way(s) of engagement with the South unapologetically need to be reconsidered and re-imagined.

On a more specific level, the research investigates the work of community-driven initiatives involved in small-scale adaptation projects primarily through the lens of a construction project for a small community building in rural Ghana. Drawing on its main research site and primary fieldwork in Abetenim, a remote village in southern Ghana, and the researcher's role as a community architect and participant in the Earth Architecture construction workshop through a non-profit organisation (NGO), it discusses how the use of ethnography as part of architectural praxis facilitates the holistic understanding of the local context and informs the design process. The research uses the Earth Architecture construction workshop in rural Ghana as a typical example of a community-based initiative making use of local materials in order to empower the local people. It feeds off Anthropological research and its key method for data collection, specifically ethnography, as a typical methodological approach through participant observation and participation, in order to rethink architecture from a broader cultural perspective. This allows the researcher to critique local situations and frame questions, which directly inform the design process in this context.

1.2 Research aim and objectives

This study aims to set a framework for acknowledging the importance of rethinking the discipline of Architecture from the perspective of culture, with a view to reconsidering Western conceptualizations of the types of building methods and materials, analytical categories, and methodologies, suitable for regions of the South, in a way that they have resonance and meaning within the communities at hand. Achieving this aim will be through the objectives set below:

- To undertake a critical review of contemporary architectural discourse with regard to approaches to the resilience and the potential for adaptation, and traditional building practices, and position them within the culture-architecture relationship.
- To carry out primary and secondary research into approaches to resilience and adaptation through the lens of building materials within community-driven construction projects in the global South with, a view to exploring how the choice and use of building materials and practices become a tool to think about resilience and empowerment of local communities in this context.
- To discuss the relationship between culture, nature and architecture and how this challenges architectural education in the West, as well as the idea of what is local in a given context.
- To investigate, through the primary research, how the syncretism of the ethnographic method and the practice of architecture within design and build community development projects undertaken by NGOs in the global South, enables solutions, which can contribute to longer-term sustainable adaptation in this context.

Through the use of primary and secondary research, this study looks at building materials and practices in this context through the lens of questioning about their connections to local culture, climate, and governance in order to be considered in their totality.

1.3 Research questions

Against the above background, the research looks at issues concerning various approaches to the resilience and the potential for adaptation through the use of local building materials within small-scale construction projects in the global South, and rethinks the idea of what is local in a given context.

The thesis uses research questions in order to frame the discourse and help clarify the aim and set some objectives. Initially the proposed research questions were as follows:

1. Can local materials and traditional building practices contribute to mitigating the effects of climate change in a given context?
2. How do community-driven initiatives enable housing, which is capable to adapt to changing circumstances over time, and build a sense of belonging and resilience of community?
3. How are the needs and aspirations of the local people manifested in the work of these initiatives?

These questions, however, have been through a process of refinement after the fieldwork phase. After undertaking ethnographic fieldwork both in Ghana and the UK, as well as discussing the challenges and struggles of both the practitioners and local masons to produce architecture for the common good despite the scarcity of means, it becomes evident that some aspects of the research need to be recognised more. The need for the discipline of Architecture and its practice, to consider culture, and its inherent specificities and complexities, as part of the curriculum and field practice is one of the main recurring themes during the fieldwork. Therefore, the above original questions 2 and 3 are replaced with questions about the connections among the use of materials, resilience, empowerment of local communities, and ethnography, all of which are related to culture. Both the original questions 2 and 3 are concerned with the impact of the work of community-driven initiatives locally, therefore the research would require spending a considerable amount of time in the field in order to undertake further ethnographic fieldwork. For this reason I decided to leave out the original questions and possibly address them in postdoctoral research. Based on these considerations the revised research questions, which informed this thesis, are as follows:

4. How can local materials and traditional building practices empower local communities and increase the potential for resilience and adaptation in the global South?
5. How can the use of ethnographic research contribute to the advancement of architectural research and practice in a given context and help imbue culture and the spirit of a people into the built environment?

The research addresses these questions (questions 4 and 5) in a number of ways. First, through the review of the literature, a holistic framework has been created to describe

the overall areas related to the research, including the cultural, social, theoretical and practical aspects of the context. Second, the primary and secondary research is conducted in order to explore how the syncretism of multi-site ethnographic approach and participatory design methods enables solutions, which can contribute to longer-term sustainable adaptation in this context.

The research explores the compromise between the global and local perspectives. It investigates how an NGO's prescriptive narrative of using local materials like earth, in the construction of new projects may be adapted and translated into the local reality, and looks at the process of the 'on the ground' experience through direct involvement in community architecture and building. It considers the relationship between culture and nature; the intimate relationship between nature and architecture and how this challenges architectural education in the West. Finally, the process of selecting building materials addresses distinct layers of collaboration among the local community, the members of the NGO, and local institutions. Thus the value of collaboration with local actors within research in the global South is emphasized, as the very praxis of collaboration is employed as a method in the implementation of such projects.

The research findings focus on themes, such as the very central relationship between architectural education, practice, and in-field training on the one hand, and materials, ethnographic approaches to research and design, and collaborations on the other, through the lens of climate change adaptation. All the above themes are discussed at length in the coming chapters. The thesis considers the category of materials as a tool to think about resilience and empowerment of local communities in the global South, and rethinks the idea of what is local in a given context. It examines the influence of different variables on the 'choice' of materials and building methods employed by NGOs in different contexts. Attention is drawn to the local people's strengths, i.e. local knowledge, local skills and materials used for building, and how these can be used to reduce the local people's vulnerability. This allows the thesis to critique local situations and frame important questions about both the discipline and practice of architecture. The findings of this research show that the discipline of Architecture, and its practice, lack in considering culture, and its inherent specificities and complexities, as part of the curriculum and field practice. Therefore, it focuses on the potential for combining the ethnographic method with the practice of architecture within design and build

community development projects undertaken by NGOs in the global South in order to achieve longer-term sustainable adaptation.

It is anticipated that this study will lead to a better understanding of the complexities and challenges that need to be tackled in order to improve the quality of the built environment and consequently people's quality of life. It is hoped that this research could influence the way in which community-driven construction projects in the global South implement their work on the ground, and could contribute to longer-term sustainable adaptation in this context. The ethnographic method in combination with architectural praxis in the field is considered to be an effective tool to address the complexities and challenges of the South in order to make a meaningful and coherent contribution not only to the field but also to the communities at hand. This interdisciplinary approach pushes the boundaries of the discipline of Architecture in a meaningful way, one which enables it to become more socially-driven and responsive, and enables it to face the complexity of our global urban/rural future in a much more flexible way. The value of collaboration with local actors within research in the global South is emphasized throughout the thesis as it is a way forward to approach the design process in this rapidly changing context.

1.4 The structure of the thesis

The thesis is organised into eight chapters:

Chapter 2 gives an overview of the literature that discusses various approaches to the resilience and the potential for adaptation through the use of local materials. It not only explores physical resilience but other ways of empowering communities. The main research questions, which this chapter explores are, *How can local materials and traditional building practices empower local communities and increase the potential for resilience and adaptation in the global South? How can the use of ethnographic research contribute to the advancement of architectural research and practice in a given context and help imbue culture and the spirit of a people into the built environment?* It starts with a brief introduction to the effects of climate change in developing countries, followed by a section on participation and training, adaptation and resilience. The latter section discusses the role of community-driven initiatives

involved in building resilience within housing reconstruction programs and community development schemes in the global South through non-governmental organisations (NGOs) and international non-governmental organisations (INGOs). It also discusses the role of the vernacular shelter, the use of local materials and traditional building practices, and how the use of locally sourced and low-cost materials influences both the design and construction methods. Further, the issues of ‘temporariness’ and ‘continuity’ as perceived in the global South, as opposed to the perception of ‘permanence’ in the developed world are briefly looked at in order to set the scene for the comparisons between South-centric and North-centric approaches to resilience, building, materials, modernity, and so on, which are discussed throughout this thesis. In addition, the critical importance of culture and the social context for development is explored, as one of the main arguments which this thesis puts forth is the idea that the only way to make a contribution to the discipline is to rethink it from culture. Further, this chapter reviews the process of giving aid within a post-natural disaster context and how the former is interlocked in both local and international power relations and transactions; and finally, the key issues such as how, by whom and for whose advantage this is encouraged and utilised.

Chapter 3 sets out the research methodology. It argues that the syncretism of ethnographic and participatory design methods enables solutions, which can contribute to longer-term sustainable adaptation in this context. Also, it outlines the research questions, which are directly relevant to the fieldwork. The chapter outlines the basis of the research methodology and why an ethnographic approach is chosen. It moves on to explain how the change of field site alerted the research, in a serendipitous manner, to another workshop. This chapter discusses how the use of ethnography, typically a method of the discipline of anthropology, as part of architectural praxis facilitates the holistic understanding of the local context and informs the design process. It also discusses collaboration as a research method, and field collaborations. The overall theoretical framework will be mainly concerned with exploring specific earth building techniques in rural Ghana and other developing countries.

Chapter 4 specifically addresses the ethnographic account of the primary fieldwork in a remote village called Abetenim in rural Ghana, which is considered as the primary case study of the research. By drawing on this fieldwork and my role as a community architect and participant in the Earth Architecture workshop, the chapter explores the

role of traditional building practices in the way they may contribute towards building resilience, coping with the effects of climatic changes in this context. The primary fieldwork seeks to demonstrate how complex the skills of building with earth are, and that building with earth is not a straightforward endeavour as one may think. The following are discussed: allocation of building site, the participatory design workshop with the students, the Building and Road Research Institute (BRRRI), Kwame Nkrumah University of Science and Technology (KNUST), scaling down the canteen project, carrying out the site survey, orientation of the canteen and location of the kitchen, the notion of control in relation to design and planning, community labour, local materials used for building, the need for a contract, the making of the earth bricks, as well as a lecture I gave at the architecture school at Kwame Nkrumah University of Science and Technology (KNUST).

Chapter 5 supplements the research with secondary case studies, which look at issues that have emerged from the primary fieldwork in Ghana. The role of these case studies is to demonstrate some of the issues raised in Chapter 4, and not to identify new issues. Therefore this chapter comprises four distinct secondary research case studies, which are illustrated by the some of the research participants as typical examples of initiatives, projects and organisations, which utilize local materials, building practices and labour, as well as and various forms of training in order to implement their work on the ground. The research participants, who are 14 in total and with whom I conducted semi-structured and unstructured interviews, are practitioners who have a background in architecture or environmental design, and are experts in building with eco friendly materials, such as earth, lime, straw, and bamboo, and have all been involved with non-governmental organisations. The secondary case studies are situated in four different countries, specifically Pakistan, Swaziland, Algeria, and Zimbabwe, and provide a dialogue which enables the exploration of architectural practice from a climate and culture first approach, which addresses and engages with the specificities of the context. In addition, they demonstrate diverse ways of building community resilience through community projects and the use of local materials, building practices and labour. They are considered as a lens through which the research investigates how different interests envision the social and spatial reordering of the area. This creates a comparative context through which similarities and differences are drawn out in order to first, understand the local social context in which these building practices are considered. Second, it ensures realistic and grounded recommendations.

Chapter 6 presents an analysis and discussion of the information gathered during the fieldwork by means of semi-structured and unstructured interviews conducted with 14 participants with the intention of understanding their perspective and personal experiences of being involved in the work of community-driven initiatives in the global South. Moreover, it focuses on themes, which pertain to training, such as the architectural education and practice, and the in-field training. Thus the following are discussed: The urgency for the discipline of architecture to engage with the ongoing narrative about climatic change and its impact on local communities; The need to rethink the discipline and its practice from a broader environmental and cultural perspective; The architects' capacity for systems thinking as a learned and transferrable skill which may be applied in various situations; The flaws of the discipline's curriculum; The challenges of architects involved in humanitarian and development projects in the global South; The role of the community-based organisations within destitute, and often disaster-stricken, communities of the global South; The need for training local masons and Western trained practitioners involved with non-governmental organisations in development projects.

Chapter 7, the second data analysis chapter deals with the themes, which pertain to practice, such as the materials used for building, and collaborations. Thus the following are discussed: Approaches to resilience and adaptation through materials; The value of using building materials suitable for the local climate and context; The role of the building and construction industry in sustainable development; 'Modernising' local traditional materials in order to cope with changing climatic conditions and to empower communities; The case of Pozzolana cement in Ghana; The need for National Building Standards in Africa; Collaborations and interdisciplinarity; The value of 'being there': getting to know the local context and culture; The Architecture of 'listening' and 'unlearning'.

Chapter 8 discusses the research findings and presents some recommendations. It looks at materials as a tool to think about the levels of resilience and empowerment of local communities in the global South, and focuses on the idea of 'being there', that is 'experiencing fieldwork' which entails employing the ethnographic method of observation, participation and face-to-face interviews, as part of the design and build process within the implementation of community-driven projects undertaken by

various NGOs in the global South. It demonstrates how the research questions are addressed and point out the limitations of the methodology used. The chapter also discusses the contribution of this thesis to knowledge, and identifies areas for future research.

Chapter 2

Approaches to resilience and adaptation, local materials And community-driven initiatives in the Global South: A Literature Review

Chapter 2: Approaches to resilience and adaptation, local materials and community-driven initiatives in the Global South: A Literature Review

2.1 Overview

This chapter addresses the literature that discusses various approaches to resilience and adaptation such as, approaches to resilience through the use of local materials, and looking at the relationship between local building materials and resilience. It will not only explore physical resilience but also look at other ways of empowering communities.

The main research questions that this chapter explores are, *How can local materials and traditional building practices empower local communities and increase the potential for resilience and adaptation in the global South? How can the use of ethnographic research contribute to the advancement of architectural research and practice in a given context and help imbue culture and the spirit of a people into the built environment?* In Chapter 3, I outline other research questions which are directly relevant to my fieldwork. In what follows, I will be discussing issues related to vernacular building practices and the materials used.

2.2 Introduction

Developing countries, namely the global South, are more sensitive and vulnerable than developed countries to the direct impacts of climate, such as natural disasters, because of their geography, economic structure, population growth and low income. Disasters and natural hazards are not solely natural; they are political, social as well as economic and have to be seen as development issues. Heinrichs et al. (2009) argue, that climate change, through both the effects of extreme events and a longer-term decline in the environment, exacerbates many existing vulnerabilities, and therefore acts as a magnifier of existing development problems. Mike Davis, a Marxist and one-time editor at New Left Review, in his book titled, 'Planet of Slums' (2006: 124) illustrates, through examples, how *poverty magnifies local geological and climatic hazards*, and

how *the housing crisis* has transformed both the character and magnitude of the disaster with the poorest of the population exposed to regular danger and property loss. The cities which Davis (2006) presents as examples and describes in order to support his argument, are not the rich, vibrant cultural centres but rather vast peri-urban developments, horizontal spreads of unplanned squats and shantytowns, unsightly dumps of humans and waste, where there is no access to clean water or sanitation, neither education or democratic institutions. There is a direct relation between poverty, that is lack of resources and opportunities, and vulnerability to the impact of disasters.

Although this thesis acknowledges the challenges that other parts of the world than the developing countries, have suffered over the past few years, that is the increasing poverty and ongoing economic crises in the United Kingdom as well as in southern European countries, the 2013-14 United Kingdom winter floods which left much of southern England inundated and its economy badly affected, the May 2014 cyclone which affected a large area of South-eastern and Central Europe, causing floods, landslides and the loss of human and non-human lives, and so on, it focuses on the challenges in the developing world. The crises in the developed countries is not within the scope of this thesis.

While Aquilino, a professor of architectural history at the École Spéciale d'Architecture in Paris, in her excellent edited book titled 'Beyond Shelter: Architecture for Crisis' (2011), affirms, among other scholars, that 'ninety-eight percent of the people affected by disasters in the last decade live in the developing world, and most of them in informal housing,' Davis's book (2006) argues that the majority of the world's population live in poverty, oppressed and dispossessed, and sets out to find out how and why. Aquilino's book (2011) comprises twenty-five reports or case studies authored by architects who are also leaders of non-profit organisations, research centres, and international agencies. It focuses on these architects' challenges and failures when involved in post-disaster housing and rebuilding efforts after humanitarian crises, and also draws on their role in shaping policy as well as their enormous power to mitigate that suffering.

The literature suggests that sustainable design may contribute towards mitigating the effects of climate change. The architect and environmentalist Jason McLennan in his book titled, 'The Philosophy of Sustainable Design' (2006: 5), emphasises that the intention of sustainable design is to 'eliminate negative environmental impact

completely through skilful, sensitive design.’ The latter embraces all aspects of human settlement including the dwelling, livelihoods, social interactions and organisation, economy, climatic conditions, biodiversity and ecosystems, the environment and natural resources as well as the concepts of uncertainty and scarcity. The literature though suggests that there is a tendency to see the concept of sustainability as a utopian state we may attain in the future if we adopt more socially responsible and less resource-intensive forms of development. Despite the fact that climate change is our context and should not be seen as an unconnected problem, there is a tendency to see the concept of climate change as separate from the lives we live today. ‘Climate change is not a problem, it’s a context; sustainable design has to be a process-driven and collaborative activity’ (Max Fordham Roundtable, Architects’ Journal, 29.11.13). Moreover, current literature indicates that *secure and sustainable design and livelihoods* not only reduce susceptibility to disasters but also reduce poverty. Sustainable design is concerned with meeting the needs of the present without compromising the ability of future generations to meet their own needs. Thus it acknowledges the limits of the natural environment’s capacity to fulfil the needs of the present and the future. Consequently design becomes part of an eco-system or whole which reflects the *holism* of life itself, and is intimately interconnected and explicable only by reference to the whole.

2.3 Resilience and Adaptation, Participation and Training

This section reviews some of the current literature on community ‘adaptation and resilience’ as well as ‘participation and training’, as these are some of the projected and most prominent themes. The thesis engages critically with the key themes during the stage of data analysis (see chapters 6, 7, 8).

2.3.1 Community-Driven Initiatives

The community-driven initiatives which are involved in housing reconstruction are non-governmental organisations (NGOs) and international non-governmental organisations (INGOs), and generally operate in two major areas, disaster relief and community development, with many combining the two. They operate from two main perspectives, those from the developed world working in the global South, and those working within their own locality. The research is concerned with the work of some initiatives which

are involved in building resilience within community development schemes in the Global South, and looks at the work of such initiatives as practitioners, non-governmental organisations, which are involved in community-based work as well the role of low tech, locally developed building practices that can underpin community driven initiatives for long-term sustainable disaster mitigation. Such initiatives often operate as networks or systems of *chapters* and emphasize the empowerment of disaster-struck communities from the micro level. They are not bound to a specific geographical place as their work is *rather multi-sited*. Davis (2006) asserts that community-driven initiatives or grassroots groups, as he refers to them, are partly to blame for the ‘neoliberal restructuring of Third World urban economies that has occurred since the late 1970s’, since they are ‘captive to the agenda of the international donors.’ He argues that the result of the above mentioned restructuring is that slums, unplanned squats and shantytowns are becoming the blueprint for cities of the future.

Current literature emphasizes the importance of macro level strategies which could work in synergy with the micro level plans in order to truly empower poverty/disaster struck communities and *enable integrated development*. Initiatives which exclude community or *user participation* often foster a culture of dependency among beneficiaries. This dependency forms the destructive effect of a reconstruction process which gives people no active role in their own future, thus beneficiaries rather come to rely on charity as a means of survival, argues Michal Lyons, an architect planner and urban geographer and Professor of Urban Development and Policy, in her paper titled, ‘Building Back Better: The Large-Scale Impact of Small-Scale Approaches to Reconstruction’ (2009). The cultural anthropologist Margaret Mead further contributes to the argument that the local communities are not passive recipients of knowledge instead they take an active role in the transformation process of their world through building their own shelters, homes and communities, and argues that ‘*men and women are both the recipients and agents of change*’ (Mead, 1955: 55).

What’s more, there is a substantial body of opinion that development can only make sustainable gains through beneficiary participation and decentralisation, and that gains are greatest when participation is deepest and most comprehensive (Lyons, 2009). Barakat (2003) states, that the endorsement of approaches which, whenever possible, involve local people in repair, reconstruction or construction of their homes *enable integrated development*. Anthony Oliver-Smith, an anthropologist with extensive work

and research on disaster, displacement and resettlement studies, argues that such approaches build on people's tendency to begin almost immediately to re-house themselves and to re-establish their social and economic networks after a disaster' (in Lyons, 2009: 386). They are based on beneficiaries' energies and enhance resilience of individuals and communities (Oliver-Smith, 1991; Schilderman, 2004). Here beneficiaries play an active role in the development of their own futures, have ownership and are responsible of the program, and they are put in front (Lyons, 2009). In consequence user- or community-driven programs foster redevelopment of a cooperative local social fabric and institutions and create an opportunity for integrated development.

Writing about the process of community participation prior to and during a post-disaster reconstruction project, Lyons (2009) describes that there is pressure for a trade-off between consultation and involvement of local communities, and rapid redevelopment. Boano, an architect planner and expert on post-disaster housing reconstruction, further support Lyons' argument and argue that 'there is less time for the participatory process to take root and thrive, and since this process is often highly contested, it requires time to build the momentum necessary to enact meaningful change' (Boano *et al.*, 2012: 10). A number of scholars and researchers, whose work entails participation as a method to rebuild communities after a humanitarian crisis, draw upon the fact that *true participation* in the building and transformation of local communities is about power, and the exercise of power is about politics (Dudley, 1993). Reconstruction programs are political processes and usually influenced by interactions among many sectors, i.e. economic, political, humanitarian, etc, with less influence from grass roots. Some of the reconstruction initiatives positioned within a disaster context 'have, in one degree or another, been able to challenge the conventional paradigm of delivery' (Boano *et al.*, 2012: 10). In some cases the collaboration between a few of the (reconstruction) initiatives, the landlords and villagers has yielded demonstration projects for disaster-risk reduction strategies in order to increase building resilience of these communities to future floods. In view of the above, this thesis looks at the local power relations in order to understand the existing disparity between institutions, and what the implications are.

2.3.2 Mitigation

The interventions relating to disaster are presented in three areas; disaster mitigation looks at low cost, effective actions that can be taken in preparation of a potential disaster in order to reduce the severity of its impact; disaster relief/response is undertaken in the immediate aftermath of an event; and disaster reconstruction looks at the more long term return to normality and should encompass mitigation. Mitigation is a systematic approach to reducing vulnerability and includes low cost, effective interventions such as earthquake resistant housing, flood preparedness and rainwater harvesting in drought prone areas. It is about the day-to-day management of hazard-prone environments and day-to-day building livelihoods for the longer term, rather than reconstruction following disasters. Very often reconstruction remains as a relief process, and to a certain extent at a state of permanent temporariness.

Disaster mitigation is different to disaster relief and for the most part has a much lower profile. Although the impact is less dramatic it can be very effective. Disaster mitigation is a systematic approach to reducing vulnerability and should be regarded as part of long-term sustainable development work and a core element of development programme planning. Theo Schilderman, Head of Practical Action's Infrastructure Programme and an expert of post-disaster reconstruction, argues that 'the disaster mitigation strategies do not have to happen after a disaster has struck. They could happen at any time and their study could involve local universities, NGOs and authorities supporting disaster risk reduction, and it would be equally important involving communities at risk; doing some of this work now will reduce the pressure immediately after a disaster' (2010). In the seminal book titled, 'Building Back Better' (2010), the authors, including the editors Michal Lyons and Theo Schilderman, explore the potential for large-scale reconstruction to be participatory and developmental, and acknowledge the difficult continuum from relief to development and the ongoing process of reconstruction. The research thus will ponder upon whether 'we' need to rethink and sustain reconstruction as a developmental and not just relief process.

2.3.3 Housing & Infrastructure

This research argues that *'donor-driven, instant housing solutions are notoriously inappropriate in layout and technologies, particularly in relation to habits and lifestyles, and that over the longer term participatory processes deliver more sustainable solutions'* (Lyons M. et al., 2010). Further, it rejects donor-driven reconstruction as being inappropriate and exclusive (Schilderman, in Lyons M. et al., 2010: 7), and focuses on housing as an incremental process which includes not only the practical business of building houses but also the strategic aim of improving livelihoods and building all kinds of assets.

The research argues that 'we', as researchers and practitioners, need to take notice of the way low-cost housing, which builds on people-centred approaches, is delivered in non-disaster circumstances in order to inform and enable development after disaster. Kreimer, an expert on housing in emergency recovery projects research, points out that 'a number of continuities and similarities exist between 'normal' and post-disaster shelter development which need to be considered in the future planning and implementation programmes' (1980: 282). In support of this Lankatillike (in Lyons M. et al., 2010: 346) also argues that coherent models can be developed and implemented in more than one country, culture and logistical context, and which build on people-centred approaches to housing in 'normal' times to enable development after disaster. On the other hand statistics emphasise a disconnection between programmes addressing post-disaster housing and the normal production of housing for low-income communities (Lyon et al. 2010, Lizarralde & Rooth 2008). Schilderman (in Lyons M. et al., 2010: 7) reflects on key developments in housing practice and theory and their links with post-disaster reconstruction. He argues that, 'reconstruction needs to adopt a more holistic approach combining the rebuilding of houses with that of livelihoods and local markets' (ibid), and that 'in order to create greater resilience and sustainability, reconstruction must be more participatory and learn from development theory and practice, particularly in the housing sector (ibid). Davis (2006: 31) states that in the developing world, 'public housing for the poor is an exception rather than the rule'. Yet, at the present time there are numerous examples of low-cost social housing schemes in countries of the global South which we can learn from and draw upon. One example is a large scale low-cost housing program in Guayaquil, Ecuador, where the International Network of Bamboo and Rattan (INBAR) Latin America in collaboration with the NGO

Viviendas Hogar de Cristo have built and delivered around 265,000 flood resistant elevated bamboo homes under the Economic Development and Adaptation to Climate Change program. The same programme is initiated in coastal regions of Ecuador and Northern Peru and aims to reduce the vulnerability of populations living along the coast by using bamboo, which is a renewable locally available resource. Several low-cost housing projects were also built in Jinja, Uganda, by the National Slum Dwellers Federation of Uganda (NSDFU) and the NGO ACTogether, both working for and with the urban poor in Uganda. This project makes use. The low-cost housing projects of around 300 homes, constructed from compressed earth blocks (CEB), were executed with the help of NGOs, where local labour and residents were trained on brick making and layering. In 2014, Trong Danh Co and the Australian foundation for the peoples of Asia and the Pacific (AFAP) built a number of low-cost family homes and a community centre in the village of Vinh Thanh, Soc Trang Province, Vietnam. Trong Danh Co are based in Ho Chi Minh City, Vietnam, and are the producers of the low-cost building materials RHPP, which are made from recycled plastic in the form of polypropylene, and rice husks that are a by-product of rice cultivation. The components of the RHPP are rice husks, polypropylene plastic, baking powder, catalyst, and other additives. The work of the Heritage Foundation (HF) of Pakistan (see Chapter 5.2) involves, among other activities, the training of local artisans on building for disaster risk resistant construction with improved vernacular methodologies using earth, lime and bamboo in order that it is seismic as well as flood resistant. The HF approach encourages self-building and nurtures self-reliance. The above examples are to name but a few out of the many low-cost housing schemes, which have been implemented in the global South and which we can draw upon. Yet, international agencies and national governments rarely pay attention to the way in which housing is delivered, and often make the assumption that developing countries have no background or experience in low-cost housing schemes, no finance mechanisms, nor do they sometimes possess a profoundly rich and established informal housing sector (Boano and Hunter 2012, Lyons *et al.* 2010).

Alexander (1964) defends the idea that a building is not a ‘thing’ and that what we call form is the product of a pattern of forces. John Turner (1972) describes, ‘Housing’ as being ‘a verb’ and emphasises the continuum in housing, ‘what the house does is equally if not more important than what the house is.’ Turner (*ibid*) discusses the connections between the practical business of building houses and the strategic aim of improving livelihoods and building all kinds of assets such as social, political, physical,

human resource, and more. ‘He reminded us that the most successful housing emerges and consolidates incrementally, in pace with the needs and budgets of people and the aspiration of community’ (Hamdi, in Lyons M. *et al.*, 2010). ‘In the housing world, Turner (1972), Choguill (1996), and Hamdi (1991) have helped to shape an approach to housing development for the poor which emphasizes the superiority of participatory, people-centred approaches in technical terms but also in terms of the transformative potential of the process. On the other hand Lyons *et al.* (2010: 354) argue that ideas about power and rights have evolved differently in the housing world and in post-disaster reconstruction. It is further debated that the post-disaster reconstruction arena has favoured a less active role for affected people and communities as participation has only recently been widely applied’ (*ibid.*). Schilderman (2010) argues that affected households construct their house according to their needs and capacities, and the process may involve years of incremental development. Once a disaster has destroyed that asset they often need outside assistance to reconstruct them non-incrementally. The capacity to adapt to changing circumstances over time is a resource to sustain well-being, and build a sense of belonging and the resilience of community. There are some interesting tendencies for incremental processes which the authors in Lyons M. *et al.* (2010: 353) identified in Kenya, El Salvador, Turkey and Sri Lanka, which entail flexibility in design that allows for future alterations; and incremental processes which help agencies to make their money go further and reach more people. The above mentioned approaches allow the reconstruction process to take into account the technical requirements for future expansion, and may thus result in construction which is less vulnerable in the longer term. On the contrary, undifferentiated house types and lot sizes fail to take account of individual family needs or cultural differences; site plans are overly provided with public and unspecified use which results in many houses suffering construction defects in the rush to build (Hamdi, 1991).

Moreover, the provision of infrastructure is an area of critical importance. Infrastructural projects reconfigure the ways in which things and people are connected or disconnected. One of the core differences between the urban Global North from the urban Global South is that the provision of infrastructure of the cities in the former is much more technologically advanced and consistent than those in the latter. When it comes to rural areas, the Global South is generally characterised by scarcity in relation to the provision of infrastructure and access to services. According to Hunt *et al.* (2011), the climate risks most frequently addressed in existing studies are associated with sea-

level rise, health and water resources and that other sectors such as *the built environment and infrastructure are less studied*. Davis (2006: 124) broaches the subject of (earthquake) insurance which guarantees residential repair & rebuilding in wealthy cities like LA and Tokyo, in juxtaposition to the lack of disaster insurance in the poor countries of the Global South. Davis writes that ‘lack of potable water and latrines is unlikely to be defended by disaster insurance’ (ibid.).

My own first hand observation of projects in Bangladesh and Haiti suggest that the main priority of any sustainable reconstruction project or initiative is the importance of examining the existing livelihood practices within reconstruction projects. Expert organizations and practitioners need to spend time in the field to familiarise themselves with the local market, in other words what is available locally makes a significant difference in making decisions about materials and so on. Thus, the research will discuss the lack of infrastructure provision in the developing countries and how this affects their development, empowerment and recovery from disasters.

It also asks the questions whether the focus should be on infrastructure prior to the building of houses, and how the planning for infrastructure and that of low-cost houses may happen in synergy. Davis (2006: 14) argues that ‘urbanisation without industrialisation is an expression of an inexorable trend: the inherent tendency of silicon capitalism to delink the growth of production from that of employment. But in Africa, Latin America, the Middle East and much of South Asia, urbanisation without growth is more obviously the legacy of a global political conjuncture – the worldwide debt crisis of the late 1970s and the subsequent IMF-led restructuring of Third World economies in the 1980s – than any iron law of advancing technology.’ Referring to large-scale post-disaster reconstruction schemes in *Building Back Better* (in Lyons M. et al., 2010), Nabeel Hamdi argues that often attention to livelihoods is sporadic when designing for people and communities in the developing countries which often consequently leads to the displacement of communities. Further, Davis (2006: 64), points out that, in restructuring Hong Kong’s spatial economy ‘planners seldom paid attention to actual livelihood strategies of the urban poor, including their frequent use of their homes as workshops or their need to be located close to central markets or factories’. In addition, Lizarrade and Boucher (2004) argue that the ultimate consequence of lack of infrastructure cause residents or beneficiaries to ‘dislike the housing units provided – to the point that sometimes they do not even occupy them even if they are provided for

free.’ Cameron Sinclair, architect and founder of Architecture for Humanity (2012: 41) further reinforces the importance of livelihoods strategies within development and/or reconstruction schemes by bringing up the paradigm of Haiti, as he states that ‘in Haiti, families living in tents, most working in the informal economy, watched and waited as the international community struggled to rebuild homes. Meanwhile active commercial areas were atrophying. The Architecture for Humanity team realised that if we did not rebuild businesses there would be no jobs for the next generation of students.’

Further, Lyons et al. (2010: 351) argue that ‘every housing reconstruction programme reviewed in *Building Back Better* has prioritised construction over livelihoods, and introduced planning and support for income earning schemes only after housing completion if at all.’ ‘Reconstruction processes ignore at their peril the need to reinstate and if possible improve people’s income earning capacity. Poor occupancy rates are the results of the above as the need for livelihoods has been realised’ (ibid.). In relation to the integration of resettlement sites with other settlements, Hamdi writes that the location of the former have displaced communities in many instances and are often at some distance from schools, shops, and other facilities placing further burdens on family budgets, ‘sites are poorly integrated with other settlements’.

Davis (2006), Aquilino (2011), Schilderman (2004), Lyons M. *et al.* (2010: 351) and Sinclair (2013), argue that the root and outcome of much of the vulnerability, suffering and destruction experienced during disasters is poverty, or ‘systemic poverty’. All conventional or normative housing processes in development have reiterated the fact that shelter is the most basic need in society (Kreimer, 1980). Sinclair (2012) argues instead that ‘the number one request we – Architecture for Humanity- get from clients is a job, often before housing. No one is looking for a handout.’ Sinclair (ibid.) explains that ‘to rebuild holistically after a disaster it is imperative to have a series of strong economic anchors in the community. Without them you are putting the community at risk to become a future slum beset by unemployment, violence and social ills.’ To my mind, both Kreimer’s and Sinclair’s arguments are worth taking seriously by those of us who wish to develop the idea of holistic development further and flesh it out both in theory and in practice. By holistic development I mean the need to work simultaneously and in synergy on housing and infrastructure as one may complement the other.

2.4 Vernacular Building Practices and Materiality

This section discusses the issue of building standards, the use of traditional/vernacular building practices, and how the use of locally sourced and low-cost materials influences both the design and construction methods, as well as the economy and trade patterns of the local communities.

2.4.1 The Issue of Standards

‘Despite the tragedy (of a disaster) we are all dealing with the same basic issues, whether it’s finding a way to live with your mother-in-law or starting your own business with your friends. Design is a tool that helps us do more than just survive, it helps us live’ (Sinclair, 2012). This research discusses how design may help us live. John Turner in *Housing as a Verb* (1972) explains that if building standards were to be lowered, the user’s control in housing would increase at the expense of central institutions. This would result in taking the power away from central institutions which makes standards a controversial matter within public policy. I argue that the latter is a matter of power and control which is essentially a matter of forces. Although the role of central institutions, that is local, state, federal, and international government organizations, should be to craft and implement public policy to protect and benefit their populations, the governments rarely act in people’s interests as Shiva argues (Ecowalkthetalk 2011). ‘The civil society cannot take their freedom for granted; only a vigilant, active civil society can defend the rights of citizens’ (ibid).

Turner (1972) argues against the minimum standards for building, housing and planning, determined by central institutions and international organisations, as they specify not only what should be built but also how it should be built. The latter is a critical point that this research attempts to develop further and flesh out both in theory and in practice as it encompasses the materials used for building and consequently the local markets, livelihoods and economy. The standards that central institutions and international organisations aim at represent their own notion of what housing (design and procurement) ought to be. The enforcement of minimum or unrealistic standards, as Turner (1972) refers to them, worsens the housing conditions of the poor as they cannot be realised with locally available resources, i.e. local materials and traditional building

practices. Furthermore, Schilderman (2004) observes that, central governments often adopt globalised approaches (building technologies and standards) to reconstruction instead of making use of traditional materials and technologies ‘on the grounds that formal testing may not have been carried out and for which standards may not exist’ (Lyons, 2009: 387). This research argues that in order to enable a community to become more resilient, vigilant, and active, ‘we’ as practitioners ought to advocate and design with the community and using available resources. As Sinclair states, ‘the power of Architecture is to work hand in hand with somebody and to work locally’ (AIA 2013 Convention Keynote, National Convention in Denver).

Traditional architecture often gives way to dwellings made of modern materials which are manufactured from imported resources; are not only expensive but thermally and acoustically problematic; and whose rising cost makes it difficult for low-income families to become homeowners. Yet there are low cost and local alternative building materials available in most places. In light of the above and through the use of case studies in the following chapters, this research draws attention to the people’s strengths, that is indigenous knowledge, local skills and materials used for building, and how these can be used to reduce their vulnerability. The case studies of reconstruction programmes focus on ways of designing and building other than those supported by the international agencies and NGOs.

Current literature suggests that ‘the initiatives and case studies which have reverted to improved vernacular technologies and construction tend to offer the cheaper solutions and build on local skills. The quality has often depended on both quality of support and on owner’s ability to contribute to raise/maintain minimum standards’ (Lyons M. *et al.*, 2010: 354). *Building Back Better* (2010) illustrates case studies on Pakistan, Peru, Kenya, Gujarat and Turkey renowned for fostering improved vernacular construction. Lyons et al. (2010) argue that the best use of local skills and materials is achieved if improved vernacular building methodologies are implemented in combination with capacity building. The minimum standards set in the above case studies varied considerably which according to Lyons et al. (2010: 353) may be related to how much aid money was available after disasters.

2.4.2 Vernacular Building Practices

Vernacular building practices form part of the cultural heritage of a place, region or country and therefore there is a motivation to record them for posterity before they are lost (Vellinga, 2013:571). These practices have developed as a direct response to extreme climatic conditions in different parts of the world. They embody traditional local knowledge and existing coping practices (Freire 1970, 1993, Geertz 1983, Dudley 1993, Huq 2011), and may be interpreted as being sustainable or what Birkeland (2008: xxii) refers to as ‘reversible’, where she states that ‘to truly be sustainable we need to make development, land-use, and resource decisions that are reversible. This can only be achieved by design.’ In the case of post-disaster reconstruction purposes in the global South though it would be of great value to record and technically improve the diverse vernacular practices as they – usually being low cost- may enable and empower local communities to cope with, and plan for the impacts of climate change (Dudley 1993). Various local community-driven initiatives in the global South have devised strategies for post-disaster reconstruction with technically improved vernacular methodologies employing and enhancing local skills and indigenous materials.

Native or vernacular architecture are the houses or shelters of ‘ordinary people built by those with no architectural training’ (Dummet, 2005). These shelters are often in rural rather than urban locations and suitable for the local climate. According to Dummet:

“Such buildings only began to be deemed worthy of study within the last half-century, with the publication of Bernard Rudofsky’s Architecture without Architects in 1964, and the exhibition at the Museum of Modern Art in New York which it accompanied. However, in May 1911 Le Corbusier was ahead of his time by taking an interest in the vernacular buildings which he encountered on his journey to the east.” (2005: 2)

Echoing Vellinga (2013: 570) ‘vernacular traditions can teach us valuable lessons on how to create architecture that is rooted in local environments, traditions and places.’ And he continues, ‘no longer simply an obstacle on the road to progress, a common and tenacious popular representation, vernacular architecture has become a more sustainable alternative, or predecessor, to conventional contemporary forms of architecture and their associations with excessive energy consumption, pollution and wasteful use of

resources' (ibid). Vellinga (2013: 584) argues, that it is necessary to look at 'the dynamic interrelation of the social, political and economic aspects of vernacular architecture in specific cultural and historical contexts and at the way in which this is influenced by human agency and practice', in order for us to start to think about how to learn from the vernacular and improve the sustainability of our contemporary and future built environments. Vernacular architecture is increasingly regarded in connection with local materials and character, as well as passive technologies. The research will explore how traditional building methods may have been used in reconstruction programmes.

Dudley (1993: 169) argues that, 'sustainability has come to occupy a place in the vocabulary of aid on a par with community participation'. In recent years, in response to a multitude of environmental challenges and concerns, scholars from various disciplinary backgrounds 'have started to stress the sustainable character of vernacular architecture, emphasising its ecological friendliness and appropriateness' (Vellinga, 2013: 570). Most of the recent studies focus 'only on the positive aspects of vernacular traditions and tend to assume that the good environmental performance of a specific tradition implies the inherent sustainability of vernacular architecture as an entire, undifferentiated category' (Vellinga, 2013: 584). This research discusses vernacular building practices while reflecting on their geographical location.

In their paper titled, 'Architecture at risk (?): the ambivalent nature of post-disaster practice', Boano *et al.* (2012: 1) call for 'a renewed sense of critically anthropocentric post-disaster practice' and discuss the context which frames the current challenges and risks facing the production of post-disaster space drawing from the ontology of Foucault and Lefebvre. The latter argue that the way we perceive space could both influence and question the role, limits and principles of architecture and its practice as well as concurrently address social and material needs within a reconstruction context. 'According to Lefebvre we can no longer view space and social processes separately. Claiming that 'social space is a social product', he considers space beyond an intrinsic physicality' (Boano *et al.*, 2012: 7). 'Lefebvre argues that treating space as an abstract manifestation has 'nothing innocent about it: it answers to particular strategies and tactics; it is, quite simply, the space of the dominant mode of production, and hence the space of capitalism' (ibid). Boano and Hunter (2012: 3) note that, 'for decades, most approaches driving post-disaster reconstruction have defined the house in a reductively materialistic manner - a building. However, cultural specificity of home and space

aside, it is important to recognise that the everyday practices, material cultures and social relations that shape the home on a domestic scale resonate far beyond the household.’

2.5 The Critical Importance of Culture and the Social Context for Development

This project argues that culture – including the vernacular building practices as they form part of the cultural heritage of a place - should be recognised as a dynamic and active agent of social transformation and community rebuilding. Cameron Sinclair states that ‘we have to understand that culture is an element of sustainability and by ignoring heritage we are actually discrediting the desires and needs of a community; we need to protect the cultural heritage in order to enable social and economic sustainability’ (AIA 2013 Convention Keynote, National Convention in Denver). ‘Development actors worldwide, such as UNESCO, have been made progressively aware of the inter-linkages between culture and development. Recognizing culture as a dynamic and transformative force, they seek to explore culture as an indicator and facilitator of social development. Today, its role as an active agent of social transformation has been increasingly recognized. Cultural Heritage is an expression of the ways of living developed by a community and passed on from generation to generation, including customs, practices, places, objects, artistic expressions and values’ (ICOMOS, 2002)’ (<http://www.cultureindevelopment.nl/>).

Susan Moore (2013), in her paper titled, “What’s wrong with best practice? Questioning the typification of New Urbanism”, argues that the use of ‘best practice’ guides as powerful heuristic tools for the dissemination of innovation and knowledge is seldom questioned. Moore (2013: 1) is concerned with the ‘unquestioned compliance with practices labelled as ‘best’ as this ‘obscures the processes of typification that enable it, that is to say the cultural struggles, tensions, conflicts, collaborations, alliances, and personal/professional justifications that prefigure it.’ Like Moore, Gramsci argues that ‘to move beyond contests over meaning to unquestioned acceptance is to become hegemonic’ (Lyons M. *et al.*, 2010: 357). In their paper titled “Constructing sustainable urban futures: from models to competing pathways” Guy and Marvin (2001) develop an analytical framework of social constructivist theory to demonstrate that a multiplicity of pathways towards different sustainable futures are likely to co-exist within a single city.

They (ibid) are concerned with the unquestioned use of ‘models’ in sustainable regional development, and argue that the achievement of sustainability is a complex and multilayered process and not the result of implementing a specific model.

Vellinga (2013) alludes to the need of the Architectural Sustainability discourse to start a dialogue with other disciplines which have been working on the ‘cultural embodiment of the vernacular and the role of human agency and practice’. Vellinga (ibid) observes that ‘many recent studies on architectural sustainability tend to ignore or appear unaware’ of such work. Nevertheless he (ibid) explains that these studies are valuable as they illustrate ways of designing, building and dwelling other than those regarded as proper and advocated by the conventional architectural community.

The research proposes that it is imperative for the disciplines of Architecture and Sustainability to communicate with for example the discipline of Anthropology as the two would gain insights from and inform each other’s work. This dialogue may in turn benefit the way experts and expert organisations work with communities, and also enable a better understanding of the context in which they practice.

In the light of the above, I argue that the simplistic use of model(s) for post-disaster reconstruction would not work. ‘It would be a mistake to employ the model as a blueprint to implement within the existing context’ (Guy & Marvin, 2001: 134). Models should be used in a more flexible way, not as specifications for reconstruction but rather as conceptual devices to sensitise us to different visions of what the sustainable way might be (Guy & Marvin, 2001). Like Guy and Marvin, Susan Moore argues that ‘there is interpretative flexibility attached to any artefact: it might be designed in another way’ (1997: 25). Therefore, this research considers the traditional building practices as a conceptual device, pathway or framework which would need to be contested in specific local contexts within post-disaster reconstruction initiatives.

Lyons (Lyons M. *et al.*, 2010: 346) discusses the case study of the Community Rehabilitation and Reconstruction Partnership (CRRP) example of an approach to reconstruction. The latter was developed upon the mainstream of the Sri Lankan housing building tradition, following the strategies and methodologies of the *Million Houses Programme* to reach people. Individual families form the main plank of housing development. The programme is conceptually grounded in a holistic developmental

strategy. She (ibid) maintains that such models can be sensitively adapted to a local scale and accommodate a wide variation of household needs.

Guy & Marvin's (2001) framework of social constructivist theory suggests their compliance with Lev Vygotsky's theory of social constructivism. Vygotsky (1978) emphasizes the critical importance of culture and social context for (cognitive) development and learning. He argues that learning is a collaborative process which cannot be simply assimilated or separated from social context. Constructivist learning environments: emphasize authentic tasks in a meaningful context rather than abstract instruction out of context; encourage thoughtful reflection on experience; and enable context- and content-dependent knowledge construction. In her paper titled "Vygotsky, Piaget & education: a reciprocal assimilation of theories & educational practices" DeVries (2000: 189) argues that 'the child cannot construct physical knowledge without getting information from the object's reactions to actions on it. However, physical knowledge cannot be elaborated without logical reasoning. Knowledge about physical events requires inferences drawn from observations.' I find DeVries' paper useful to my topic despite the fact that it is concerned with child development and learning. A number of reconstruction initiatives provide training and a 'learning space/environment' for members of local communities. Therefore I argue that like in DeVries' description of child development above, these initiatives have been developing their improved techniques by experimenting and drawing from observation. The technically improved vernacular methodologies have derived from physical knowledge based on experiences of acting on objects and observing their reactions. These actions are to find out if the techniques/methodologies will react to a natural hazard. The source of physical knowledge is partly in the vernacular techniques themselves whose reaction depends on their properties and external factors such as the climate.

2.6 Aid and its Role

This section considers the process of giving aid within a post-natural disaster context and how the former is interlocked in both local and international power relations and transactions; and finally the key issues such as how, by whom and for whose advantage this is encouraged and utilised.

Climate change and poor communities in the global South generate income and livelihoods for thousands of local and foreign non-governmental organisations who are required to produce quick visible outcomes. Consequently, building and specifically post-disaster housing reconstruction justifies the Aid expenditure. As Boano *et al.* (2012: 5) argue ‘producing space and built form are inherently elite practices as they insist on who controls resources at different scales.’ I argue that aid is presented as ‘gift’ to the field actors as well as its beneficiaries by virtue of ‘the gift being more visible or accountable than the commodity, perhaps because of its continuing importance as a visible manifestation of one’s social relations’ (Dittmar, 1992: 98). In light of the anthropologist Marcel Mauss’ (1954) description of the ‘gift’, I contend that the process of giving aid in a post-disaster context is interlocked in both local and international power relations and transactions.

The purpose of development aid, as described by Dudley (1993: 141), is to help solve problems but yet less clear is *whose* problems are to be solved. Such aid, many scholars argue, is designed for the sole purpose of solving the economic problems of the wealthy industrialised countries (Hayter 1981, Linear 1985, Dudley 1993). Hence, one of the reasons that ‘gifts’ such as aid towards post-disaster reconstruction are made is to maintain a profitable ‘alliance’ or ‘association’ or perhaps business. This alliance is a force that binds the actors together and keeps them separate at the same time, divides their labour and constraints them to exchange (Mauss, 1954). There are inherent interests in giving aid as it is transformed into services that yield money. Hence this process of exchange challenges the status quo and existing power bases.

In his book ‘Planet of Slums’ (2006) Davis explains that the new wisdom of the late 1970s and early 1980s ordered that the state go into partnership with international donors and NGOs in order to become an ‘enabler’ of the poor as opposed to the top down structural reform of urban poverty undertaken by post-war social democracy in Europe and advocated by revolutionary-nationalist leaders of the 1950s (Davis, 2006:71). The tendency of the State going into partnerships with essentially international corporations is also observed, among other scholars, by Vandana Shiva (Ecowalkthetalk 2011), during an interview on the *Traditional Knowledge, Biodiversity and Sustainable Living*. Shiva (ibid.) explains that ‘Society used to have three pillars: the Government/State, business/corporations, and the Citizens. The corporations and State have merged to become a Corporate State. The Governments act in corporate

interests, they have become of/by/for the corporations. Today the civil society is not just a counter veiling force to the government, it has to be a counter veiling force to corporations.’

It is important to explore the role that institutions are playing in either supporting or constraining vernacular building practices using traditional locally sourced materials from being adopted widely within post-disaster reconstruction initiatives. According to Guy & Marvin (2001: 137), ‘different field actors’ viewpoints and strategies, with often competing social, political and commercial interests, either resonate or dissonate with the visions inscribed in models of development.’ Therefore, this research reflects on the local power relations in order to understand the existing disparity between institutions, and what the implications are. Collaboration is not without its difficulties when two or more actors from different countries with different cultures, disciplines, timescales, priorities and institutional demands try to work together. Interdisciplinarity requires both a strong direction as well as the provision of a platform for dialogue to make explicit each partner's expectations of the collaboration sustained through the process. I contend that this platform for dialogue would aspire to act as King Arthur’s miraculous Round Table, as Mauss (1954: 81) states in ‘The Gift’, at which ‘no-one would be excluded and everyone would be at the same level.’ Anthony Oliver Smith argued, at the roundtable discussion titled ‘collaboration in interdisciplinary research projects’ organised by the University of Miami at the 112th American Association of Anthropologists (AAA) from November 20th to 24th 2013, that ‘there are no firsts among equals’ when actors from different disciplines try to frame the complex question or issues posed.

Hamdi (Lyons M. *et al.*, 2010: xi) once argued that, ‘we need to shift our roles as experts and providers of everything to enablers. Recently he decided that this ‘either or’ distinction is neither helpful nor accurate. In order to be an effective enabler you have to be a prudent provider.’ According to Hamdi (*ibid*) there are four integrally related sets of responsibility vital to good practice: providing, enabling, adapting and sustaining (PEAS). He advocates that ‘we’ as both enablers and providers examine the context and circumstances thoroughly in order to decide how much of each and how they relate to each other. Schilderman (2010) observes that ‘it remains difficult for some decision makers to shift from a supply-driven ‘relief mode’ to a ‘reconstruction mode’ that ought to be more support driven and people centred.’ This fragmentation of the roles and

expertise one may find positioned within reconstruction schemes often reflects in the way we design and build for uncertainty. I contend that there is no one blueprint for reconstruction that is uncompromising but rather many nuanced pathways which depend on the context we work in. It may transpire that the effectiveness of a scheme is contingent on the level of the practitioner's or researcher's familiarity with the context and field prior and during their involvement with the affected community. This is a point which I revisit on many occasions during this research.

The issues of 'temporariness' and 'continuity' have often come up both during my literature review as well as my own work experience on similar issues prior to this research, in juxtaposition to the normative perception of 'permanence' in the developed world. 'Our' perception of 'permanence' has been challenged over the past few years either due to the economic crisis in southern Europe or because of the natural disasters in European and western countries, i.e. the floods of 2014 in southwest England, the recent floods (May 2014) in Southeast Europe and the Balkans, etc. What does permanence mean to people from other parts of the world, which is in the Global South where the notion of permanence differs distinctly from what 'we' perceive as permanent in the global North. Disasters often place traditionally overlooked places on the spotlight and make them temporarily become the 'spectacle.' However, this lasts only for short period of time and these places are gradually forgotten whilst the NGOs continue working there. Schilderman's argument is that this disparity and lack of continuity must be understood in terms of the political economy of post-disaster aid. It is the result of, among others, the transient ad hoc partnerships of actors who come together after a disaster; the involvement of long-term development agencies with little experience of the behaviour of markets and systems under the pressure of a disaster; the pressures of time and budget imposed by governments, donors, agencies. This thesis reflects on how the mitigation strategies could inform the reconstruction process so that the temporariness of the response process gradually becomes eliminated, and how 'we' could lessen the severity of potential disasters in relation to the practice of building houses.

Since mid 1990s the World Bank, UNDP and other aid institutions have increasingly bypassed governments to work directly with regional and neighbourhood NGOs (Davis, 2006:75). In 1976 the first UN-HABITAT Conference was held as well as the publication of Turner's 'Housing by People; Towards Autonomy in Building Environments', 'this amalgam of anarchism and neoliberalism had become the new

orthodoxy that formulated a radical departure from public housing favouring sites and services projects and in situ (slum) upgrading.’ ‘Helping the poor help themselves’ meant the momentous downsizing of entitlement implicit in the World Bank’s canonization of slum housing. Kavita Datt and Gareth Jones (Davis, 2006:74) argue that, ‘self-help is partly a myth as most self-help is actually constructed with the paid assistance of artisans, and for specialist tasks, skilled labour.’ Does praising the praxis of the poor or in other words helping the poor help themselves enable or constrain resilience? Or does it, as Jeremy Seabrook (1996) suggests, prepare for a withdrawal of state and local government intervention and support as ‘enablement’ and ‘good governance’ sidestep issues of ‘global inequality’ and ‘debt’ and cloak the absence of any macro strategy for alleviating (urban) poverty. Davis argues that praising the praxis of the poor became rather a smokescreen for renegeing upon historic state commitments to relieve poverty and homelessness (2006: 72), and that ‘the effort of NGOs is constantly to divert people’s attention from the larger political evils of imperialism to merely local issues and so confuse people in differentiating enemies from friends’ (Davis, 2006: 78). In his book ‘In the Cities of the South: Scenes from a Developing World’ Jeremy Seabrook (Seabrook, 1996) states: ‘*by demonstrating the ability, the courage and the capacity for self-help of slum people, the way was prepared for a withdrawal of state and local government intervention and support.*’ Shiva (Ecowalkthetalk 2011) explains that ‘*the civil society cannot take for granted that the governments which they put in place, which in democracies are supposed to be of/by/for the people, will continue to act in people’s interests. For this reason only a vigilant, active civil society can defend the rights of citizens. We cannot take our freedom for granted anymore.*’ This is where training the local community/masons makes a very important shift. Additionally, the anthropologist Marcel Mauss brings out the importance of social justice and commitment to community and to others above self-advantage in order to make such an alliance’ successful, and states:

“In order to trade one must lay down their spear. When that is done they can succeed in exchanging goods and ideas between individuals. It is only then that people can create, can satisfy their interests mutually and define them without recourse to arms. It is in this way that we will all learn how to oppose one another and how to give without sacrificing anyone’s rights or freedom.” (1954: 80)

In order to begin to understand such a complex type of exchange or social phenomenon we may need to go farther than the mere 'visible result' of the process and break down, reconsider and redefine the social structure of giving aid. By looking at these social phenomena as 'wholes', as 'systems in their entirety, may we be able to analyse facts of a more general nature, and our analysis may suggest the way to better administrative procedures for our societies' (ibid: 69).

2.7 Conclusions: Areas for further investigation

As mentioned earlier, the research looks at issues concerning various approaches to the resilience and the potential for adaptation through the use of local building materials within small-scale construction projects in the global South. Thus it identifies the role of locally available materials and traditional building practices in relation to the empowerment of local communities, as an area for further investigation. It aims to rethink the idea of what is local, in relation to building materials, in a given context. The use of locally available materials and traditional building practices is directly associated with the current narrative and concept of sustainability. The literature suggests that once we acknowledge the socially contested nature of environmental design and sustainable architecture, we may begin to engage in a very different dialogue about sustainability (Guy & Marvin, 2001). Current debates around the environment and sustainability suggest that they both constitute sites of conflicting interpretations, and that they are contested terrains shaped by the often conflicting political, social, economic and commercial interests and strategies of different actors and stakeholders, such as architects, designers, developers and planners, institutions, the construction industry and so on. These actors interpret and define the nature of the environmental problems and the solutions available to us differently, in order to suit their own agendas, or to suit their own conflicting convictions. The literature contends that it is necessary to acknowledge the plurality and diversity of approaches to sustainable architectures, and environmental design, relate directly to the different locations, technologies these architectures may incorporate, materials they are constructed from, aesthetics, and so on. Therefore, sustainability is about exploring, (re)interpreting and coping with the diversity of local conditions, cultures and natures, not about the setting and application of universal goals. We cannot solve the environmental problems simply through the application of technologies. The sustainable solutions to our issues cannot be defined in

a reductively materialistic manner – buildings and technologies; they need to be shaped and framed within the diversity and plurality of the cultures and natures at hand. Sustainability cannot be a universal set of goals or best practice rules; it is an ongoing process, which responds to the plurality of social, economic and physical contexts. It is therefore time and place specific.

What's more, the literature argues that to truly be sustainable we need to make development, land-use, and resource decisions that are reversible, and that this can only be achieved by design. The concept of sustainability entails and is enabled by more socially responsible and less resource-intensive forms of development. Sustainable design embraces all aspects of human settlement including the dwelling, livelihoods and local markets, culture, social interactions and organisation, economy, climatic conditions, biodiversity and ecosystems, as well as the environment and natural resources. In order to have a positive impact on local communities and contribute towards enhancing their resilience and potential for adaptation, truly sustainable design has to consider all the above aspects simultaneously and as an integrated system that they are, not just as a series of individual issues. At the same time sustainable design has to be a process-driven and collaborative activity in order to enable local communities to become more resilient. The literature argues that, initiatives which exclude community or user participation often encourage a culture of dependency among beneficiaries, who come to rely on charity as a means of survival rather than having an active role in their own future. What's more, these initiatives' attention to livelihoods is sporadic when designing for people and communities in the developing countries, which consequently leads to the displacement of communities. On the other hand, initiatives whose work consolidates incrementally, in pace with the beneficiaries' energies, needs, capacities, existing skills, aspirations, and budgets, enhance resilience of individuals and communities; in this case the local communities are both the recipients and agents of change, and not passive recipients of knowledge. The literature reinforces the idea that, in order to create greater resilience and sustainability, reconstruction must be more participatory and adopt a more holistic approach combining the rebuilding of houses with that of livelihoods and local markets. Therefore, it calls for an anthropocentric and holistic approach, which prioritises the importance of livelihoods strategies within community development and reconstruction schemes over construction. Thus, another area for further investigation is identified, one which looks at the practice of architecture within design and build community projects undertaken by NGOs in the global South,

and how this practice may be informed by employing an anthropological, and anthropocentric, and holistic approach. Such projects, which foster participatory processes in order to recognise and enable the local everyday practices, material cultures and social relations, focus not only on the practical business of constructing buildings but also on the strategic aim of improving livelihoods and building all kinds of assets. On this account, and as mentioned earlier in the thesis (see 1.2 Research Aims and Objectives), the research investigates, how the syncretism of the ethnographic method and the practice of architecture within design and build community projects undertaken by NGOs in the global South, enables solutions, which can contribute to longer-term sustainable adaptation in this context.

As already stated, this research draws attention to the people's strengths, that is indigenous knowledge, local skills, locally available resources, such as building materials and traditional building practices, and how these can be used to reduce people's vulnerability. The literature reinforces the idea that since culture forms an aspect of sustainability, we need to protect cultural heritage, which also includes the vernacular building practices, in order to enable social and economic sustainability. The sustainable character of vernacular architecture has been emphasised by scholars from various disciplinary backgrounds in recent years, due to its appropriateness and ecological friendliness in responding to a multitude of environmental challenges. Most of the recent studies though focus only on the positive aspects of vernacular traditions, and tend to assume the inherent sustainability of vernacular architecture as an entire, undifferentiated category, due to the good environmental performance of a specific tradition. Yet the literature suggests that in order to determine how sustainable a vernacular tradition may be, it is not enough to consider its environmental performance, but rather it is necessary to look at the dynamic interrelation of the social, political and economic aspects of the specific vernacular tradition in specific cultural and historical contexts and at the way in which this is influenced by human agency and practice. This may constitute a fundamental area for further investigation, in relation to specific vernacular architectures.

In addition, vernacular building practices cannot be considered static or an undifferentiated category, as they are always in a state of flux and continuous improvement, according to the changing climatic conditions, local biodiversity and ecosystems, globalisation patterns, etc. They have developed, and are still being

developed, as a direct response to the various climatic conditions in different parts of the world, and embody traditional local knowledge and existing coping practices. As stated earlier in the chapter, central governments often adopt globalised approaches to reconstruction, such as building technologies and standards, instead of making use of traditional materials and technologies, on the grounds that formal testing may not have been carried out and for which standards may not exist. Yet, current literature suggests that there are a number of initiatives, which have been developing improved vernacular techniques derived from physical knowledge based on first hand involvement, experimentation and observation. These initiatives have reverted to using improved vernacular technologies and construction, and tend to offer the cheaper solutions and build on local skills. What's more, it is also argued that the best use of local skills and materials is achieved if improved vernacular building methodologies are implemented in combination with capacity building. Hence, one fundamental area, which needs further exploration, is to rethink the idea of what is local, and vernacular, in a given context, and how to help imbue culture and the spirit of a people into the built environment. Therefore, this research considers the traditional building practices as a conceptual device, pathway or framework which would need to be contested in specific local contexts within community-driven construction initiatives.

Moreover, the production of space and the built artefact, well as that of environmental design strategies constitutes elite practices as they demand the control of resources at different scales, and are interlocked in both local and international power relations and transactions. Hence, the role of the architects, who are involved in the production of the built artefact such as construction projects aiming to empower local communities and enhance their resilience and capacity for adaptation in the global South, is another area for further investigation. The way we perceive space could question and influence the role, limits and principles of architectural practice, education, and research, as well as concurrently address social and material needs within a community-driven development context. The literature contends that we need to consider space and social processes as an integrated system that they are, not as individual categories, this same logic may be applied to culture and sustainable architecture, local climate and sustainability, and so on and so forth. By doing so, that is by looking at these phenomena as 'wholes', may we be able suggest the ways to better organizational procedures for our societies and environment.

Finally, some themes have emerged from the fieldwork, which do not fit nicely into the above literature. This calls for reading further literature but it may also be an original critique of the literature. As I state in Chapter 3, which sets out the research methodology, the combination of an ethnographic approach and architectural praxis produces a unique kind of knowledge. Chapter 3 outlines the research questions which are directly relevant to the fieldwork, as well as the basis of the research methodology and why an ethnographic approach is chosen. The overall theoretical framework is mainly concerned with exploring specific earth building techniques in rural Ghana and other developing countries.

Chapter 3

Methodology: An Ethnographic Approach to Community-Driven Initiatives in the global South

Chapter 3: Methodology: An Ethnographic Approach to Community-Driven Initiatives in the global South

3.1 Overview

This chapter will mainly explore the role of traditional building practices in the way they may contribute towards building resilience, coping with the effects of climate change in a given context. My work mainly draws on *ethnographic fieldwork* conducted in a remote village called Abetenim in rural Ghana, as I explain below.¹ The fieldwork in Abetenim seeks to demonstrate how complex the skills of building with earth are; first, that building with earth is not a straightforward endeavour as one may think; and second, the complexity of knowledge that is involved in learning a building craft and performing it with mastery. This kind of craft building method is often associated with tradition. By drawing on the fieldwork in Abetenim, and my role as a community architect and participant in the Earth Architecture workshop, this chapter discusses how the use of Ethnography, typically a method of the discipline of Anthropology, as part of architectural praxis facilitates the holistic understanding of the local context and informs the design process. The chapter argues that the *syncretism of ethnographic and participatory design methods* enables solutions, which are based on ‘thick description’ (Geertz, 1973) and as such can contribute to longer-term sustainable adaptation in this context.

In this chapter, I follow the work of the anthropologist and trained architect, Trevor Marchand, among others, who conducted long-term fieldwork amongst the local masons in Djenné. In his excellent book titled, ‘The Masons of Djenné’ (2009: 27), Marchand argues, that ‘tradition and continuity are necessarily couched in a relation with modernity and change’. This research may have some similarities to that of Marchand’s, in the sense that it looks at the role of earth-based building methods in the modern age and the struggles and tensions between tradition and modernity, the tensions that arise between the local masons’ work and the modern world, and the tensions between globalisation and the politics of place and localness (ibid.). Any kind of craft knowledge involves a lot more than simply technique or technical precision. There are so many types of social and moral knowledge that go into the various crafts.

¹During my fieldwork I have taken a number of photos, which I make use of throughout Chapter 4.

The research acknowledges that the discussion about the use of Ethnography as part of architectural praxis and how it facilitates the holistic understanding of the local context, as well as the tension between tradition and modernity, between globalisation and the politics of place, have both been discussed by other scholars. However, the originality of this research lies in the syncretism of the participatory and creative methods of data collection it uses during fieldwork, and beyond, such as: ‘multi-sited ethnography’ (see sub-chapter 3.1.2 Why an Ethnographic Approach?, pages 51-52), which entails my participation in the Earth Architecture workshop as a labourer with the aim to experience firsthand and learn about materials and building methods used locally, in juxtaposition to my extensive involvement and collaboration with the Architects’ Project (TAP)² (my role within TAP is discussed in sub-chapter 3.3.6) as their online editor through social media, mainly Facebook. Thus the fieldwork moves from a rural geographical site to a virtual site through social media; it moves from a conventional single-site location, which characterizes Ethnography, to multiple sites of observation and participation that cross-cut dichotomies such as the ‘local’ and the ‘global’ (Marcus, 1995:95). Moreover, the combination of both sites, the physical and the virtual, as well as the fieldwork conducted in the UK through the interviews with the research participants and also the secondary case studies (see chapter 5) have all contributed towards a more holistic exploration and understanding of the challenges that are related to resilience and adaptation in this context. Further, the originality of the research also lies in employing the praxis of collaboration as methodology, which the research employs during the primary fieldwork in Ghana as well as throughout the extended fieldwork and writing-up endeavour (see sub-chapter 3.3.4 on Collaboration(s) and Interdisciplinarity); collaboration between initiatives, organizations, and/or practitioners, or the combination between these; and finally a collaboration between the disciplines of Architecture and Ethnography, which is the typical methodological approach of Anthropology. The latter provides an interdisciplinary dialogue, whereby the ethnographic method becomes an effective tool to re-think architectural practice in this context; a tool to address specificities of context and culture, and question the often rigid organizational structures of Architecture in a meaningful way enabling it to become more socially-driven. In addition the originality of the research methodology

² TAP: a non-governmental organisation involved in Architectural Research and Design in Africa and mainly Ghana; an autonomous initiative set up to boost the education and practice of architecture. It is local in context and global in agenda.

also lies in considering the category of local building materials, like earth, as a tool to think about resilience and empowerment of the local people. The syncretism of all the above enables the research to: critique local situations and ask the right questions about the practice of architecture, question the boundaries of the discipline and its practice in the field, and reconsider the design process in our rapidly changing world.

Moreover, the case studies, which have been used as one of the qualitative methods to undertake this research, embody real-life situations, issues, and problems, enhance the rigor, genuineness, and gravity of the study and strengthen the cohesion and accuracy of the findings, because ‘evidence from multiple cases is often considered more compelling’ (Yin, 1994, pp. 45). In the social sciences in particular, the use of case study methodology, which is a qualitative research method, is adopted to examine contemporary real-life situations, and to contribute towards an understanding of complex issues. Yin (1984: 23) defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used. ‘Case study methodology is characterized by a purposeful selection of the case to study and triangulation, which is normally conducted by means of multiple-method data collection’ (Alizadeh, 2006: 57). Therefore, the research makes use of various research strategies, such as case studies, observation, participation, as well as face-to-face interviews in order to explore how the use of local materials can empower communities and improve resilience in a given context. This creates a comparative context through which similarities and differences are drawn out in order to first, understand the local social context in which these building practices are considered. Second, it ensures realistic and grounded recommendations. The case studies, which are illustrated and discussed in this thesis, provide a dialogue which enables the exploration of architectural practice from a climate and culture first approach, which addresses and engages with the specificities of the context, and demonstrate diverse ways of building community resilience through the use of local materials.

In light of the above, the thesis, besides the primary fieldwork/case study in rural Ghana (see chapter 4), purposefully selects and makes use of four secondary case studies out of the fourteen interviews undertaken for the purpose of this research (see chapter 5). They are illustrated by four of the research participants as typical examples of initiatives,

projects and organisations, which utilize local materials, building practices and labour, various forms of training, and which entail collaborations with local actors in order to implement their work on the ground. Each one of the four embodies a unique paradigm demonstrating diverse ways of enhancing resilience at a local level through the use of local available materials and building/making techniques; through the use of the ethnographic approach, or in other words through the participants' 'being there', they inform architectural research and practice in a given context and help imbue the local culture into the built environment. The four secondary case studies are situated in four different countries, specifically Pakistan, Swaziland, Algeria, and Zimbabwe. Case Study 1, 'The Heritage Foundation of Pakistan', focuses on strengthening the capacity for adaptation and resilience at a local level through the use of sustainable materials, thus inhibiting carbon emissions, veering away from the use of industrialized products, such as fired brick, cement and steel, within schemes, which entail the rehabilitation and provision of housing for the devastated communities affected by natural disasters in the global South. Case Study 2, 'The women-led collaborative project in Swaziland', focuses on transferring knowledge and skills to women's groups facing extreme calamities in destitute communities in rural Swaziland, in order to help them to become more resilient long-term. Case Study 3, 'Capterre, Algeria', focuses on the local knowledge and the preservation of the local vernacular skills in order to re-educate local expert masons on improved vernacular building methods, with a view to enhance resilience at community level. Case Study 4, 'Creating a National Standard for earth building in Zimbabwe', focuses on the implementation of Standards for earth building in Zimbabwe and the importance of institutional support in order to strengthen the capacity for adaptation and resilience at a local level.

All five secondary case studies deal with similar core issues and challenges in the field, which manifests that there are convergent themes across the South. They cover a wide range of approaches to resilience and adaptation through the use of local available materials and skills in construction processes, which they explore empirically from a variety of geographic regions, from different perspectives and steeped in very diverse circumstances. This reinforces the idea that a South-to-South dialogue may benefit the periphery. The above studies consider how being immersed in the field, that is by 'being there', engaging with the local community on all levels including physical making, facilitates the holistic understanding of the local contexts and thus informs the design and build practice in the South in a way which empowers the communities at hand; they

focus on building upon existing knowledge about locally available materials and existing skills, and explore the practices of designing, building and making at its deepest in order to be able to (re) interpret them and thus enhance the resilience at a local level. They focus on and intensify the available skills, knowledge, and local resources despite the scarcity of means and lack of time. They regard the category of training, such as the material and physical processes of making and/or as part of capacity building, as a tool and concept to think about resilience and empowerment of the local community at hand. Finally, they emphasise the value of collaboration(s) with local and non-local actors in the field, institutions and affected communities alike, who are from diverse backgrounds, expertise and capacity, in order to implement their work on the ground in meaningful and coherent ways.

All five case studies are considered as a lens through which the thesis investigates how different interests envision the social and spatial reordering of the area. Ultimately, they rethink architecture and building practices from a broader cultural perspective; they argue that culture can only be learned by experience, and that ‘being there’ is fundamental for western-trained practitioners involved in development projects in the global South, as it is the only way to understand the local culture, the needs of the community and therefore their priorities. In addition, they raise critical questions about the practice of architecture, design and making in such circumstances, and how it can be improved and informed through ‘being there’³, or *experiencing fieldwork*, as part of the design and building process within the implementation of community-driven projects that are undertaken by various NGOs in the global South.

Furthermore, the research seeks to reappraise the role of locally driven initiatives in building for a sustainable future. It considers the organisational structure of such initiatives in relation to their socio-political and geographical context, that is, their relationship to the local communities and their wider networks. Another aim of this research is to examine the influence of different variables on the ‘choice’ of materials and building methods employed by non-governmental organisations (NGOs) in different contexts. Thus, my overall theoretical framework will be mainly concerned with exploring specific earth building techniques in rural Ghana and other developing countries.

³‘Being there’ is the title of the first chapter in Clifford Geertz’s 1988 study of anthropological writing.

In addition, the research looks at both collaboration and interdisciplinarity. The value of collaboration with local actors within research and other projects in the global South is emphasized. Here, by collaboration I refer to the teamwork among initiatives, organizations, and/or practitioners, which work together on the implementation of the same project. What's more, the research itself employs the practice of collaboration as a method, among others, of collecting data (see 3.3.4). It argues that the only way to make a contribution to the discipline is to rethink it from another discourse outside of it, and specifically to rethink it from culture (The Architectural review 2014), and that the syncretism between the ethnographic method and architectural research and design opens up a dialogue which entails the continuous reconsideration, adjustment and negotiation of the disciplines' boundaries, specifically looking at the way the boundaries of the discipline of architecture are affected, and contributes to longer-term sustainable adaptation in this context.

The following section outlines the basis of the research methodology and why I choose to take an ethnographic approach. I move on to explain how the change of field site alerted me, in a serendipitous manner, to another workshop. Then, I give a detailed description of the fieldwork in Ghana.

3.1.1 An Outline of Research Methodology

The research is divided into three stages: the pre-fieldwork stage, the fieldwork stage and the post-fieldwork stage. Although this research is steeped into the discipline of architecture, it takes an interdisciplinary approach and considers knowledge from other disciplines such as, sustainable development, Anthropology, climate change adaptation and its wider resilience discourse (see 3.34). Therefore, this research is of a qualitative nature. It takes an ethnographic approach to the work of some community-driven initiatives in the Global South. The choice of method is crucial as it is not merely about collecting data, that is, a means to an end. Instead, methodology is a continuous dialogue which morphs according to time, people and space (and money). But most importantly, method is about the production of knowledge - it is a collaboration between self and *other*. There are multiple meanings of ethnography. The etymology of ethnography which finds its roots in the Greek language literally means 'to write about a nation'. Thus, the ethnographer is someone who writes about peoples. Also,

ethnography is both a method of social research and genre of social science text (Marcus and Clifford 1986). It is a descriptive and highly analytical account of a small scale society or a specific group of people. The strength of ethnography is its holistic endeavour which brings together method, interpretation and writing (Malinowski 1922, Okely 2012). As it will become clear from the following chapters, the method informs the interpretation and writing, thus, one cannot be treated as separate from the other.

Thus, I use a qualitative methodology which is based on qualitative data collection, and includes a mixture of creative methods such as, participant observation, semi-structured and unstructured audio-recorded interviews, informal interviews and conversations and participatory-design methods. My own personal insights, that is, anecdotes, cultural baggage, personal and professional experiences, personal history, and motivation are also considered. These factors are significant as they may influence the construction of theory, but most importantly, this type of reflexivity addresses ethnocentricity. As Hoey (2008) argues, reflexivity forms part of the larger ethnographic endeavour and should be acknowledged as a mutual product born of the intertwining of the lives of the ethnographer and his or her subjects. Creswell (2003) also observes that, ‘the more complex, interactive, and encompassing the narrative, the better the qualitative study’ (2003:182). This reflexivity features in my main research questions and areas of enquiry, which include:

1. How can local materials and traditional building practices empower local communities and increase the potential for resilience and adaptation in the global South?
2. How can the use of ethnographic research contribute to the advancement of architectural research and practice in a given context and help imbue culture and the spirit of a people into the built environment?

As I state above, the term ethnography has increasingly been associated with practically any qualitative research project where the objective is to provide a detailed, in-depth description of everyday life and practice (Falzon, 2009, Hoey, 2014). The latter may be referred to as ‘thick description’ which is a term coined by the anthropologist Clifford Geertz who was mainly writing about the idea of an interpretive theory of culture (1973). I shall now move on to discuss how I ended up following an ethnographic approach.

3.1.2 Why an Ethnographic Approach?

In this section, I seek to briefly outline the meaning of ethnography as this will be useful in determining why I chose to adopt this specific approach during my fieldwork phase. The definition of ethnography may be established in the disciplinary home of anthropology, although an ethnographic approach to social research is no longer purely that of the social anthropologist, as it is increasingly employed by researchers and others from a variety of backgrounds and for a multitude of purposes from the academic to the applied and even commercial (Okely 2012; Hoey 2014). Ethnography, whose aim is cultural interpretation, may be defined as a qualitative research process and method, as well as the product, which is the final outcome of the research (usually the monograph, but also visual documentaries). I find the quote from Mark-Anthony Falzon to be apt here, as he states that:

“Ethnography is an eclectic methodological choice which privileges an engaged, contextually rich and nuanced type of qualitative social research, in which fine grained daily interactions constitute the lifeblood of the data produced.” (2009:1)

By adopting an ethnographic approach, the researcher attempts to largely explain how events and details of experience represent the cultural constructions in which we live. Ethnographers generate understandings of culture through representation of what we call an emic perspective, or what might be described as the ‘insider's point of view’ as many anthropologists refer to them, whereas a more distant, analytical orientation to experience is described as an etic perspective (Geertz, 1973, Hoey, 2014). Further, an ethnographic understanding is developed through close exploration of several sources of data which the ethnographer considers the foundation for cultural interpretation. Okely writes that ‘social anthropologists will have accumulated a mass of material from long-term fieldwork’ (2012: 16). The main purpose of collecting a large amount of data, primarily through fieldnotes, is due to the fact that the ethnographer does not know in advance what will be of importance. The latter in the field setting or place where the ethnography takes place, is called participant observation which comprises the primary source of ethnographic data. The ethnographer’s or researcher’s role in the field is dual: he or she must both become a participant in the life of the setting while also being an observer, maintaining a certain degree of detachment. Thus, an ethnographer must

participate in order to observe. Writing fieldnotes is central to the conduct of this form of research. The term ‘participant observation’ was first defined by the Chicago sociologists in the interwar period’ (Okely, 2012: 75). The anthropologist Bronislaw Malinowski, author of the ‘Argonauts of the Western Pacific’ (1922), is considered to be one of the founding fathers of ‘participant observation’. Malinowski states that:

“This goal is, briefly, to grasp the native’s point of view, his relation to life, to realize his vision of his world. We have to study man, and we must study what concerns him most immediately, that is the hold which life has on him.”
(1922: 25)

The term ‘qualitative’ is meant to distinguish the kind of social science research from a more ‘quantitative’ or statistically oriented research (Okely 2012; Hoey 2014). Although quantitative and qualitative approaches may often be complimentary, they ultimately have different aims (Hoey, 2014). What differentiates qualitative from more quantitative or demographic approaches is that the researcher, by asking specific but open-ended questions, allows the person or persons being interviewed to be spontaneous and engage in a conversation with them without being constrained by a pre-defined agenda. The latter is mainly conducted through a linear-mode of investigation such as, structured interviews and questionnaires. There is a variety of interview styles and each ethnographer brings his or her own unique approach to the process (Hoey, 2014).

The above outlines briefly the basis on which my fieldwork builds on. However, an important aspect of my fieldwork, which emerged as a core signifier is that of, ‘multi-sited ethnography’ (Marcus and Clifford, 1986, Marcus, 1995; Hannerz, 2003; Falzon, 2009). A multi-sited ethnographic understanding is developed through close exploration of several sources of data where the methods are justified by and follow from the methodology. As Falzon (2009) states, the essence of multi-sited research is to follow people, connections, associations, and relationships across space (because they are substantially continuous but spatially non-contiguous). The research design proceeds by a series of juxtapositions in which the global is collapsed into and made an integral part of parallel, related local situations, rather than something monolithic or external to them. In short, a multi-sited ethnography involves a spatially dispersed field through which the ethnographer moves – actually, via sojourns in two or more places, or conceptually, by means of techniques of juxtaposition of data. As I illustrate below, my

research design consists of both a geographical and virtual site in juxtaposition to each other.

According to Howell, 'in order to grasp and make sense of the cultural issues that are activated' which in my case is conducting research on community-driven initiatives in the Global South, 'I involve myself in a multitude of social arenas' (2006: 231). Multi-site ethnography or fieldwork, propagated by George Marcus and James Clifford (1986, 1995), defines as its objective 'the study of social phenomena that cannot be accounted for by focusing on a single site' (Falzon, 2009). 'Multi-site or multi-local fieldwork has become increasingly practised and acknowledged in anthropology since the 1980s' (Hannerz, 2003: 201). Traditionally ethnography has been associated with long-term and thorough engagement with a single field. However, as Hannerz argues:

"Yet the hegemony of the single-site model seems remarkable since it is fairly clear that a great many anthropologists have long, but a bit more discreetly, been engaging in a greater variety of spatial and temporal practices as they have gone about their research. (...) the power of the model has not been as strong among the ethnographically inclined in other disciplines, not so fully exposed to it, and obviously working under other conditions." (2003: 202)

In short, the combination of an ethnographic approach along with architecture is significant in my own work as it brings out the 'thick description' of how building practices are understood and practised in the local community of Abetenim. This close analysis may inform NGOs in how to adapt such building techniques depending on the local, social and political context. The prerequisite for making a contribution to the discipline of Architecture was broached by Charles Jencks during the 2014 Venice Architecture Biennale, affirming that '*you would need a lever to change architecture and the only way you can get a lever is another discourse outside of it; you can't just change it from within, you have to rethink it from culture*' (The Architectural review 2014). In light of the above, this research feeds from the discipline of anthropology and specifically its approach to methodology through participant observation, in order to rethink architecture from a broader cultural perspective. This allows the research to critique local situations and frame questions which directly inform the design praxis in a specific context.

3.2 Pre-Fieldwork Stage

The pre-fieldwork stage mainly entails an extensive literature review through which a more focused research area and a set of research questions are developed. It also involves the development of a pragmatic research program which would highlight and help prevent problems such as field accessibility distance and travel costs. In this section, I discuss the various ways in which I set out to engage in dialogue with the various organizations before the research project commenced. Entering a dialogue with practitioners, along with my previous experience of working with NGOs, put me in an advantageous position as it was a step forward in knowing some of the challenges that such initiatives face in the field, and the variety of the themes to be addressed.

3.2.1 Change of Field Site

This research project builds on the first hand experience I gained while collaborating with Reset Development, a UK charity, on a two-year programme titled ‘Affordable Low-Carbon and cyclone resilient housing in Sathkira, Southwest Bangladesh’. Its aim was to develop a greater understanding of training and education for sustainable, disaster resilient construction in the region of Sathkira. An opportunity emerged for knowledge and skills transfer in the form of training in Sathkira from the Heritage Foundation of Pakistan. The latter is a local Trust who set up an eco-training centre as part of their work on post-flood reconstruction in the region of Sindh. Unfortunately due to further flooding in Hyderabad in September 2012 this opportunity was left unexplored. Therefore, the research questions and concerns stem out of the challenges encountered while I was carrying out this project.

In the months leading up to my Research Plan Approval, which took place in January 2014, I had hoped and planned to visit the Heritage Foundation of Pakistan in Karachi with a view to conduct/experience fieldwork and participate in one of their construction training workshops. My aim was to gain precious insights into the project and community and concurrently carry out a number of semi-structured interviews with the organisation’s director, research team, other participants of the training workshops, as well as other charities which collaborate with them on the implementation of projects. Despite the fact, that I had had conversations with the Heritage Foundation who agreed

to offer me local facilitation, accommodation, and one of their staff members to ensure that guidance and advice would be available during my fieldwork there, my visit did not materialise. As Okely states, I was after all, ‘at the mercy of my hosts’ acceptance’ (2012). During this period, I had attended relevant talks and conferences at the Pakistan Embassy where I met up with the founder of Heritage Foundation who at the time was enthusiastic about my plans of doing research there. In the meantime, I also had email and Skype conversations with the founder who assured me that I was welcome to visit the foundation. However, long months of silence passed. My supervisor sent an official letter to the Heritage Foundation but there was no response. This was the last attempt to get in touch with them to discuss my trip and stay at their training centre was when my supervisor officially wrote to the Foundation’s Director and Founder, but without any reciprocation.

Therefore, I had to search for another non-governmental organisation to collaborate with. By that time I had done considerable pre-fieldwork preparation, reading the relevant available literature and the practicalities of actually visiting the site. However, change of field site or topic is not uncommon. In fact, most of the young and established anthropologists that Okely interviewed in her book titled, ‘Anthropological Practice,’ state that:

‘They found that the main focus of their projected study changed once they were in the field. (...) In practice the researcher follows hunches. Things happen. Things change. The unplanned character of ethnography is precisely its value.’ (2012: 48)

In a similarly unplanned manner, I came across a non-profit organisation (NGO) namely the Nka Foundation⁴ as I was searching online for NGOs whose work is in various

⁴ ‘Nka Foundation was in development in 2005 to bring together individuals and groups to engage in local-global humanitarian activities through use of the arts. In 2007, it developed as African Community of Arts Educators (AfriCOAE) and conducted projects at Accra and Kumasi from 2008 to 2009. In February 2008, FocusOnTheArts.Org evolved to extend AfriCOAE’s endeavors. In August 2008, Nka Foundation was established as a network of Arts Village and arts-based community projects in Africa and other industrially developing parts of the globe. In 2009, it was incorporated as a non-profit seeking company under the laws of the Republic of Ghana to carry on the work of bringing together motivated creative individuals in arts and technology, arts groups and supportive others to create cross-cultural synergy for community arts practice and infrastructure to support their continued professional growth and enhance the social, cultural and economic vitality of, especially rural communities in the Anglophone, Lusophone and Francophone African settings. The Foundation will be registered and develop residency

countries of the Global South. I followed the field, in a similar manner, which I explain in sub-chapter 3.3.1 in relation to the process of the interviewing. Upon realising that the initial plan to travel to Karachi, Pakistan, in order to study the work of the Heritage Foundation would not go ahead, and that I would have to look for another organisation which I could join and conduct my primary fieldwork with, I followed the open-ended approach of ethnography during my search for an organisation, and this is how the opportunity with the Nka Foundation came along. This ‘deviation’ proved to be insightful to my understanding of how flexible one needs to be when undertaking research, and that being open to the field is a prerequisite. This open-ended approach of ethnography allows one to discover paths he/she would not have expected prior to starting fieldwork. The importance was not finding the ‘right’ geographic location, but rather to find a Foundation, Trust, NGO and so on, whose work entails the use of local building materials and vernacular building methods in order to enhance resilience and the capacity for adaptation at a local level. Thus, I wrote to the founder and director of Nka Foundation who put me in touch with a technologist from Ireland. He was going to be the facilitator of one of their ‘Earth Architecture’ workshops in rural Ghana. I was in dialogue with them for almost three months before the plan for my fieldwork, which would partly consist of participating in the earth architecture workshop, in Ghana was finalised. In what follows, I discuss my fieldwork in Ghana.

3.2.2 The Uncertainty of the Research Journey

One of the things that doing ethnography brings out is the notion of unpredictability, unforeseeability and even the uncertainty of the research journey itself. Unpredictability or the potentiality of change is something that architecture is generally not supposed or perceived to be associated with, and also something which most architects are not comfortable in encompassing as this would allude to losing control over the built outcome or artefact of their work. Jeremy Till, in his book ‘Architecture Depends’ (2009) argues that, uncertainty and contingency afflict the practice of architecture despite the architects’ claims of autonomy, purity, and control over their practice. In fact, Till argues that:

facilities in other countries; each centre within the Network is to be independent but will similarly respond to local needs’ (<http://www.nkafoundation.org>).

‘Circumstances invariably intervene to upset the architect’s best-laid plans—at every stage in the process, from design through construction to occupancy’ (ibid).

To confront architecture's comfort zone by ‘bringing uncertainty in place of purity’ is the aim of Boano’s & Talocci’s paper titled, ‘The (in)operative power: architecture and the reclaim of social relevance’ (2014). With a view to ‘offer a renewed perspective on design’ the cited paper considers, ‘a reorientation between politics and aesthetics that would not simply reorder power relations, but create new political subjects too.’ This reorientation between politics and aesthetics is achieved by reconfiguring ‘the role of the architect and architecture’s ethical shift, and by revitalising participatory neologisms and design activisms’ (ibid). Thus, through my ethnographic approach, I precisely aim to address a renewed perspective on design, mainly coming from a bottom-up approach, as I discussed above and as I will illustrate throughout this chapter, and Chapter 4.

A renewed perspective on thinking about architecture and its praxis may also be observed during the 2014 Venice Architecture Biennale titled, ‘Fundamentals’ curated by the architect, Rem Koolhaas. This was the first research-centred Venice Biennale of Architecture; ‘A Choral Research on Architecture!’ as Paolo Baratta, the President of la Biennale di Venezia, described it.⁵ In a similar manner, Charles Jencks argued that, this biennale changed the paradigm from Practice to research as ‘this was the first Venice Architecture Biennale which gave emphasis on research, the previous biennales tried to predict what is going to happen over the next five years since we have a compulsive desire to learn what is the next step.’⁶

3.3 Fieldwork Stage

This section is mainly dedicated to the fieldwork stage. The latter is where the ethnographer embarks into her/his fieldwork. In my case, the fieldwork consisted, as I explained above, travelling to Ghana where I participated in the Earth Architecture work from the period of 6th November 2014 to 7th December 2014. Here, I largely conducted participant observation where I took detailed field notes in combination with

⁵For more information see, (<http://www.labiennale.org/en/architecture/archive/14th-exhibition/14iae/>) accessed on 31st March 2015.

⁶In fact, it is important to note that, Charles Jencks critiqued the 2014 Venice Biennale, July 2nd 2014 Architectural Review online.

other creative methods, such as participatory-design workshops with small children and teachers, informal conversations with the locals including the masons and carpenters, and recorded unstructured and semi-structured interviews with local Ghanaian architects and researchers. I discuss this in detail in the following sub-chapters. Additionally, I also conducted semi-structured, unstructured, formal as well as informal dialogues/conversations with participants in the UK. These participants (see 3.3.1), are mainly professionals, some of them architects who have extensive experience in establishing or working with NGOs in developing and poor countries. The fieldwork is supplemented by close exploration of secondary data, that is, a wide variety of different written sources ranging from the current debates on all the issues mentioned above, literature authored by different NGOs, material found on the internet, online lectures, webinars and interviews, online videos and documentaries, text analysis, newspaper and journal articles, to special interest group publications.

Additionally, researchers collect other sources of data which depend on the specific nature of the field setting. This may take the form of representative artefacts that embody characteristics of the topic of interest, government reports, and newspaper and magazine articles. Secondary academic sources are utilized to ‘locate’ the specific study within an existing body of literature. Okely argues that, *‘The field is more than a demarcated geographical place, if it ever was. (...)Nothing is excluded, neither in advance nor during the process’* (Okely, 2012: 53). This understanding is important as it fits in within my multi-sited approach. Personal and professional experiences, together with historical context, lead individual researchers to their own particular methodological and theoretical approaches. Ethnographic fieldwork is shaped by personal and professional identities just as these identities are inevitably shaped by individual experiences while in the field (Hoey 2014).

The research *‘synthesizes through one author/analyst the commonalities and contrasts in multifaceted individual dialogues’* (Okely, 2012: 2). Thus, I have included long excerpts from the recordings of these interviews/conversations of each participant. It is also crucial to state at the outset that ‘The selection, editing and commentaries are my responsibility alone’ (ibid).

3.3.1 The interviews: Whom have I spoken to?

Besides conducting participant observation in Abetenim (see Chapter 4), I have conducted semi-structured, unstructured, formal and informal interviews, conversations or ‘*exchanges*’, as Okely (2012) refers to them, with practitioners who have a background either in architecture, environmental design, or are experts in building with mainly, but not restricted to, natural eco friendly materials like earth, lime, straw, bamboo, and so on, and have all been involved with non-governmental organisations. During the fieldwork I conducted semi-structured and unstructured interviews with 14 participants with the intention of understanding their perspective and personal experiences of being involved in the work of community-driven initiatives in the global South. The work of these individuals, either through collaboration(s) with an NGO or through founding their own NGO, focuses on using the process of designing and building in order to empower local communities in the Global South to become more resilient and cope with the effects of extreme climatic conditions, disasters and which have been exacerbated by acute poverty. The practitioners I have interviewed work with community-driven initiatives through NGOs or international non-governmental organisations (INGOs) which operate mainly in the area of community development. Some of these NGOs operate from the developed world working in the global South, and some others, like the Nka Foundation which I collaborated with, operate within their own locality. Only one of the practitioners/participants had been involved in disaster relief.

The 14 participants I conducted semi-structured and unstructured interviews with during the fieldwork phase are as follows:

The participant A1 is an architect, academic and researcher working with the Building and Road Research Institute (BRRI) in Ghana. We met at the BRRI, and then he became involved with the construction site of the canteen in Abetenim. The participant A2 is an architect and founder of The Architects’ Project (TAP), and also involved with Nka Foundation occasionally. We met in Ghana during my fieldwork. The participant A3 works with the Department for International Development (DFID) as a humanitarian aid worker, shelter consultant, and construction and lime expert involved in housing reconstruction projects in various regions of the global South affected by natural disasters. He works closely with the Heritage Foundation of Pakistan (HF), and in

particular with Lari. It was the participant A3 who put me in touch with Lari and the HF in 2011 while I was collaborating with Reset Development, a UK charity, on a two-year research programme titled ‘Affordable Low-Carbon and cyclone resilient housing in Sathkira, Southwest Bangladesh’ (see 3.2.1 Change of field site). I met participant A3 in Edinburgh in August 2014 for an interview, when we discussed their work with the Heritage Foundation mostly. Hence, the first case study illustrated here is about the latter. The participant A4 is an architect, expert builder, academic, trainer on construction using low-carbon materials and traditional methods. She teaches environmental design at UCL. We met as she was also the founder of Reset Development in London where I worked prior to my PhD. The participant A5 is an expert builder, carpenter, and founder of Women into Construction (WiC), a not for profit organisation, based in London, Birmingham and Wales to promote construction opportunities for women. The focus is on transferring knowledge and skills to women’s groups in the UK and Africa in order to help them to become more resilient long-term. Case study 2 titled, ‘The women-led collaborative project in Swaziland’, is connected to participant A5. I am in contact with participant A5 through another research participant. The participant A6 is an architect and academic involved with ASF-UK on various projects both in the UK and Africa, mostly in Ghana. We met through TAP. The participant A7 is an architect and earthen architecture expert working with Capterre, a State-funded local NGO involved with the rehabilitation of earthen heritage in rural Algeria. The focus of his work is to re-educate local expert masons on improved vernacular building methods, with a view to enhance resilience at community level. Case Study 3 titled, ‘Capterre, Algeria’, is connected to the participant A7. I am in contact with participant A7 through the Nka Foundation online forum on earthen architecture. The participant A8 is a rammed earth expert, practitioner, trainer, carpenter and academic, who has long been involved in the adoption of rammed earth as a Standard across the Southern African Development Community (SADC)⁷ region. Case Study 4 titled, ‘Creating a National Standard for earth building in Zimbabwe’, is connected to the participant A8. He is a founder member and Project Officer of EBUK (Earth Building UK) and is currently working for EBUK on a European Training Standard, which will allow training in earth building to be recognised across the EU. He

⁷The Southern African Development Community (SADC) is a Regional Economic Community comprising 15 Member States; Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. Established in 1992, SADC is committed to Regional Integration and poverty eradication within Southern Africa through economic development and ensuring peace and security.

is Director of Rammed Earth Consulting CIC, and Honorary Associate Professor to the UNESCO Chair on Earthen Architecture. I met participant A8 through another participant as well as the Nka Foundation group. The participant A9 is the primary school and junior high school principal in Abetenim, as well as the field Nka Co-ordinator in southern Ghana. He is also the landlord to all the Nka groups who visit Abetenim to build with earth. He was my landlord too during my primary fieldwork. The participant A10 is an architectural technologist and Nka earthen architecture workshop participant and leader. I met him through Nka, as he was my colleague in Abetenim. The participant A11 is an architect and an anthropologist, an academic at a UK university. She spent time in the north of Ghana building with vernacular methods and local materials. I met participant A11 through a friend, who is a Professor in Social Anthropology. The participant A12 is an architect, builder, and academic involved in research at the Building and Road Research Institute (BRRI) in Ghana. I met him while on fieldwork in Ghana, as he had been involved with Habitat for Humanity Ghana on low-cost and low-carbon housing projects in rural Ghana. The participant A13 is the founder of the Nka Foundation, who is an academic on Fine Arts. He is Ghanaian-Nigerian based in the United States. We met through social media in relation to my participation in the earth architecture workshop in Ghana. The participant A14 is an architect and academic based in Italy. She was also participating in another earth construction workshop in Abetenim through the Nka Foundation. We met through TAP.

Appendix A includes all the transcribed interviews, which are eight in number specifically from A1 to A8. The voices of the rest, from A9 to A14, are also included in the research but in an indirect manner; they are reflected in the views of the transcribed ones. I have kept in contact with all the participants, some of whom have become good friends and colleagues. As I already mentioned earlier, during the fieldwork phase I conducted semi-structured and unstructured interviews with 14 participants with the aim to find out about their personal experiences and understand their perspective of being involved with community-driven initiatives in the global South. I followed the field, as an ethnographer would do, in the process of the interviews too; The ethnographer does not know in advance what will be of importance; in fact, what they aim to discover, or unveil, is *what is* of importance. Thus, the dialogues/conversations were based on listening to the participants' immediate concerns and challenges, that is 'the hold which life has on them' (Malinowski, 1922: 25), in relation to building techniques and processes of construction and engagement with the local communities, rather than on a

set questionnaire in the conventional sense. I let conversations move *'beyond any rigid interviewing formulae'* as we often discussed *'parallel and contrasting experiences'* (Okely, 2012: 2), as I followed the open-ended approach of ethnography during the interviews and beyond in my research. These so-called 'deviations' proved to be insightful to my understanding of the building techniques as adopted by the local community and the architects/practitioners. This open-ended approach of ethnography has allowed critical categories and meanings to emerge through the encounters with the participants; critical categories and meanings which one discovers and is taken down to paths he/she would not have expected prior to starting fieldwork. A similar experience is exacerbated by the anthropologist Falk Moore, who discloses that, *'Listening to what people wanted me to know, rather than what I was trying to find out, was a large part of the fieldwork encounter'* (Okely, 2012: 49). In light of the above, the starting point of each interview was my own research project, which induced conversation about architectural education, building materials and their use in the rural poverty stricken regions of the global South, experiences of engagement with community-driven initiatives, the narrative on resilience and approaches to adaptation through the use of local available materials and skills, and so on. I briefed each participant about my PhD research project prior to the interview; I had sent them in advance a summary of the research project, and we discussed it upon meeting. I also knew about their work in the field either from themselves or from the people who put me in touch with them. Their views were invaluable in the process of thinking and writing. Some interviews took place before my primary fieldwork in Ghana, which were very helpful in prompting me to consider categories and factors in relation to the fieldwork itself, which I had not thought about at that point. The interviews, which took place after the primary fieldwork in Ghana, were also equally helpful as we discussed, among other things, my own experience in the field, which helped elicit realisations about my own personal experiences of the field and how those may relate to the larger discourse about resilience and adaptation through the use of local skills.

The work of all the research participants is based in rural areas. Similarly the work of the Nka Foundation is based in rural Ghana. The focus on the rural Global South was not something I sought or planned for but rather something that emerged by chance from listening to my participants during the interviews I have been conducting, besides my primary fieldwork, and which I ought to acknowledge, in order, to narrow the focus

of the research even further. Overing, one of the anthropologists interviewed by Okely (2012: 53) declared, in relation to chance and serendipity during fieldwork, that,

'You have parameters – things you like, learn before you go. The best advice I ever received was: 'Study what people have passion for. What they are interested in.' You don't know that before you get there. If they are interested in digging the ground, you study digging the ground!'

A similar experience was exacerbated by Falk Moore, another anthropologist interviewed by Okely, who disclosed that, *'Listening to what people wanted me to know, rather than what I was trying to find out, was a large part of the fieldwork encounter'* (2012: 49). I contend that the unplanned character of the research focus is precisely its value. The focus on the rural Global South offers the opportunity at a later stage in the thesis to discuss the differences in relation to the challenges that community-driven initiatives face in the rural as opposed to the urban Global South. The research process puts emphasis on *'allowing critical categories and meanings to emerge from the ethnographic encounter rather than imposing these from existing models'* (Hoey, 2014: 2).

The level of access I have had with the various individuals and institutions I approached has been encouraging as people have been welcoming and open with me during the interviewing process and beyond. There have been a few times when at the end of the interview, when I switched off the voice recorder, I had some insightful and invaluable conversations. Sometimes the voice recorder can inhibit participants from going beyond their 'script' as they are conscious that they are being recorded. For instance, participant A3, a humanitarian aid worker, shelter consultant, and construction and lime expert involved in housing reconstruction projects, agreed to meet me in Edinburgh for one hour as he was there only for a few days before moving to South-East Asia in order to set up a non-profit organisation. When we finally met at a friend's flat in the city centre during the Edinburgh Comedy Festival, we spent more than three hours talking, two of which were recorded while the rest was not. We discussed opportunities of working together in the future after my PhD. I have encountered intellectual dialogue and analytic insight in all the interviews I have carried out. The research identifies the general themes, categories and meanings as they emerge from the interviews, and draws

out the most predominant ones, which are then compared to the field notes from Abetenim.

3.3.2 'Being there'⁸

The research supports and puts forth the idea of 'being there', that is doing ethnography as part of the design and building process within the implementation of community-driven projects that are undertaken by various NGOs in the global South, and puts emphasis on the value of knowing what the local community's wants and capabilities lie. 'Being there', or in other words experiencing fieldwork, entails getting to know the local context and becoming familiar with the local culture; it is fundamental for western-trained practitioners involved in development projects in the global South, as it is the only way to understand the local culture, the needs of the community and therefore their priorities. Culture, among other things, can only be learned from experience. Participant A4, an active practitioner and teacher of Environmental Design, alludes to Michael Maren's excellent book titled, 'The Road to Hell: The Ravaging Effects of Foreign Aid and International Charity' (2002), which takes a critical look at the 'humanitarian' missions of international charities and foreign aid institutions which are controlled by agribusinesses and infighting bureaucrats. Maren (ibid.) argues that NGOs are like any bureaucracy; they first and foremost prioritise their own survival over the needs of the affected communities. The same participant argues that the students and graduates who get involved with design and build projects in developing countries through NGOs are more often than not ignorant about the culture of the local community, and are ignorant about themselves in the sense that they do not have an awareness that they might be about to do something much worse than not doing anything at all. She asserts that having good intentions is not enough; one needs knowledge, experience, humility, and most importantly communication skills, all of which are essential for any meaningful contribution in the field. Further, participant A4 argues that although the idea of going to learn from other communities is very valuable there's a lot of "*architectural disaster tourism*", as she calls it, referring to the students and graduates who get involved with design and build projects in developing countries. They go out to the slums of Delhi or Mumbai believing that they will be able to solve

⁸'Being there' is the title of the first chapter in Clifford Geertz's 1988 study of anthropological writing.

other people's problems using their design skills. She argues that this is a modern form of Colonialism, as she states:

“Poverty can make communities look to others to help them, not always, certainly not always, but then you get in this cultural dependency discussion. Looking to someone else for support takes over and provides something which isn't helpful and then it ends up being replicated as well. Even just the idea that ‘we can't help ourselves we need you to tell us what to do’ is unfortunately a modern form of Colonialism. There are loads of skills in every community, there are designers, there are builders, there are makers. So it's going to be so interesting when you go to Ghana because you are going to see a lot of that. It'll be really interesting what you will learn and what exchange there will be.”

Here, the use of ethnography facilitates the holistic understanding of the local context and informs the design process. Drawing on the main research site and primary fieldwork in Abetenim, a remote village in southern Ghana, as well as participation in the Earth Architecture construction workshop through a non-profit organisation (NGO), it reflects on the need to integrate social, physical and cultural change in order to effect broader changes in the community. Without knowing in advance the outcome of both the interviews conducted with the research participants as well as the informal conversations I pursued with the locals, both academics and others in Ghana and the UK, I stumbled on many commonalities in the participants' experiences and responses in relation to the value of being in the field, such as, getting to know the local context and culture; the value of knowing what the local community wants and is capable of doing and thus prioritising their needs. Experiencing fieldwork may offer a better understanding of the local culture especially to foreign architecture students and/or practitioners. The research contends that the traditional methods of architectural observation, specifically drawing and photography, are insufficient in capturing holistically the rich experiences of life particular to these environments or the aspirations, needs, and priorities of these communities. The latter do not only have needs and weaknesses; they also have strengths, capabilities, skills and aspirations like the rest of us. In their excellent paper titled, ‘Anthropological quests in Architecture:

pursuing the human subject’, Askland et al. (2014: 293) explore ‘what architectural practice and the architectural research domain may gain from the theoretical and methodological premise of anthropology and ethnography’. They (ibid.) compare ethnographic analysis to vernacular architecture as both offer a holistic approach to humankind, embody completeness and consider the totality of the whole. They argue that although over the past two decades architecture has become more and more responsive to the deep understandings of ethnographic analysis and cultural theory, the focus has remained on professional conduct, and social and ethnographic research of buildings, space and place, whereas studies that explore architectural practice itself remain limited, as they write:

“Ethnographic analysis offers a holistic approach to the whole of the architectural practice and profession. Like vernacular architecture, it favours completeness, recognizes diversity and seeks ways to tell better versions of the human story. It is a tool that can be used to ‘crack open’ the practice of architecture and interrogate its often secretive and opaque organisational structures. Addressing the calls to ‘reinvent the discipline’ and resolve ‘the crisis of identity’, anthropology and its associated method of ethnography provide a means of rethinking architectural practice and management, raising important questions about the practice of architecture and how to approach it in the contemporary, rapidly changing, world.”

Moreover, Osae-Addo (Africatalks 2009) emphasizes to the role of culture in design and empowering people, and that architecture should be rethought from culture. Osae-Addo’s following quote further reinforces Jencks’ argument at the 2014 Venice Architecture Biennale (The Architectural review 2014), that the only way to make a contribution to the discipline is to rethink it from culture. Inevitably the question that surfaces is how does one imbue culture and spirit into the built environment? Osae-Addo states:

“The role of culture and design and how that can be used to empower a people, to define a people, and most of all to inspire a people. I think that architecture plays a critical role, as with art and the crafts, in developing an identity, which I think in most parts of Africa it has become an afterthought.

If you look at this it ties into architecture. Architecture is more than just edifice; it's about how you imbue culture and the spirit of a people into the built environment. So to me I think architects and architecture should be refocused towards culture and design."

Lokko's keynote presentation on 'Risk' at aae2016 (Bartlett School of Architecture 2016), offers a powerful and telling description of what culture is. She argues that culture entails the kinds of stories we tell ourselves about ourselves, as she aptly states:

"It seems a terrible waste to me at this point of time and history with all of the resources, information and perspectives available to us, it seems terrible to try to narrow our definitions of who we are and the kinds of stories that we wish to tell ourselves about ourselves which at the end of the day seems to be the most accurate description of culture that I have ever heard. That it is the sum total of the stories we tell ourselves about ourselves."

Underneath all this, the question which unapologetically emerges asks who is telling these stories? Or, who has the privilege to tell these stories? Lari, in the episode dedicated to her work titled, 'Pakistan: a traditional future' (Al Jazeera 2016), as part of Al Jazeera's television documentary series, 'Rebel Architecture'⁹, broaches the question about who is interpreting and writing culture. The interpretation of culture needs to come from the periphery itself, which echoes the discussion in chapter 6, Data Analysis Part 1 (see sub-chapter 6.3) whereby Lokko alludes to Coetzee's "The novel in Africa" in order to make the point about how can a world be explore at its deepest level if at once it needs to be interpreted and explained to outsiders? The exploration of 'otherness' in architecture needs to come from the periphery, from the very context it is steeped in, before it is interpreted to western-trained eyes, as Lari very succinctly expresses in the following quote:

"Earlier we studied books that the British gave us. Now we've written some of our own books. We need to write a lot more of our own books because

⁹ A six-part documentary series profiling architects who are using design as a form of activism and resistance to tackle the world's urban, environmental and social crises. The series follows architects from Vietnam, Nigeria, Spain, Pakistan, Israel/Occupied West Bank and Brazil who believe architecture can do more than iconic towers and luxury flats - turning away from elite "starchitecture" to design for the majority (<http://www.aljazeera.com/programmes/rebelarchitecture/>)

our interpretation will be different. We have a lot to do, if we want our architecture to relate to our reality.”

Lokko's keynote presentation on 'Risk' at aae2016, hosted by The Bartlett School of Architecture at UCL in collaboration with the association of architectural educators (aae), aae2016 is an international peer-reviewed conference on 'Research-Based Education' which ran from 7 to 9 April 2016:

“There is the risk that if we as Africans don't step up to the table and take hold of the conversation, and here I don't mean that exclusively, we run the risk of continuing to be defined through someone else's eyes, in someone else's language, image and ultimately through someone else's forms. But then there's also the risk that if we don't embrace risk, the speculative, the unknown, the unseen, the untried and untested, in 50 years' time we will be sitting in conferences like this one saying exactly the same thing and bemoaning our lack of agency.”

So how does the architecture of a place, of a people, relate to it and to them? Both Lari and Lokko prompt the periphery to take hold of the conversation, to write one's own books in order to create architecture that relates to their realities; the realities of the periphery itself as the periphery is not homogenous. This will entail exploration and interpretation of the periphery by the periphery. By periphery here I refer to academics, scholars, practitioners and students from and in Africa and other parts of the South, Pakistan included. The above quotes from Lari and Lokko both relate to the main research questions and concerns; *how to imbue culture and the spirit of a people into the built environment, and how to increase the potential of local communities for resilience and adaptation through the use of local materials and traditional building practices*. As already stated, this thesis attempts to focus more on the cultural and social values and context, which are embedded in the everyday making of built form, rather than on its physical and spatial element. Here, both Lari and Lokko raise a critical point in relation to the discipline of Architecture; that, it is incredibly Western according to the periphery; that it has been defined through Western approaches, in Western languages and image, and ultimately in imported forms. They are raising a point about academics and students of architecture alike from and in the periphery, that they have a lot of work to do in order for their architectures and their discipline to relate to their realities, to

their ‘otherness’. By ‘their otherness’ here I refer to the pluralities of the perspectives from the South, as the latter is not homogenous. They need to explore their ‘otherness’ in all its depth in order to understand their world view(s), their values and cultures, histories, identities, issues of modernity and tradition(s), migration, and so on, before they endeavour to interpret it to western-trained eyes. Yet exploring one’s ‘otherness’ may be risky, challenging, and may be painful at times, as this exploration necessitates embracing the unknown, the unseen, the untried, the untested. But it is ultimately the only way for the periphery, namely the South, to regain their agency and be part of the conversation and current narrative on resilience and adaptation approaches on equal terms as their Western counterparts.

In Koolhaas’ 2002 compilation ‘Mutations¹⁰’ the essay titled, ‘Telegram from Nowhere’, written by Australian theorist McKenzie Wark, argues that ‘history is not about time, it is about space’, as seen and considered from the periphery. I find that in his essay McKenzie Wark looks at the phenomena of globalisation and imperialism from the perspective of the periphery, in other words giving a voice to the periphery using the means of a notional telegram. Thus the geographic area, as in the space, where one looks and writes from becomes fundamental in determining how they perceive and experience the world. McKenzie Wark (2002, 31) writes:

“..... Hello? Hello? Is anyone there? I’m calling here from there. I’m calling night from day. I’m calling summer from winter. I’m calling from the other side of the world. Here is how things look from here (there), looking at there (here). To whom does globalisation appear to be a new phenomena? To those used to living close to the centre of the old imperial powers. To the rest of them (we others, your others), out in the periphery, globalisation is nothing new. History, seen from the periphery, from the former colonies, is nothing but globalisation. History, seen from the periphery is nothing but the struggle by one metropolitan centre after the other to distort the growth of contact and trade between peoples in such a way as to benefit themselves.

¹⁰ “*Mutations*, a joint project of Rem Koolhaas OMA and the Harvard Project on the City, explores the unstable urban conditions around the world at the turn of the 21st century, a tipping point at which the world’s city-dwellers began to outnumber those in rural areas” (<http://oma.eu/publications/mutations>).

History is not about time, it is about space. [...] Welcome to life on the periphery.”

With reference to the primary fieldwork in Abetenim (see chapter 4) and the use of the ethnographic method in order to understand the reasons why the use of some materials is ‘preferred’, the research contends that the beauty and open-endedness of ethnography is as one discovers and is taken down to paths he/she would not have expected prior to starting fieldwork. In chapter four titled, ‘Abetenim Fieldwork’, I briefly mention that our group in Abetenim had initially been asked by the NGO to design a traditional compound house. It was only after we had arrived in Abetenim and spoken with the Chief of the village and the community representatives that we realised what the local community actually needed was a building which would be used mostly as their school canteen instead. So ‘being there’ proved to be fundamental. The research contends that spending time in the field and getting to know the local culture is of utmost importance as one gets to know what the community wants and needs. Buildings are very often the last thing that people need; they may need training instead, a sanitation system, or rain water collection, and so on and so forth. Therefore, the research succinctly emphasises the value of communication, understanding, and listening if we really want to know how to solve problems.

In short, the research puts forth the idea of ‘being there’, or ‘experiencing fieldwork’, that is employing the ethnographic method, which entails participant observation and participation, and face-to-face interviews, as part of the design and building process within the implementation of community-driven projects that are undertaken by various NGOs in the global South. It argues that the ethnographic method facilitates the holistic understanding of the local context and informs the design process. This method also allows the author to rethink architecture from a broader cultural perspective, critique local situations and frame questions. The research contends that culture can only be learned by experience, and that ‘being there’ is fundamental for western-trained practitioners involved in development projects in the global South, as it is the only way to understand the local culture, the needs of the community and therefore their priorities. Finally, the thesis argues that the exploration of ‘otherness’ in architecture needs to come from the periphery, from the very context it is steeped in, before it is interpreted to western-trained eyes. As Lokko asserts, *the kinds of stories we tell ourselves about ourselves is the most accurate description of culture*. Thus, the research

suggests that we need to tell a story differently, one which is looking from the periphery; looking from a South-centric perspective.

3.3.3 Earth Architecture Workshop in Ghana as my Geographical Field Site: Global Narrative - Local Reality

‘You learn how to cut down trees by cutting them down,’ says a Bateke¹¹ proverb which I believe encompasses the essence of participant observation and hence ethnography. It describes the essentiality of immersing oneself in the field in order to genuinely experience it. The practices of designing and building with and as part of a group do ‘not only respond to and create a physical environment, but, more important, they make their own spaces and places of learning’ (Marchand, 2009: 13). And the best way to really learn about how the building processes work through an NGO in the Global South, all of the politics involved in the production processes of the built artefact, the way knowledge is produced and practised, would be by joining such a project and becoming a community architect and labourer myself. Hence, I carried out my fieldwork in Ghana which has now become the core of my fieldwork, and which involved my collaboration with a local non-profit organisation, namely the Nka Foundation, through my participation in the Earth Architecture construction workshop and role as a community architect and labourer in the village of Abetenim, southern Ghana.

In what follows, I explore the work of a community-driven initiative which was involved in small scale community resilience and adaptation project, which is illustrated through a school canteen construction project in the village of Abetenim (the fieldwork is described in detail in Chapter 4). Based on ethnographic analysis of the above programme, the research focuses on the need to understand the local context in order to come up with solutions which may contribute to longer-term sustainable adaptation.

I participated in the Earth Architecture construction workshop in rural Ghana in order to: ‘gain precious insights into the project’ (Okely, 2012: 4) and community of masons

¹¹The Bateke are a Bantu Central African ethnic group situated mainly in the Democratic Republic of the Congo, the Republic of the Congo and Gabon.

and carpenters; develop first-hand experience and practical knowledge of earth based building practices (Marchand, 2009); meet other people involved in various aspects of community driven initiatives, some of whom I interviewed as part of my research; and finally to work and participate in a community project. The workshop lasted for eight weeks, during which I was part of a group who undertook the design and construction of a school canteen in the village of Abetenim. For the construction of the project we worked together with the local masons and carpenters.

This field trip was insightful both practically and theoretically. Practically, as an architect I had the chance to learn a local way of building with earth. This learning process happened in various stages. First, a process of *unlearning* occurred which entailed personal adaptation in relation to the local building practices, skills, and perception of materiality. Adapting my own skills, architectural thought and praxis to fit the local context was deemed necessary. I had to contemplate deeply about my Western education in architecture which invariably had an impact on the way I viewed how a building/scheme should be designed, planned and built. My own background as a Western-trained and practising architect and subsequently a researcher with a non-governmental organisation became fundamental factors in shaping my personal adaptation and modification. My Greek ethnic origin proved to be an advantage as I seemingly acknowledged and dealt with informality better than my British and American colleagues did. Greece appeared culturally more similar to Ghana than Northern Europe or the United States. In a way, there was no choice but to include informality in the design and building process. Such is the context that it encourages one to adapt oneself and his/her knowledge and practice to a less regulated setting.

Considering the above this research argues that the process of ‘unlearning,’ in relation to modifying one’s practice as one modifies one’s goals, is necessary when one gets involved with (architectural) projects in a culturally unfamiliar setting. This unlearning process was the most invaluable for my theoretical and methodological framework. It is through this trip that I developed my multi-sited ethnographic approach which is intricately linked to my theoretical framework. One informs the other.

Listening to the community’s needs was a fascinating process which enriched the way, I with my colleagues from the Nka Foundation, designed the school canteen. In order to design a people-friendly canteen, I conducted a series of participatory-design-

workshops with the school children. This was another insightful process as by asking the children to draw where they would sit, eat and play, through drawing I was able to break down the language barrier and understand the flow of movement within the school campus. This was important when as a team we set out to design the plan of the canteen. The canteen building was finished within the stipulated eight-week timeframe that was allocated to us. It is a shame that I was not able to stay in order to see it get finished especially as I was the only architect within this group. In the following chapters, I discuss in detail ‘architecture as a process of unlearning and listening’. Listening to the local masons’ and carpenters’ immediate concerns, that is ‘the hold which life has on them’ (Malinowski, 1922: 25), in relation to building techniques and processes may ultimately be the centre of my investigation. This will allow critical categories and meanings to emerge through the ethnographic encounter. LaViolette, in her writings on women craft specialists in Djenné states, that most studies on the topic concentrate on ‘the minutiae of the production process to the virtual exclusion of the women at work, as if the pots make themselves’ (1995: 171). Although, I am not directly looking at the gendered aspect of building techniques, I must add that women and children were part of this process too. The study and collaboration with this specific Nka Foundation group and project focuses not so much on the analysis of the material artefact/building, but mainly on the processes of its production, that is the processes of building and the built form as cultural objects through the lens of the local context, and its producers, that is our group and local artisans. In light of this, the fieldwork concentrates not only on the built form, the details of architecture, the construction process or the materials used, but also on the social relations and cultural behaviour of the local artisans, masons and carpenters and the Nka Group members.

As I mentioned earlier, the main method that I employ is participant observation. I worked very closely with my colleagues as well as the local masons and carpenters whose work team I became part of. The benefit of that is that I could get a better understanding of their struggles and aspirations on the building site. I also conducted formal and informal interviews with the other workshops participants, the Nka Foundation’s coordinator in Abetenim, local practitioners and academics in order to get a better idea of what is going on in the field more generally. Echoing the words of Trevor Marchand (2009), who worked in Djenné with the local masons, that by being a participant observer I was able to interweave the material from the interviews, which

explores their lives, aspirations and past experiences, with the day-to-day data that I collected as a worker.

The local reality as I mention above did not match the global narrative of the NGO I was part of. Departing from the NGO's prescriptive narrative of using local materials like earth in the construction of new projects, the research looks at the process of the 'on the ground' experience through direct involvement in community architecture and building. It looks at the difficult task of compromise between the larger and local perspectives, and investigates how the NGO's narrative can be adapted and translated into the local reality. Further, the fieldwork questions the existing level of indigenous knowledge and local skills in coping with adverse climatic conditions and poverty. Among the Nka Foundation's aims, as stated in its online narrative, was to encourage grass-roots interest and expertise in building with 'laterite, red earth, which is available everywhere in Ghana' (retrieved from the online forum of the Nka Foundation). There was no requirement for us to have any knowledge or previous experience of building with earth as we would learn from the locals. 'The preferred construction method to be used' by the participant groups suggested by the Nka Foundation was either 'cob construction, rammed earth, mud brick, cast earth (poured earth) by formwork, or any other earth construction techniques that can be easily learned by local labour' (ibid.).

This prompts the question whether the masons and carpenters were capable or had experience of using any of the above methods, as well as whom they would be trained or taught by. The research reflects on the insufficient existing levels of local building skills in coping with adverse climatic conditions and poverty, and simultaneously, on the need to integrate social, physical and cultural change in order to effect broader changes in the community.

Despite 'the several examples of mud homes in Abetenim that have eroded over time due to poor construction and water damage' as emphasised by the Nka Foundation, no schedule or plans for maintenance from the corrosive effects of the rain, sun and harmattan winds, was mentioned. In chapter 4 on the fieldwork in Aberenim (see 4.12 The visit from two architecture students) it is described in detail why the earth buildings in Abetenim are in ruins. In essence, in rural areas Atakpame buildings slowly fall into ruins due to the combination of the worsening climatic conditions, such as the intense rainfalls, which destroy them, together with the fact that these earth structures were built

without any foundations, which makes them prone to deterioration; the maintenance of mud or Atakpame buildings is a specialised skill nowadays and labour is costly which the local people cannot afford; locals invest their earnings in cast concrete blocks with the aim to acquire enough quantity to be able to build their new modern houses, which leaves their Atakpame buildings neglected. Fundamental to the longevity of earth/Atakpame¹² buildings is their annual re-plastering which is also emphasised and described by Marchand (2009), as being an event of great significance in relation to Djenné's Mosque. This raises the point of how and whether the buildings made by the Nka Foundation's participants would be maintained. Moreover, through my firsthand involvement in the building process with the local masons and carpenters it became apparent very quickly that the latter lacked adequate knowledge, experience or capability of building with mud, Atakpame, rammed earth or (unstabilised) earth bricks correctly. Only the head carpenter was trained to build with rammed earth by a couple of architects/participants of a previous Nka Foundation workshop in 2009. These architects, prior to starting their project onsite, had attended a training course at the nearby Building and Road Research Institute on building with rammed earth, and subsequently transmitted their knowledge to the head carpenter whose labour fees for rammed earth construction. As a result, the head carpenter's fees proved to be unaffordable for the local community. A previous project undertaken by a team of architects, one month before our group arrived in the village and which had proposed Atakpame wall construction, unfortunately had its Atakpame mud walls washed away three times for two reasons: the walls were built first and there was no roof to protect them from the heavy rainfall, and secondly, the artisans who built them had not been trained in Atakpame construction. There is widespread neglect of the old Atakpame buildings in the village and, according to the opinions of the local academics, in rural Ghana in general. The review of existing local knowledge and building skills with a view to consider possibilities of their enhancement that is any necessary training, would be vital to the project's success.

The importance of training and emphasis on practice is discussed extensively throughout this thesis. This is also a major finding in Marchand's (2009) work, which features throughout his book, titled the 'Masons of Djenné.' An example Marchand alludes to is of a Dutch-funded seven-year project which was completed in 2002 in Mali

¹²'Atakpame' is a building method using wet mud balls which originated from the town of Atakpame in Togo.

for the rehabilitation and conservation of Djenné's architecture and whose aim, among others, was to 'establish a lasting schedule of annual building maintenance,' the masons were employed in the controlled rehabilitation of selected schemes in order to gain firsthand knowledge about traditional palm-wood ceiling construction and mud-plaster techniques among others (ibid). The renewal and reproduction of traditional building-craft knowledge were deemed vital to the project's success. Marchand argues that, 'Through practice this knowledge would become part of their skill set and would ideally be transmitted and learned by successive generations of apprentices' (ibid). Marchand states that:

"The tradition most worthy of support and conservation is the apprenticeship system itself. (...) Ultimately ownership of Djenné's architectural heritage must be entrusted to those who make its buildings and keep it a living place." (2009: 27)

Conclusively the fieldwork in Ghana is my core model or platform from which lessons can be learned and knowledge can be transferred to other NGOs working within a similar cultural and political framework. Therefore, the combination of doing in-depth fieldwork, practice and theory has given me a unique understanding of the way such building techniques can be improved but also how they are viewed by the community. The latter I would not have discovered if I had been not present in Ghana.

3.3.4 Collaboration(s) and Interdisciplinarity

The research looks at both collaboration and interdisciplinarity although this exploration is difficult to achieve in such a short writing space. Here, by collaboration I refer to the teamwork between two or more initiatives, organizations, and/or practitioners, or the combination between these, which work together on the implementation of the same project. The research itself employs the practice of collaboration as methodology among other methods of collecting data, not only during the primary fieldwork in Ghana but also throughout the extended fieldwork and writing-up endeavour.

The primary fieldwork entails collaboration of different levels: one among the members of our Nka Foundation group; another between the Nka Foundation group and the local

community including the masons; and one between the Nka Foundation and the Building and Road Research Institute (BRRI), which is a local institution (see 3.3.5). All the three collaborations take place in order to implement a construction project for a small community building in rural Ghana. The value of collaboration with local actors within research in the global South is emphasized throughout the thesis, from the fieldwork in Abetenim (see chapter 4 on Abetenim) through to the secondary case studies which include initiatives, projects and organisations located in Algeria, Swaziland, Zimbabwe, and Pakistan (see chapter 5 Case Studies). The case studies look at the collaborative aspect of such projects and the way boundaries get affected and reshuffled through such endeavours.

Architectural critic and historian, cultural theorist, as well as the protagonist and definer of Post-Modernism, Jencks, also quoted earlier in this chapter, in an interview by The Architectural review during the 2014 Venice Architecture Biennale (The Architectural review 2014), which was titled 'Fundamentals' and curated by Koolhaas, broached the prerequisite for making a contribution to the discipline of Architecture, arguing that the only way to make a contribution to the discipline is to rethink it from another discourse outside of it, and specifically to rethink it from culture, as he states:

“To get outside of architecture which you have to do to make a contribution of architecture, Corbusier wrote a book called, ‘If I had to teach you architecture’. If I had to teach you architecture one of the things I would say you would need a lever to change architecture and the only way you can get a lever is another discourse outside of it. You can’t just change it from within, you have to rethink it from culture.”

Here, Jencks suggests a collaboration between architecture and other disciplines which study culture(s). Cultural anthropology, for instance, studies the cultural life of humankind by employing the ethnographic method, which is descriptive and entails participant observation, participation as well as face-to-face interviews. Thus this research undertakes a collaborative exchange between architecture and ethnography in order to not only open up a dialogue which entails the continuous reconsideration, adjustment and negotiation of the boundaries of the disciplines, but also in order to be

able to ‘see’ longer-term sustainable pathways in similar contexts, and rethink architecture from a broader cultural perspective.

The research is interested in the ways disciplines work together. Scicluna (2015) contends that the exchanges between disciplines should not blur the boundaries, but make their borders more porous. And more porous alludes to perforation in architectural thinking and imagination, which means that the discipline of architecture, in this context, allows influences from the discipline of ethnography to go through its boundaries in order to inform and enrich its content and outcome to a certain degree. In the context of the global South, can making the borders of the discipline more porous enable us to face the complexity of our global urban/rural future in a much more flexible way?

The research contends that architecture needs to ‘listen’ to and become more responsive to the needs of the people, as well as its social and environmental context; it contends that there is a need to ‘connect the dots’, as Professor of Anthropology Nader (CalTV Berkeley 2010) argues about the state of the education system today. We are a specialist nation, we go to school to become specialists and in the process we isolate ourselves, we detach our whole being from our larger context. Thus the process of connecting the dots may offer the invaluable tool and skill to think beyond the specialist knowledge of our discipline. Speaking at Architecture ZA (AZA) 2012 Biennial Festival in Cape Town ([Design Indaba](#) 2012), Ghanaian architect and educator Joe Osae-Addo highlights the need for architecture to become more receptive and aware of its users, that is the people. For him one of architecture’s drawbacks is that it is not in a harmonious alliance or partnership with the people whom they design for; unlike musicians and playwrights, who are attuned to their audience, as he describes:

“You will be surprised with the people who will inspire you; they could be musicians and playwrights because they are attuned and in tune with the people and that’s where we have to go for inspiration. And I think this is something which architecture has not been able to achieve.”

The research is aware of:

“the differences between: ‘interdisciplinarity’, which brings multiple disciplines together to address a specific issue or project; ‘multi-disciplinarity’, which brings multiple disciplines together, but uses them separately to shed light on a specific issue; while ‘cross-disciplinarity’ is about dialogue across disciplines” (Scicluna, 2015: 75)

In a lecture titled, “Paul Jenkins: 'Understanding urbanisation, urbanism and urbanity in African cities'” (Paul Jenkins 2013), academic and active practitioner Jenkins explores how empirical inter-disciplinary research needs to be the basis for an improved understanding of cities of the global South, through the lens of a major research programme focusing on an in-depth case study undertaken from 2009 to 2013 in Maputo, Mozambique. He argues for the need to go beyond disciplinary boundaries and to engage in inductive processes in order to find new and more relevant analytical concepts and categories so that we understand the field in a more comprehensive way, as he notes:

“I think what we need to do in a self-critical way to avoid the prejudice which underpins or potentially could underpin this but it also means going beyond disciplinary boundaries and this is how I think some of the biggest challenges are.”

Participant A4 is concerned with the increasing fragmentation of the Academy, the ‘silo mentality’ as she refers to it, drawing on the urgency to understand each other’s professions, and to get outside the box, which entails critiquing the isolation of the various disciplinary approaches, as she states:

“Obviously there’s been a lot of talk about how to get outside the box and talk to each other, out of the silos, out of the silo mentality. There should be respect for every skill involved and every discipline and people should be more used to talking to each other across disciplines.”

Moreover, Jenkins (Paul Jenkins 2013) also critiques the nature of disciplinary specialization as being increasingly fragmented and argues that the Academy stimulates

at best some form of multi-disciplinary view, which entails bringing multiple disciplines together, but using them separately to shed light on a specific issue. Although multidisciplinary research includes more integration rather than just addition, and is able to integrate ways of thinking concepts and any challenging situation, it still does not enable the necessary dialogue which the complexity relating to development and design in the global South demands. Petrie (1992: 304) writes about interdisciplinarity that:

“Interdisciplinary research or education typically refers to those situations in which the integration of the work goes beyond the mere concatenation of disciplinary contributions. Some key elements of disciplinarians' use of their concepts and tools change. There is a level of integration.”

Jenkins (Paul Jenkins 2013) contends that transdisciplinarity is what is needed to face the complexity of our global urban, and rural, future in a much more flexible way, as there is a strong focus on complexity, as he writes:

“I would argue that transdisciplinarity is what is needed to face the complexity of our global urban future in a much more flexible way. That's an ability to step outside the box and rethink the nature of knowledge and conceptual analysis as part of that process of working together as well as rethinking methods. What I argue for is this concept of transdisciplinary, the idea is that we go beyond the disciplines; new approaches to a subject are sought, derive from unpacking disciplines, new knowledge is produced with aspiration to a highest common factor not a lowest common denominator and there is a strong focus on complexity.”

Petrie (1992: 304) writes about transdisciplinarity in this way:

“The notion of transdisciplinarity exemplifies one of the historically important driving forces in the area of interdisciplinarity, namely, the idea of the desirability of the integration of knowledge into some meaningful whole. (...) Essentially, this kind of interdisciplinarity represents the impetus to integrate knowledge, and, hence, is often characterized by a

denigration and repudiation of the disciplines and disciplinary work as essentially fragmented and incomplete.”

In short, the research recognises the need to go beyond disciplinary boundaries and to engage in empirical inductive processes in order to find new and more relevant analytical concepts and categories for a more holistic understanding of the field of the global South (Paul Jenkins 2013). Interdisciplinary collaborations are considered, that is, the ways disciplines work together and the continuous exchanges which take place between them and cause their borders to become more porous. The research argues that the syncretism between the ethnographic method and architectural research and design opens up a dialogue which entails the continuous reconsideration, adjustment and negotiation of the disciplines’ boundaries, specifically looking at the way the boundaries of the discipline of architecture are affected, and contributes to longer-term sustainable adaptation in this context. Furthermore, the research touches upon the notion of transdisciplinarity within research in this context and puts forth the idea of exploring the mutual collaboration between disciplines, which entails the necessary interdisciplinary dialogue and at the same time, and equally, empirical experiences of and in the field itself. The culmination of the above aspires to a process of rethinking existing methodological approaches, narratives and knowledge of the field(s). The aim is the integration of knowledge into some meaningful whole (Petrie, 1992). The above issues are discussed further in chapter 8.

3.3.5 The Role of Institutional Support in the Implementation of the Project: The collaboration with the Building & Road Research Institute (Ghana)

Drawing on my fieldwork experience and role as a community architect and participant in an Earth Architecture project through the Nka Foundation, this section discusses how the process of selecting building materials addresses the significance of institutional support in the implementation of the project. Two weeks into the construction project and having done no visible work on site besides digging the foundations, I realised that the use of earth in building was proving to be a complicated and complex task, and that the Nka Foundation’s global narrative of using earth in the construction of new projects needed to be adapted and translated into the local reality. Most importantly I became

more and more perceptive of the significance of institutional support in the implementation of any project using earth building techniques in this context. In Abetenim, amongst the Nka Foundation members, both locals and others, there was little understanding or awareness, if any at all, of the institutional options available for providing backup support to rural communities in relation to building/construction and training.

Further, the research makes use of the praxis of ‘collaboration as methodology’ (Marcus 2008) in the implementation of such a project (see 3.3.4). The process of selecting building materials addresses two distinct layers of collaboration: one among the members of our group affiliated to the NGO, and another between this group and a local institution. The visit to, and subsequent collaboration with, the Building and Road Research Institute (BRRI), in Fumesua near Kumasi was deemed vital to the realisation of the canteen. The BRRI conduct research into all aspects of building, training and technology transfer in the construction and transportation sectors (see Chapter 4). The main reason of our visit was to talk to one of the experts at their Materials Division and find out about the production and use of pozzolana locally. Pozzolana is a low-cost and low-carbon material, which partially replaces cement (see 7.3 Materials). The BRRI, through laboratory trials and field tests, produces Pozzolanas from clays and bauxite waste that can be blended with Portland cement to produce Pozzolana cement for housing construction, which is a durable and cheaper than cementitious material. Both clay Pozzolanas and bauxite waste Pozzolanas can be used to replace 30% to 40% of Portland cement for both concrete and ordinary construction (Atiemo, 2005; Manu et al., 2009). Pozzolana cement is much cheaper and environmentally friendly than Portland cement; therefore by using the former, housing delivery will become more affordable, while at the same time reducing the environmental impact. Yet, the cement used in Ghana is either imported or produced from imported clinker and gypsum; thus, encouraging the use of Pozzolana-cement would still support imported materials and would benefit the construction industry further. This would have detrimental effects on the rural communities and cause long-term harm and dependency on external help, whether monetary or technical, or both. The imperative is to create awareness within communities in all the regions about building materials produced locally, such as pozzolana and other earth-based materials, the impact these may have on the local economy, and necessarily about other local low-cost materials that could replace cement entirely when mixed with earth; at the same time there should be capacity building in

terms of training local masons to use these materials correctly, so they have the power to choose responsibly.

Two BRRI experts, the research architect and materials scientist visited us on site every week in order to offer advice on the use of different materials, quantities needed, and most importantly testing the soils for the making of the earth bricks. They showed willingness and intention of collaborating with the Nka Foundation further stating that, ‘this is the first time we are in Abetenim but definitely not the last, we will be coming here and offer advice and transfer the technology to the local masons now that we know about the Nka Foundation and their work in Abetenim.’ The support from BRRI would provide assistance with the ongoing training of the masons and would not be limited to traditional notions of (technical) operation and maintenance. Hence, the collaboration with the experts at BRRI was fundamental and rather a prerequisite especially for Western-trained architects and technologists. This form of external support would not intend to engender long-term dependency, rather its aim would be to empower and sustain community capacity and resilience over time.

The masons and carpenters in Abetenim, and presumably elsewhere in rural Ghana are both the designers and makers of their buildings. With the intervention of the NGO though, it was ‘us’ and other groups involved with the NGO who carried out the design of the buildings. Our group endeavoured to simultaneously improve the building methods, previously perceived as straightforward, through the collaboration, help and mentoring from the experts at BRRI. We sought to enhance the locals’ know-how not by Western knowledge or technology, but by enabling knowledge locally developed through ongoing research at local institutions, to inform the choice of materials, the construction and consequently the design of the canteen. Neither the local builders nor any of our group members had ever used pozzolana or made stabilised compressed earth bricks with pozzolana-cement mix before.

In light of the above, this section explores how the research on local building materials undertaken at the BRRI relates to rural Ghana; if the artisans (carpenters and masons) in the rural areas know how to and are able to use these materials in construction projects; whether training is required in order to enable this. The BRRI have set up the National Artisan Centre where they offer a training programme for the duration of two to five weeks against a very minimal fee. They look at the artisans’ level of skills and offer

them training on what they would lack and they take it away to their district, to their locality. The research architect and I discussed the possibility of proposing to the NGO the training of the Abetenim group of masons and carpenters at the BRRRI as they could work out some tailor measured fee for the entire group.

How would the masons in rural Ghana get to know about this training program? The BRRRI advertise for about two months before the start of the program and also write to the district assemblies as most of the artisans are registered with their district assemblies. The latter are 'supposed to relay back to their contractors' and then their foremen relay to the artisans. The lack of funding restricts the BRRRI from organising training at each district so the artisans could receive training at their own locality. Echoing participant A1, the research architect at BRRRI whom I interviewed in Ghana:

“We are looking at, later on when we have funding, it will make it a lot easier for us to move out and organise this training. It can be regional, it can even be at a district level depending on how the funding is and how and where the resources are. We could have done that but now we are restricted so we are doing it at the centre where we have the resources because we are able to manage with the limited funds that we have.”

The participant A1 during the interview at his office in Fumesua spoke to me about the relation between possibilities of external collaboration(s) and the implementation of a training program for the masons in rural areas:

“The government is not helping much; most of the work that we are doing with the district assemblies has been on our own initiatives. Initially the district assemblies used to have their own funds and could take their own decisions. But now everything is going back to the central government who is still controlling the money and they can be directing any district authority. So the concept of the district assembly project has already been defeated. It becomes difficult when you want to persuade them to do some initiatives on their own. As we (BRRRI) are a government supported/ subvented organisation, there are no funds for us to go and do some of these things and there are some legislations which also restrict us as to how we can even go for partnerships. This is what we have come out with, these are

the findings of our research. But it's left on the shelf. So you are praying that somebody will come and pick it up and go and implement them.”

The above quote demonstrates how changing people's thinking about what knowledge is and about what intelligent performance is, manual skills and manual labour, is critical. Handicraft has deteriorated in terms of status and practice particularly over the last century and it is often understood that this happened because of industrialisation, globalisation and technological development which would replace the need to do things by hand (Marchand, 2009). Another important factor for the deterioration of handicraft is that it attracts a low social status. It is generally believed that those who work with their hands, those who are involved within even skilled labour are those who did not make it through school or did not have the academic credentials to go on. This is elaborated further in the following chapter on the actual fieldwork in Abetenim. I will now turn to another part of my fieldwork, which emerged out of the encounters I had in Ghana.

3.3.6 The Architects' Project (TAP) as Virtual Field Site: The collaboration with TAP

From the encounters that I had in Ghana, both in Abetenim and Accra, my research has continued to develop in a most serendipitous way. After coming back from Ghana and during my fieldwork year in the UK, I was invited by the Architects' Project founder, whom I met in Accra, to become their online Editor. The Architects' Project (TAP) is an Accra-based non-governmental organisation involved in Architectural Research and Design in Africa and mainly Ghana. TAP is an autonomous initiative set up to boost the education and practice of architecture. It is local in context and global in agenda. TAP is a lively virtual network which is vital for my doctorate as it continuously keeps me informed about and engaged with the political and housing situation in rural and urban Ghana. Its founder and director is a female architect of Ghanaian origin who received her architectural training in the UK and returned to Accra in order to practise locally as well as set up the initiative. Thus, from a rural geographical site my fieldwork has now moved to a virtual site through social media networks, mainly those of Facebook and WhatsApp. The Architects' Project have a company page on Facebook, LinkedIn and Twitter which act as means of networking with active professionals in and outside the

architecture and planning industry. Here, I have enhanced my relationship with locals I met when I was in Ghana and it is proving to be an exciting and creative aspect of my methodology. This fits within the flexibility of the multi-sited ethnographic approach, as I explained above.

My role as the online editor entails research on African architecture with specific reference to the following: housing schemes, planning related issues, vernacular architecture in various parts of the African continent, ongoing and/or completed projects by community-driven initiatives, and generally schemes that make use of local resources, local materials and labour. I undertake research on the above daily in order to be able to post on the TAP's Facebook page. Posting on social media presupposes that I have read the material and have also written a short introduction to what the 'online audience' is about to be presented with as soon as they click on the post. The Architects' Project and my research area may share characteristics which express abiding intellectual interests including my aspiration to conduct community-based research and a focus on issues of community training and participation, low-cost and low-carbon materials in construction, sustainability, and approaches to resilience and adaptation.

Most of the NGO's members affiliated to TAP, thirty six in total at the time of my fieldwork, are based in Ghana with only a handful of us working from outside Africa. Hence, we have set up a group account on *WhatsApp Messenger*¹³ in order to be able to communicate with one another on a daily basis and instantly. The use of technology and specifically 'WhatsApp' has enabled us to work together as a group, have insightful and intellectual conversations, hold official meetings and take strategic decisions in relation to research, design, management, and operational issues.

Additionally, my ongoing involvement with The Architects' Project (TAP) has given me the opportunity to organise and facilitate events, which are directly related to my PhD. For instance, I co-organised together with the founder of TAP an event as part of the '*tap:Exchange*' series of events at London Metropolitan University, the CAAS

¹³*WhatsApp Messenger* is a cross-platform mobile messaging application which allows you to exchange messages at no cost because it uses the same internet data plan that you use for email and web browsing. WhatsApp Messenger is available for certain mobile phones. In addition to basic messaging WhatsApp users can create groups, send each other images, video and audio media messages.

Centre, on 4th December 2015. This event titled, 'Transcultural Praxis: Tapping local resources for sustainable development - localising foreign through cross-cultural praxis', entailed a workshop and seminar titled. I co-facilitated the workshop titled, 'Revisit the Reinvented' exploring the difference between 'architecture before' and 'architecture after' its context is experienced, where I also presented a paper entitled, *Ethnography and the Architecture of Situations*. Both this type of involvement as well as being the inline editor of the non-governmental organisation has given me the opportunity to put some of the ideas which emerged from the research to test. The feedback I receive at the TAP events and the online forum has informed my thinking and writing process in a meaningful way.

3.4 Post-Fieldwork Stage

This stage involves the categorising of the collected data, analysing the data and formulating interpretations, explanations and theories. During the post-fieldwork stage the researcher attempts to explain how events and details of experience represent the cultural constructions as well as '*reflect the complexity of the lived world*' (Howell, 2006: 231). I started doing the data analysis and writing up in September 2015 after having conducted all the planned interviews. The themes that emerge from the interviews are analysed in relation to: my virtual site, mainly TAP, formal and informal interviews, telephone and skype interviews, printed reports as well as on-site observation and participation (see Chapters 4, 5, 6 and 7). With reference to analysing the semi-structured and unstructured interviews, I conducted thematic analysis in order to draw out the most emergent themes. Thematic analysis focuses on identifiable themes and patterns of conversation topics, vocabulary, recurring activities, meanings and so on. After collecting the data and transcribing the interviews, I studied the material in great depth and thus was able to list patterns of experiences, or categories, from direct quotes and to draw out common ideas. Then I was able to identify all the data, which relates to these categories, or classified patterns. I then combined and catalogued the related patterns into sub-themes. The themes, which emerged from the participants' experiences and conversations were put together to construct a complete impression of the participants' collective experience in a meaningful way. Interweaving the literature with the findings helped me to create the arguments of the final chapters, 6, 7 and 8. Therefore, the research discusses five of them, specifically the architectural education

and practice, the in-field training, building materials, collaborations and ethnographic approaches to design. All five themes are discussed and argued through the lens of resilience and adaptation as conveyed by all the research participants (see Chapters 6 and 7). Chapter 6 deals with the themes, which pertain to training, such as the architectural education and practice, and the in-field training. Chapter 7 brings together and tackles the emerging themes, which pertain to practice, such as the materials used for building and collaborations. The following chapter, specifically Chapter 4, addresses the ethnographic account of the primary fieldwork in a remote village called Abetenim in rural Ghana. By drawing on my fieldwork in Abetenim, and my role as a community architect and participant in the Earth Architecture workshop, it explores the role of traditional building practices in the way they may contribute towards building resilience in this context.

Chapter 4

In the Field: The Earth Architecture Workshop in Ghana

Chapter 4: In the Field: The Earth Architecture Workshop in Ghana

4.1 Overview

This chapter constitutes the primary case study of the thesis and draws on *ethnographic fieldwork* conducted in Abetenim, a remote village situated in rural Ghana. It gives a detailed account of my involvement and collaboration with the Nka Foundation, a local non-profit organisation, through my participation in the Earth Architecture construction workshop and role as a community architect and labourer in Abetenim. The fieldwork entailed travelling to Ghana where I participated in the Earth Architecture workshop from the period of 6th November 2014 to 7th December 2014. Here, I largely conducted participant observation, which necessitated my first hand involvement in the building process of a school canteen and kitchen in order to observe and research the complexities involved in building with earth. My role in the field was dual: I became both a participant in the life of the setting, while also being an observer, maintaining a certain degree of detachment. In addition, the fieldwork entailed other creative methods, such as participatory-design workshops with school children and teachers, informal conversations with the locals including the masons and carpenters, conducting recorded unstructured and semi-structured interviews with local Ghanaian architects and researchers, as well as the collaboration with two local academic institutes.

In what follows, the research employs the ethnographic method as an approach to participate in and observe a school canteen and kitchen construction project, which forms part of a larger program undertaken by the Nka Foundation in the region, namely the Earth Architecture workshop. The research also endeavours to enable the ethnographic approach to be reflected in the manner this chapter is written; that is, descriptive and analytical. As mentioned in Chapter 3 (see 3.1.1), ethnography is both a method of social research and genre of social science text (Marcus and Clifford 1986). It is descriptive, highly analytical and endeavours to bring together method, interpretation and writing (Malinowski 1922, Okely 2012). The Earth Architecture workshop aims to enhance the local community's resilience and potential for adaptation to climatic changes through the use of earth as a building material. Based on ethnographic analysis of the above programme, the research focuses on the necessity to discover what is of importance in this context, to grasp the natives' point of view – by

natives here I refer to the local masons and local community - their relation to life, building methods and materials, to understand their vision of their world; in other words it focuses on the necessity to grasp the local context in a holistic manner in order to be able to discover and suggest possible pathways towards longer-term resilience and sustainable adaptation. What's more, the role of traditional building practices is explored in the way they may contribute towards enhancing the community's resilience and capacity for adaptation in this context. As already stated, the fieldwork in Abetenim demonstrates first, that building with earth is not a straightforward endeavour as one may think, and second, the complexity of knowledge that is involved in learning a building craft and performing it with certain mastery. It endeavours to explore the practice of architecture from a culture and climate first approach, which inevitably addresses and engages with the specificities of the context, including the local community's socio-political and geographical context, and relationship to its wider networks. Moreover, it examines the influence of different variables on the 'choice' of materials and building methods employed by the NGO in this context, and seeks to create resilience at a local level through the use of building materials. In short, the primary fieldwork in rural Ghana - as well as the four secondary case studies illustrated in Chapter 5 - is considered as a lens through which the thesis investigates how different interests envision the social and spatial reordering of the area. A number of critical questions about the practice of architecture in such circumstances are raised, and how it can be improved and informed through the use of the ethnographic method, that is by 'being there'. Ultimately, it rethinks architecture and building practices from a broader cultural perspective.

4.2 Setting the Scene

I arrived in Ghana on November 6th 2014 during the time of the most devastating ebola¹⁴ outbreak in West Africa which prompted the temporary closure of the Nka Foundation operation in Mali, and considerably deterred most of the anticipated workshop participants from travelling to Ghana. While there was no ebola cases reported in Ghana, there was a cholera outbreak which the Western world had not heard

¹⁴Almost 4,500 people had been killed by the end of October 2014 by the ebola outbreak in West Africa. According to the World Health Organisation director general, Margaret Chan, this was the "most severe acute health emergency in modern times", one that is "threatening the very survival of societies and governments in already very poor countries" (<http://www.newstatesman.com/world-affairs/2014/10/great-ebola-scare>)

about. At the Kotoka airport in Accra I first met the facilitator of our group, a technologist from Ireland named Harry. The rest of our group members, and colleagues during the workshop, were: Veronica, a young Architectural History graduate from the United States, and Kosi an environmental engineer originally from Ghana but having grown up and spent most of his life in the United States. Kosi was the only one who could speak the local language and thus was able to communicate with the non-English speaking locals. Having spent a couple of days in Accra, we travelled by coach to Ejisu, a small town and capital of the Ejisu-Juaben municipality, in the Ashanti Region. We continued our travel from there by taxi to our final destination, the village of Abetenim, which belongs to the Ejisu-Juaben municipality. The Ashanti Region, which harboured the Ashanti or Asante Empire, a pre-colonial West African state, is home to the capital city of Kumasi, and is also known for its major gold bar and cocoa production. Abetenim has a population of approximately 500 inhabitants, the majority of which relies on agriculture for their livelihoods. Their main produce includes oil palm, cocoa, kola nut, plantain, cassava and yam. The local and principal native language spoken in much of southern Ghana is Twi, a dialect of the Akan language. Abetenim used to be a place full of tall palm trees until a few years ago before the visible effects of the ongoing 'deforestation' left it with only a couple still standing and looking almost sacred. 'Abe' means 'a tall palm tree' and 'enim' means 'front' in Twi. With no running water in the village, its only water pump serves all its households. Water scarcity, low levels of education, health vulnerability, and population growth are only a few of the local challenges. Abetenim had no grid access to electricity until February 2012, and during the period of our workshop its supply was inconsistent as on most days we had power for two to three hours, but on other days had none. The inconsistent power supply meant that we had to rely on our sketchbooks for the documentation of information and not our laptops. We did have occasional access to a laptop though which we utilised for drafting the plans, sections and three-dimensional drawings. The dire situation in Abetenim is further intensified by the heavy tropical rainfalls that have been damaging the Atakpame buildings in the area (see Figure 4.1 - 4.5). The "Atakpame" together with the wattle and daub buildings (see Figure 4.6) constitute the predominant vernacular in the village, together with three handsome traditional compound (courtyard) houses (see Figure 4.7 - 4.8) lining the main road at its very centre. 'Atakpame' is a building method using wet mud balls which originated from the town of Atakpame in Togo. 'The "Atakpame" method refers to a rectangular wall laid out by the builder with pegs and a string.



Figure 4.1

An atakpame earth building gradually falling in ruins due to lack of maintenance, intense rainfalls and lack of foundations causing the lower part of the walls to deteriorate faster



Figure 4.2

A traditional compound house almost 120 years old, situated in the centre of Abetenim. The lower part of the earth walls is severely eroded as there no foundations. The upper parts of the walls are still undamaged because of the roof overhang that protects them.



Figure 4.3

This is the oldest compound house made from Atakpame earth in Abetenim. It is 150 years old, and is situated between the Nka Foundation Arts Village site and the centre of the village. Again the lack of foundations and lack of maintenance have caused severe erosion



Figure 4.4

A typical street in the centre of Abetenim, where one sees the Atakpame earth building falling into ruins. Some of them are in much better condition than others due to the maintenance that the households have been able to afford. The roof overhang plays an important role in the protection of the walls but the general lack of foundations causes severe erosion in the lower part of the earth walls.



Figure 4.5
Another street in the centre of Abetenim, where one sees a severely eroded Atakpame earth wall of a building. The lack of maintenance and lack of foundations when it was built together with the intense rainfalls have caused its external mud plaster and part of the Atakpame wall to erode



Figure 4.6
A wattle and daub building, which serves as the kitchen of a local family



Figure 4.7
One of the traditional compound houses, which is still in very good condition. Its earth walls (Atakpame method) have been re-plastered and repaired



Figure 4.8

A traditional compound house situated in the centre of Abetenim, opposite the Chief's Palace. Its earth walls (Atakpame method) have been re-plastered and repaired.

A pit is dug near the building place, the mud mixed with water, kneaded with bare feet, and then moulded into balls of about 200mm diameter. Courses of up to 600mm in height are laid, each course covered with palm leaves and allowed to set and dry out gradually before the next course is added as wet mud cannot bear its own weight and would slump otherwise'.¹⁵

Our landlords were the Principal of the Abetenim Municipal Assembly Junior High School and Primary school (see Figures 4.9 and 4.10), Paul and his wife Julie. Paul was also the Nka Foundation coordinator and manager in the Ejisu-Juaben municipality. The Nka Foundation's mission in Ghana and elsewhere is the training of local communities on local crafts and arts for livelihood. During my fieldwork Paul was in his final year of his Business Management degree.

¹⁵For more information see the Affordable Housing Institute's global blog, <https://ahiglobal.wordpress.com/2012/03/14/traditional-building-methods-in-southern-ghana/>



Figure 4.9

The Abetenim Municipal Assembly Junior High School, designed and built by another Nka Foundation group who were architects volunteers from the United States.



Figure 4.10

The Primary School in Abetenim, funded and built by the State of Ghana.

The State sponsors school principals like Paul to study further and obtain a degree in Business Management as schools are also considered to be businesses in Ghana. Due to his prominent role as an educator and school principal he was always addressed and treated with deference by the Abetenim community. The most critical negotiations about labour, materials and building costs took place initially through discussions between us and Paul. Although we were all present at meetings with the local masons and carpenters, it was Paul who would primarily engage with the locals. Besides being our landlady and official cook for the Nka Foundation's workshop participants, Julie also became a good friend with whom I had insightful conversations, mostly during mealtimes, about the local community's values and principles. This helped me grasp a better understanding of the local community's aspirations and challenges.

The Nka Foundation site in Abetenim, also called the arts' village site (see Figure 4.11), is located in a quiet and secluded area approximately a couple of hundred metres from the centre of the village. It is situated on the right hand side off the main dusty¹⁶ road from Juaben (see Figure 4.12). The Nka arts' village site was bought by the Nka Foundation Director in 2005 from the Chief of Abetenim, Nana Owusu Ababio¹⁷. Both our guesthouse (see Figure 4.13) as well as another similar looking building part of which served as Paul's and Julie's residence, were situated there.

4.3 The Building Process

Nana Owusu Ababio, the Chief of Abetenim, whom we had to visit upon our arrival in the village, offered us his blessing and permission to use some of the village land in order to design and build something beneficial and useful for the locals. The foreigners' visit to the Chief's Palace¹⁸ (see Figure 4.14) marks an important rite of passage into the village community and is considered obligatory in order to live in the village even if it is only for a short period. It was only after we arrived in Abetenim that we found out that the workshop plans had changed, and that we would have to design and build a school canteen and kitchen instead of a traditional compound house, which we had initially been assigned to by the Foundation's director, due to the community's urgent need for a school canteen.

¹⁶The locals call it a 'dusty' road as it has neither been asphalted nor hard surfaced.

¹⁷In Twi 'Nana' means Chief and 'Ababio' means the one who has come again.

¹⁸The building which the Chief occupies as his residence is referred to as the Chief's Palace by the locals. Nana Owusu Ababio's Palace is located right in the centre of Abetenim, on the main road from Juaben and next to one of the old compound houses.

Figure 4.11

The signage of the Arts Village Abetenim, where the Nka Foundation Co-ordinator is based and where the participant groups for the Earth Architecture construction workshops stay for the duration of their projects.



Figure 4.12

The 'dusty' road from Juaben to Abetenim passes through the centre of Abetenim and continues to the next village.



Figure 4.13

The guesthouse building, where our group were staying during our involvement with the construction of the school canteen and kitchen. The walls are atakpame and plastered with clay.



Figure 4.14

This is a compound house, which serves as the Chief's residence / Palace, and is situated in the centre of the village.

Nana Owusu Ababio had already agreed with Paul on a designated site for our project within the school campus. According to one of the research participants, who was also local to the Ashanti region, in rural Ghana all the land belongs to the Chiefs and it is them who have the power to decide what is supposed to be done in their land, as he states:

“All the land belongs to the Chiefs apart from the government vested land. All the villages and almost all the urban suburbs have Chiefs. The Mayor is a political appointment and takes charge of the city, but it’s the Chiefs who have most of the power over the things that are supposed to be done.”

The potential site for the compound house would be next to our guesthouse whereas the school campus was in the centre of the village, which would offer our group the opportunity to interact closely with the local community while working. There are seven villages of a similar size to Abetenim as well as a few smaller ones in the vicinity. Until 2009 there was only a primary school in Abetenim. This meant that the older children had to walk all the way to Juaben in order to study further. Out of the 20 students only two to three could afford to continue schooling until that time. With the help of Nka Foundation they have built the Junior High School, the Kindergarten (see Figure 4.15) which was still in progress at the time of my fieldwork, the canteen and kitchen, and have also made plans to build residential units for the teachers.



Figure 4.15

The Kindergarten building still unfinished at the time of my fieldwork. The site for the canteen is located on its right hand side where the concrete blocks are piled.

In addition, the library project would also start onsite in January 2015. Some of the surrounding villages have only a kindergarten hence in desperate need for more school buildings. Paul emphasised the significance of education and also the gravity of the teacher's role in this context. He explained that the State of Ghana would build school buildings mostly in urban areas which left the villages in a vulnerable situation. Yet if the local rural communities managed to build a school for themselves then the State would provide them with teachers, furniture, and equipment. Paul broached the corruption of the State and explained that a lot of the villages did not have schools and the teachers would gather the children under a tree in order to teach them how to read and write, so the creation of new school buildings would be of utmost importance. He also disclosed that the Department of Architecture at KNUST had worked on a master plan for a Technical Junior and Senior High School project which would be implemented in phases. Although the site for this project would be easy to acquire as Chiefs would generally be willing to provide some of their available land for community projects, the challenge would be to acquire funds for its implementation.

4.3.1 The Participatory Design Workshop with the Students

The following morning we visited the designated site for the canteen and kitchen buildings (see Figure 4.16) and took measurements. There were three large trees within the allocated site; a Kola nut tree, a framo tree and a short palm tree. The palm tree was cut down first as the masons said it would be of no use. The framo tree also had to be removed as it would grow massively and interfere with the foundations of the canteen. Thus, saving the kola nut tree became our mission and we repeatedly tried to convince the locals that its canopy would create good shading for the area between the canteen and the kitchen. Unfortunately it was removed at a later stage as it was infested with ants which created a big challenge during the stage of excavating the foundation trenches.

I took the opportunity to speak to some of the teachers and attended the elaborate morning school prayer. On the same day we held a participatory workshop with the primary school students of the basic school (BS) as called by the locals. The participatory workshop would entail finding out and mapping the students' eating practices (see Figure 4.17 – 4.18),



Figure 4.16

The site for the canteen. The earth wall on the left hand side is of the Kindergarten building.



Figure 4.17

Lunch break at the Primary School. The students gather at the veranda to collect their lunch from the lady cook.



Figure 4.18

Lunch break at the Primary School: the children gather to collect their bowls of cooked rice with tomato sauce and eat either at the veranda or under the canopy of a tree.

which would include where they would choose to sit and eat, what they would improve or change in those spaces, hygiene-related and other practices before and after eating, etc. I was assigned two classrooms, namely the BS1 and BS5, and asked the children to create a drawing that would indicate their preferred eating practices in relation to their school building. I also helped them write down words in English as to what each element meant to them. The whole process lasted for one and a half hours at the end of which the BS5 classroom produced some exceedingly elaborate drawings, most of them two-dimensional, depicting not only their school building but also their favourite trees, most chose the mango tree at the back of the building underneath which they would eat breakfast and lunch (see Figure 4.19 – 4.21). Some of the drawings portrayed the veranda, the students holding a pot of rice with pallava sauce, the campus lavatory which they would use after eating, their football pitch, the new but unfinished KG (kindergarten) building, the oil palm settlement located near the school, as well as other students playing. After having looked at and analysed the drawings in detail, it became clear that we were requested to design the canteen as a flexible space, an ‘outdoor’ building, and specifically a large canopy that would act as an umbrella to the children’s and teachers’ eating area, hand-washing area and cooking/food preparation area. We had collected very useful data from the students’ drawings, enough for us to start designing the initial ideas about the canteen building, as well as the sanitation and water management part of the proposal.

Further, the students’ drawings conveyed the need for a lavatory and washing bowls to wash their hands before and after meals. There was an evident lack of lavatory facilities on the school site. The only existing facility was a wattle and daub structure (see Figure 4.22) which was supposed to serve the teachers and all the school children, from all the three different schools, the kindergarten, the primary school and Junior High School. Unfortunately it was almost in a collapsing state and considered too unhygienic to use by the teachers. The debate for a lavatory became a contested issue among the group as the perception and understanding of the local community’s priorities and allocation of funds differed among our group. ‘I came here to finish a building not a toilet. I fully understand that they need a toilet more than other buildings, but I have to finish a building, this is my priority’ said our facilitator during one of our numerous debates on the need for a lavatory. ‘Is a toilet or a VIP latrine not a building?’ I asked back. To disregard a significant part of the information and insight which the drawings conveyed, and instead focus on the construction details seemed rather unethical and disrespectful towards the local community.



Figure 4.19
 One of the children's drawings showing their primary school in the forefront, a new toilet building on the right hand side, and two new kindergarden buildings at the back. A tree on the left hand side offers shade for the lunch break.

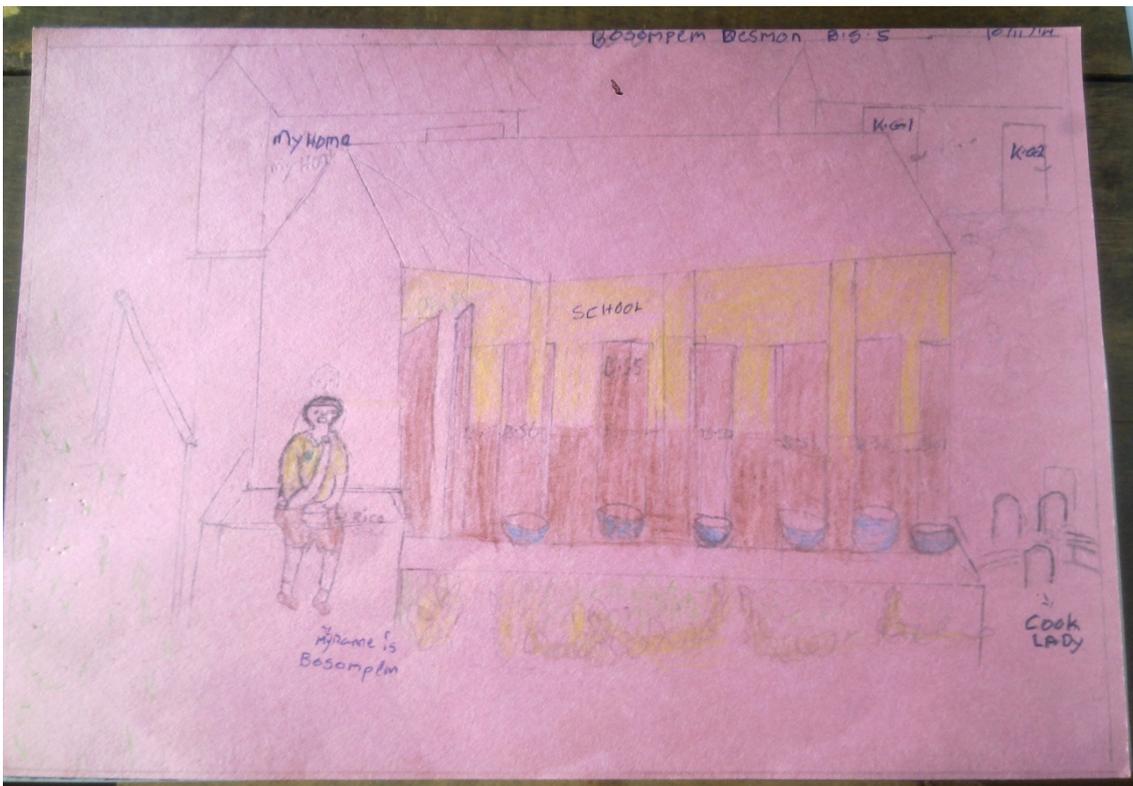


Figure 4.20
 One of the children's drawings showing their primary school in the forefront, the student eating at the school veranda, where there is an array of hand washing bowls, two new kindergarden buildings and the student's house in the background.



Figure 4.21

One of the children's drawings showing their primary school, a new toilet building on the top right, the student sitting outdoors eating lunch and then walking back home to her family's house. The toilet building is particularly prominent here, which probably reflects its importance in the student's mind, judging by its scale and situation in the drawing.



Figure 4.22

The only lavatory facility on the school campus, a wattle and daub structure which is not used anymore as it is considered too unhygienic by the locals.

Yet we were there to ‘listen’ and respond to the needs of the local community and not dictate our own ideas of what those needs should be. This incident offered an opening to more deeply consider the role of architecture and to rethink one’s role as an architect and designer in this context. Further, how might the questions asked inform alternative models of architectural praxis? Given the complexity of these questions the role of the architect/designer is discussed later in the thesis, specifically in chapters 6 and 8. Moreover, the need for lavatory facilities on the school site became evident from the students’ drawings as well as the teachers’ feedback. As a matter of fact, there was a need for both lavatory facilities and a canteen building in Abetenim at the time of the fieldwork. Yet, had we ‘listened’ in order to discover and voice the locals’ needs, and in order to ask the right questions, we would have considered implementing the lavatory facilities project instead, as they were of higher priority. This context demands a more honest architecture that is responsive to the local reality, culture, climate, science and available technology. It demands that the architects, designers, researchers and so on involved in such work to focus on understanding and ‘listening’ to the community’s priorities and needs instead of imposing their own ideas of what those needs should be, or mere construction details and aesthetics. We - that is Western trained architects, practitioners, students, and/or any other parties involved in such work - need to ‘be there’ and engage with the local community, which involves letting go of what we think we know and re-learn from the situations and engagements we are in. Thus spending time in the field and getting to know the local culture is of utmost importance. Further, the research argues that more often than not a building is not even necessary as the community’s priorities may lie elsewhere, and echoes Cedric Price¹⁹’s fundamental basic approach of asking first of all, ‘Do you really need a building?’ What does the distinction between a building and a latrine mean? What does it say about one’s own cultural background and how does it relate to the given context? Nikolaus Pevsner distinguishes between works of architecture from mere buildings in that they are ‘designed with a view to aesthetic appeal.’ Pevsner begins his book titled, ‘An Outline of European Architecture’ (2nd ed. 2009), with this distinct observation: ‘A bicycle shed is a building; Lincoln Cathedral is a piece of architecture.’ My colleague may have

¹⁹Cedric Price (1934-2003) was one of the most visionary architects of the late 20th century. Through projects, drawings and teaching, Cedric Price (1934-2003) overturned the notion of what architecture is by suggesting radical ideas of what it might be. He saw the role of an architect as that of asking the right questions, as Reyner Banham has commented: “...the basic approach is certainly one that appeals to me, a way of really not saying, ‘What kind of building do you want?’, but almost of asking first of all, ‘Do you really need a building?’ (<http://design.designmuseum.org/design/cedric-price.html>)

considered the latrine to be a functional building without any aesthetic appeal and hence not a piece of architecture. Could we not have perceived it to be a functional building overlaid with aesthetic intentions?

I had brought up the idea of a participatory design workshop with the teachers and the lady cooks but some of our group members seemed to think it time-consuming at the time and that it would unnecessarily prolong the design process. Boano et al. (2012: 10), among others, allude to the significance of time in order for the often ‘highly contested participatory process to take root and thrive,’ and that ‘it requires time to build the momentum necessary to enact meaningful change.’ Moreover, echoing Lyons’ (2009) writings on the process of community participation within reconstruction projects, she argues that there is pressure for a trade-off between consultation and involvement of local communities, and rapid (re)development.

The rest of us broached our vexation and concern about the way the project was progressing as the focus seemed to be more on the design and construction methods rather than engaging the teachers and cooks in a participatory design process in order to find out about their aspirations and needs before making any major design decisions. One of the research participants, who was local to the Ashanti region and he eventually got involved in our project, brought to our attention that, ‘the Nka Foundation need to pay caution while selecting facilitators because damage can be caused unintentionally.’ He prompted us to work on the priority map in this context and consider where in this map lies the detailing of joints. He also suggested that research mainly on materials and the testing of soils should be our priority and should take most of our project’s time, and that construction should come later in the map of priorities, as the construction is fairly easy to put up since there is enough money for the materials. There was consensus within the group that I was to run the participatory design workshop with the teachers and the cooks. The design workshop was held under the large canopy of a tree at the school campus. It was attended by six teachers, two cooks (see Figure 4.23), and the Nka co-ordinator/school principal. The participatory design workshop with the teachers is discussed in detail in Chapter 3.



Figure 4.23

The participatory design workshop took place outdoors next to the primary school building and under the canopy of a large tree. We discussed the basic design concept of the canteen and initial ideas about the kitchen. The teacher's feedback was insightful.

4.3.2 The Building and Road Research Institute (BRR)

The visit to the Building and Road Research Institute (see Figure 4.24), namely the BRR²⁰, in Fumesua near Kumasi, was mainly to talk to the experts at their Materials Division and find out about the production of pozzolana, which I had been reading about prior to my travel. The BRR expertise includes research on and the manufacture of pozzolana amongst a variety of building materials (the BRR started research on pozzolana in 1973). The experts at BRR conduct research into all aspects of building,

²⁰The BRR is one of the 13 research Institutes of the Council for Scientific and Industrial Research (CSIR), Ghana. It was established in 1952 as the West African Building Research Institute in Accra. With the attainment of political independence, (Nigeria in 1960 left), the Institute became known as Building Research Institute of the Ghana Academy of Sciences. In 1963 when the Kwame Nkrumah University of Science and Technology (KNUST), Kumasi faced acute shortage of lecturers in architectural, engineering, planning, quantity surveying, etc., the then government of Ghana relocated the Institute to the KNUST campus. In 1964 the Institute's mandate was expanded to include road research duties and hence its new name, The Building and Road Research Institute (BRR) (<http://www.brri.org/index.php/about-us>)



Figure 4.24

The Building and Road Research Institute (BRRI) campus in Fumesua, Kumasi.

training and technology transfer in the construction and transportation sectors as well as development of construction materials from local sources.

Dr Annan, originally a biologist and at the time of my fieldwork the Head of Commercialization and Information department at the BRRI, introduced us to a research architect in the Construction division and a materials scientist in the Building Materials division, Michael and Thomas, respectively. Both the Building Materials division and the Construction division were relevant to our work in Abetenim. During the meeting Michael was concerned that one of our group members was ‘speeding against time’. Our colleague’s obsession with finishing on time, deadlines and ‘pushing them to work fast’ in his own words, put us in a difficult situation especially because the rest of us disagreed with him. Michael advised us to have caution as visualisation may be deceptive, and added that, ‘you must slow down, time should not be pushing you; it is better to create something good and permanent instead of pushing something to be built’. He also expressed his worry about our lack of understanding of the concept

'time' or priorities in Ghana. At BRRRI we discussed the use of local materials for building and found out that building with earth is not allowed in urban areas. 'Local materials are thought of as substandard unless the municipality approved of them,' explained the BRRRI staff. The mindset of the local politicians was that earth bricks and clay were not sufficient for today's construction. Dr Annan brought up the issue of the association with poverty, memory and time, and stated that:

"Traditionally all the politicians, the local government and decisions makers come from rural areas, villages or hamlets which are often poverty-struck, and have eventually moved up in life and into the big cities like Accra and Kumasi. So they associate clay, earth, adobe and other local and natural materials with poverty and this is why they do not approve of their usage in construction especially within the urban fabric. No-one wants to live in poverty. Cement, concrete and other materials which are associated with wealth, modernity and good quality are encouraged and supported. The association with poverty is the problem. No-one also wants to be reminded of poverty or having been poor."

The BRRRI staff suggested that there was a twist in the building law in Ghana which would allow one to apply for permission in order to build with earth/atakpame. The application would be declined unless the applicant paid a 'fee' suggested by the officials.²¹ It was also pointed out that the way architecture is taught in Ghana encourages the use of concrete and discourages that of clay. 'Their minds have been concretised', they said referring to the architecture students and added that 'it would be a fantastic idea to involve them in the school canteen project but we would have to go through the head of the Architecture Department, nothing happens unless he agrees even if everyone else supports the idea.'²² They once again tried to explain that we need to stop rushing and instead spend time to research and test soils before we start construction on site. They were concerned to hear that only after a week of being in Abetenim the facilitator and leader of our group wanted to push for starting construction

²¹ In Chapter 2 (Literature Review) I already discuss the use of local and natural materials, however, I intend to elaborate even further on this issue as it is emerging as one of the core themes from my fieldwork, mainly through the work of Schildermann (2004).

²² Again, the notion of informality or the 'deconcretisation of the minds' is another emerging theme from my fieldwork and will be eventually developed further. This notion of informality was also discussed in depth during the 2014 conference of the Development Planning Unit, Bartlett School of Architecture (DPU) marking their 60th anniversary. This will be taken into account when I theorise this notion.

on site. The rest of us agreed with Michael, who advised us to stop rushing and instead spend time to research and test soils before we start construction on site.

The process of ‘unlearning’ was necessary as we were completely new to Ghana and Abetenim, poverty and generally earth building. Advocating the use of earth in construction and unapologetically against the use of concrete seemed rather pretentious especially because we all came from more ‘modern’ and economically developed parts of the world, where concrete would be the most widely used building material. We were either too young or perhaps too ignorant to remember that our ancestors’ dwellings had most probably been made from earth before they got the opportunity to move out of poverty and into modern houses. None of us had any idea what it would be like to live in an earth building. From speaking with the locals in Abetenim, and from spending time in the field, one immediately realises that they aspire to be modern and to be able one day to build their modern and more ‘permanent’ houses from cast concrete blocks. Hence, they save money and gradually invest in concrete blocks, which they usually store next to their dwellings, until they acquire enough quantity to be able to build their new modern houses. In the meantime their existing mud or Atakpame houses slowly fall into ruins as the locals’ priorities lie elsewhere and not in their maintenance. The latter entails the re-plastering and repairing of existing earth buildings and requires skilled labour, which is costly in this context. This is also evident in other rural areas in Ghana. Thus, modernity, which is debated at length in chapters 7 and 8, is a recurring theme that emerges from my fieldwork in Abetenim. What comes to light from conducting participant observation as part of the ethnographic approach in Abetenim, among other things, is the relationship between change and continuity and the need to reflect on this relationship; also, how the local people deal with change and modernity in relation to building materials, the deterioration of their earth dwellings, the influx of imported western materials, like cement, which are now considered to be local, and so on. ‘Our’ Western narratives of modernity and what being modern may mean in relation to building materials differ largely from the narratives of modernity in rural Ghana, and the South at large. We – Western architects, designers, researchers and so on involved in such work – tend to assume that modernity poses a threat to the local culture and building practices, but in fact local culture(s) and tradition(s) are not static entities; they are always in flux and predisposed to change. Thus, with regards to the paradigm of Ghana and the use of Pozzolana cement in making and stabilising compressed earth blocks, we need to reflect and research further as well as create awareness among the

locals about the benefits of ‘modernising’ local traditional materials in coping with changing climatic, social and economic conditions. By ‘modernising’ here I refer to the approach of integrating the indigenous qualities and knowledge with those imported or adopted from the West, in order to create a modern identity of the place, which the locals aspire to, and in order to achieve long term benefits at a local level. We need to listen to the locals and by that I do not only refer to the local community at hand, but also to academia, practitioners, policy makers and so on in order to understand how we could proceed. In relation to the paradigm of Ghana again, the BRRRI staff advised us that ‘in construction projects cement must be treated well; if you use too much it becomes your enemy.’ Thus, in order to contribute to longer-term sustainable adaptation in this context we need to look at the syncretism of the two, that is Western approaches to making and thinking about materials, and indigenous qualities and knowledge about materials, and how this syncretism may impact the local community socially, environmentally, economically and so on. And in order to make an impact and change people’s mindsets, one needs to persevere and set an example of integrating sustainable use of materials and resources consistently in our work. This was what both BRRRI experts tried to alert us to, which unfortunately our facilitator was not perceptive of, insisting about ‘how important it is that *he* finishes on time.’ Yet despite our good intentions *the road to hell is paved with good intentions*. The latter is a quote from Jonathan M. Katz’s book titled, ‘The Big Truck That Went By’ (2013) which describes the bureaucracy, politics, and infighting between NGO’s involved in emergency response to disasters in Haiti post the 2010 earthquake. Echoing the words of one of the research participants, whom I interviewed in London before travelling to Ghana, she states:

“The Road to Hell is paved with good intentions’ is a quote from a book about disaster relief. You can mean all the best things in the world and still create terrible, terrible situations for people. So good intentions aren’t enough; you need knowledge and you need experience and you also need humility and communication skills. In fact communication is probably the most important skill to have. I think a lot of people are very ignorant about the culture of the community that they are going to visit, and very ignorant about themselves; they don’t have an awareness that they might be about to do something much worse than not doing anything at all.”

The situation in Abetenim was almost a manifestation of the above: half-finished buildings scattered around both the Nka Foundation and the school sites, reminders of the short-sighted and prodigal use of limited resources by foreign architects/designers, or obronis²³ as the locals would say, who intended to finish their buildings within the stipulated eight weeks from arriving in Ghana; reminders of money spent on projects which had not been completed. One of our colleagues seemed convinced that this was a sign of failure of the architects' capacity. But was it? It could equally be a sign of an egocentric agenda that one would aim to complete their project within eight weeks regardless of the locals' advice, as 'otherwise it would look bad on them.'

It was a paradox that some of our group members used the word 'I' repeatedly in relation to all the decisions and work done by the group, separating themselves from the rest of us. We were in Abetenim working with a small self-sufficient community which showed a shared collective responsibility for everyone's welfare. Cooperative building work and collective effort, caring for the latter seemed to be the most significant thing there, not of the individual so much. This was illustrated in the idea of bartering of materials' delivery onsite and building chores for providing a canteen building to the children as this was a community project. Paul would ask taxi drivers whose children studied at his school to deliver cement bags to the site gratis as it would be their children who would benefit from the project. He explained that, 'to deliver a bag of cement from either Kumasi or Effiduase to Abetenim would cost 1,5GHC per bag so to deliver ten bags of cement would cost 15GHC'.

This ethos reflected in the building process too and it was what differentiated 'us' from 'them', in other words what we 'lacked.' Our cultures celebrated individualism whereas their culture the collective. Robert Venturi in 'Complexity and Contradiction in Architecture' (1966) wrote that, 'architecture has a special obligation toward the whole; its truth must be in its totality or its implications of totality. It must embody the difficult unity of inclusion rather than the easy unity of exclusion.' Our group seemed to lack that obligation towards the whole.

There would not be much space for the word 'I' in the everyday lexicon and interactions within the Abetenim community. Instead there would be mutual trust and dependence

²³Obroni or Oburoni is the Twi language word for 'white person'. Its literal meaning is 'a person from beyond the horizon', a foreigner. The word 'oburoni' derives from the word 'buro' which means 'from beyond the horizon' and 'ni' which means 'person'.

on the other. No-one goes hungry in the village because there is enough food for everyone. The lady cook is able to cook for the schoolchildren every day because they bring with them wood to burn for her stove. The wood is offered by their mothers so their children can have lunch at school. There is mutual trust that the mothers will send wood for her every day and that she will cook for the children in return. With her while cooking, she had not only her own baby but also the two year old girl of her friend who was unable to provide food for her during the time of my fieldwork. Hence the lady cook takes her along to school and makes sure she is fed.

4.3.3 Kwame Nkrumah University of Science and Technology (KNUST)

The visit to the Kwame Nkrumah University of Science and Technology (KNUST) during the second week of my fieldwork, gave me the opportunity to meet Professor Appiah at the Department of Architecture, who invited me to give a lecture to the second year Architecture students. Professor Appiah suggested that his students would benefit from learning about approaches to resilience and adaptation through architecture, workmanship and building, which my PhD research is about, and which the KNUST curriculum lacked. We discussed the importance of designing according to climate and culture, and agreed that one would have to look at policy in order to influence the current situation on planning, and that on a global level many politicians do not believe in climate change. Professor Appiah commented that, neither architects nor architecture students looked at design or planning in a holistic way, and that this would need to change. He suggested that some of his students could come over to Abetenim and be involved in our project and at the same time engage with the local community. He also took us around the KNUST campus and showed us some of its earth buildings, and pointed at one which had a concrete ring beam, which he called 'kind of cheating'. He advised us to consider termites when designing with timber, and suggested that we use inverted metal plates at the bottom of timber posts as they would deter termites from attacking the posts; termites do not like to walk upside down.

We also met another academic and expert²⁴ on water, sanitation and hygiene (WASH) who disapproved of the idea of latrines as he stated that it is recommended to use water flush toilets with wash basins instead of a pit latrine on school campuses in Ghana. He

²⁴The WASH expert was involved with a large-scale UNICEF project in rural Ghana which included the provision of water flush toilets.

continued saying ‘ask your funders for more money so you build proper toilets’, and was interested to find out why the *Ebola scare* had not deterred us from travelling to West Africa. I had encouraged the idea of a pit latrine among our group as I had proposed and extensively researched pit latrines during a school reconstruction project in Haiti post the 2010 earthquake²⁵, and anticipated they would work in rural Ghana too. Kosi, the environmental engineer, had already done much work on including such a facility on campus. The WASH expert was perceived as ‘completely old-fashioned and backward’ by the other members of the group comparing him to experts in the West who ‘are more forward thinking and know better about this issue.’ Yet, the research architect and materials scientist at BRRI supported the idea of providing VIP latrines and not using water for creating new lavatories.

We found out from Paul that almost five thousand people had died from cholera in Accra alone during the previous year. Hence, the strict regulations of the World Health Organisation (WHO) in relation to the construction of new schools in Ghana. This influenced our decision to discard the idea of using the existing pit for the creation of VIP latrines. The former had been excavated for another Nka project a year before but had been left unrealised. Consequently we decided to dig another pit elsewhere on campus far from the kitchen area. Another restriction was the electric pole around which we had to allow a certain area of space for repairing, etc. Kosi explained how permeable surfaces around the canteen building and the pit latrine, as well as water diversion ditches, would work with rainwater management on the school site.

4.3.4 Scaling Down the Project

The possibility of scaling down the project was discussed upon the realisation that the money we had raised would not be sufficient to build everything we had proposed initially. We had to look at the map of priorities again and decide which part of the proposal could be omitted. Our facilitator suggested that we could create a module of a section of the canteen building, and repeat it until we run out of money and the local community could continue with adding more sections at a later stage when they could afford to. I was of a different opinion and suggested that it would not make sense neither spatially nor financially, and that we had better build the basic elements first,

²⁵Prior to my doctorate, I was involved with a charity called ‘Thinking Development’ and they raised funds to build a school in Haiti post the 2010 earthquake.

that is the roof, floor slab, the kitchen frame, the latrine frame, and write a proposal for the remaining works to be implemented by another Nka group at a later stage. This proposal could also suggest that architecture students from the nearby KNUST University could be involved as that would offer them the experience of building with earth. This would make the project a collaborative and continuous process which would reflect the ethos of the Abetenim community. So, for example, the proposed low earth walls around the perimeter of the canteen could be built by someone else at a later stage.²⁶ The rest of the group agreed with my suggestion and discussed transferring all the design information to the Canadian family who would be coming to Abetenim to design and build the school library in January 2015. The Canadian family would have two site options: either the existing football pitch (see Figure 4.25) or the sloping site between ours and the Junior High School. We asked them if they would be happy to contribute towards the latrine building since we already knew our funds were severely insufficient. Their budget was 20K US dollars which will go towards the building cost, labour, furniture, computers as well as a collection of books which would be donated by an Accra-based book collector.



Figure 4.25

The existing football pitch, where the Canadian architects are implementing the school library building through another Earth Architecture workshop.

²⁶ The low-cost housing project for the Homeless in Chile by the group Elemental is used as an example.

That same afternoon Michael and Thomas, the research architect and materials scientist at BRRI respectively, visited our building site as they had promised they would. After talking to Michael about the idea of providing the canopy/roof and the floor slab first, he affirmed that, ‘the government has been doing that for the past twenty years, building roofs for classrooms and when the community have some money they build partition walls, so it is definitely not a new idea. A strip foundation²⁷ would be better for a pavilion-style building.’ Michael showed interest in collaborating with the Nka Foundation further stating that, ‘this is the first time we are in Abetenim but definitely not the last, we will be coming here and offer advice and transfer the technology to the local masons now that we know about the Nka Foundation and their work in Abetenim.’

4.3.5 Carrying Out the Site Survey, Orientation of the Canteen and Location of the Kitchen

As our building site had a slope, a way of measuring the ground levels needed to be improvised. We had two tasks to accomplish; first to demarcate the boundaries of both buildings, the canteen and the kitchen, and afterwards measure the difference in height between the points along the demarcation lines in order to determine the slope steepness. The demarcation of the two plots was carried out using iron steaks, measuring tape and yellow string, which we had bought from Kumasi market (see Figure 4.26). We borrowed the iron steaks from the building site next to our guesthouse. The rectangle canteen building measured 3900mm in width, and 13500mm in length. Threading lengths of yellow string between the iron steaks enabled us to mark out the perimeters of both the canteen and kitchen plots. Afterwards we measured the differences in level at every one meter along the perimeters and compared to the top of the concrete plinth of the adjacent Kindergarten building, which we considered a point of reference. Once these two tasks had been carried out we invited a dozen students from the primary school, while they were on their break, to come into the demarcated canteen plot in order to approximately estimate how much space they would require while eating (see Figure 4.27).

²⁷ A strip foundation is a strip of concrete placed in a trench. The absolute minimum thickness of this strip is 150mm.



Figure 4.26
The demarcation of the canteen and the kitchen sites.



Figure 4.27
The students standing inside the site allocated for the canteen building. This is an exercise in order to be able to visualise how the children would fit within the space as well as potential movement patterns. Also, this exercise aimed to involve the students in the decision-making process and create a feeling of ownership.

We simulated the canteen building on site with the help of strings. This exercise helped us decide the orientation of the building according to the sun direction during the day. The decision to turn it at an angle to the Kindergarten building was taken in order to avoid the sun. Another exercise was performed on site in order to figure out the internal space of the canteen and the orientation of the kitchen building. The main objective was to achieve maximum shading and natural ventilation for both buildings. Hence, the need to build a protective wall to the North East of the kitchen as the North East wall would be the most vulnerable as exposed to rain, wind and sun (see Figure 4.28, which shows the concept development of the scheme taking into consideration the feedback from the drawing workshop with the students as well as observation of their eating practices). However, the orientation of the canteen and the location of the kitchen were the subject of many debates and kept fluctuating as the latter was an issue of controversy and contestation among our group. The two options for the location of the kitchen were: either near the Western side of the canteen which would be shaded and provide a naturally shaded outdoor space for the cooks; or, towards the far end of the Eastern side of the canteen which would be behind the Kindergarten building and at a lower level from the rest of the site and the serving area would be out of the teachers' visibility. Ten days after embarking on the design process we found out the latter option for the kitchen location, in the Eastern side of the canteen and behind the Kindergarten building, was out of the question. It transpired that someone from the village had already laid the foundations for a house precisely in that piece of land. He then got into dispute with the Chief who asked him to stop building and leave Abetenim. Thus there was an issue related to land titling which simplified the contested decision-making process for the kitchen location as we were left practically with only one option.

Another necessary consideration was the smoke that would be emitted through the proposed improved clay stoves. The latter would be built and installed with a flue or chimney, which would conduct smoke and gases up from the fire and through the roof of the kitchen, so that the cooks could prepare the food indoors without being exposed to toxic smoke. The women cooks used traditional wood-burning stoves (see Figure 4.29 – 4.30), which were a danger to their health and the environment. Thus, the aim was to design a cost-effective cook stove made from local materials which could improve their health, and also contribute towards the reduction of the unsustainable rate of firewood deforestation in the region.

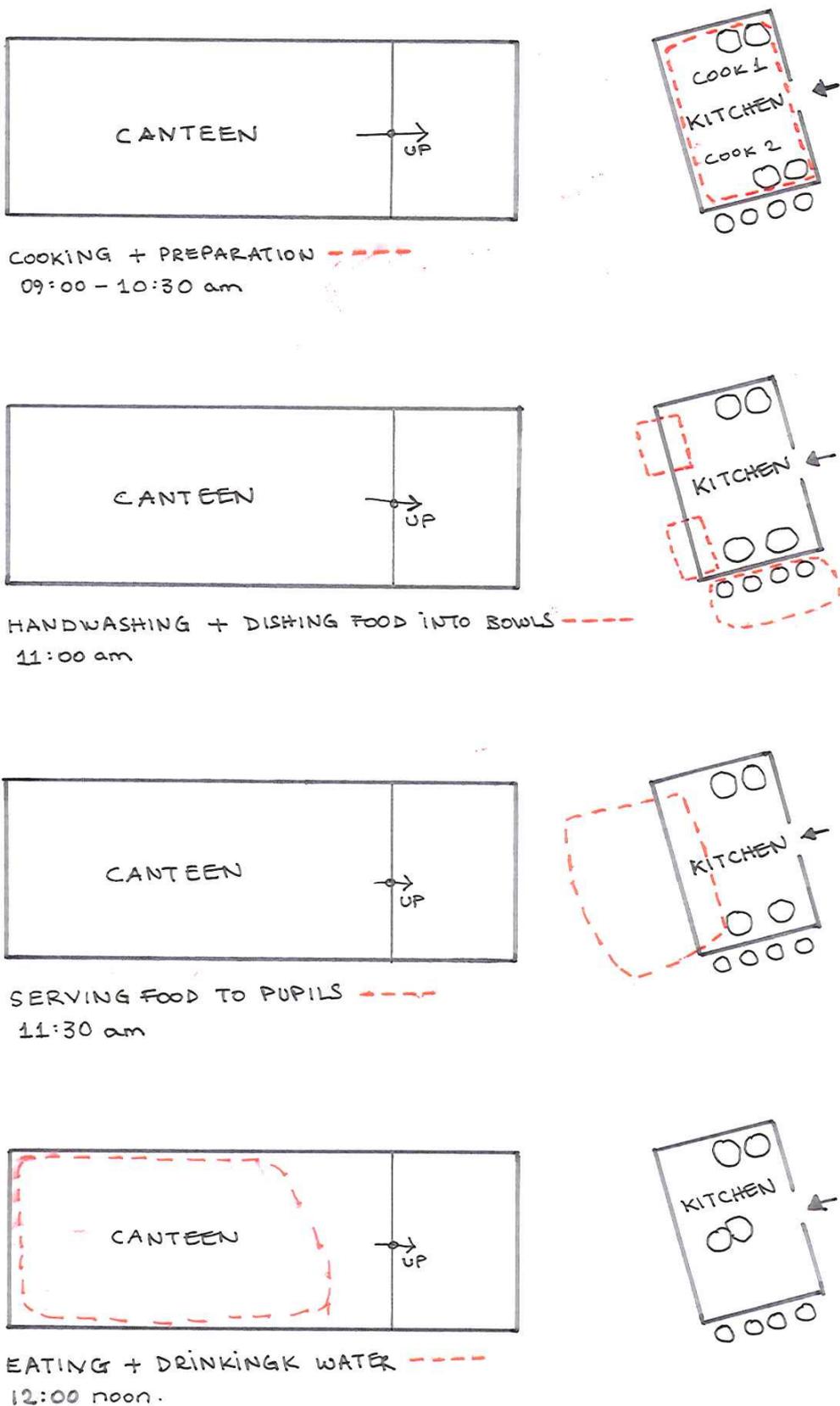


Figure 4.28

Sketch of the concept development of the scheme as informed by the students' and teachers' feedback during the participatory workshops. The red dotted lines show the areas where the action takes place at various times during the day.



Figure 4.29

This is a traditional wood burning stove, which the lady cook uses to prepare lunch for the school children. She cooks underneath the canopy of a tree next to the primary school.



Figure 4.30

Most households in Abetenim have these traditional wood burning stoves outside their dwellings and cook outdoors.

During one of our meetings with the teachers on the school grounds we had shown them some information and images we had downloaded from the website of Practical Action²⁸ on improved clay stoves. Two weeks later a senior academic at Kumasi Institute of Tropical Agriculture (KITA)²⁹ called John, visited us on-site with a view to discuss possibilities of collaboration making the improved cook stoves for the kitchen. KITA has a growing energy department with experts in cook stoves, gasification, biogas and energy efficient practices. In partnership with SNV³⁰ Netherlands Development Organisation, KITA have developed its renewable energy sector to tackle salient development issues in off-grid communities. John is leading the cook stove research group which comprises students from the Delft University of Technology and KITA, developing cook stoves with improved fuel efficiency to combat deforestation. The latter was often brought up in discussions we had among our group. It was never used by the locals though neither in the village nor at the research institute BRRI. Agyeman (2012) argues that:

“Much of the literature on deforestation in the Ashanti Region does not take into account the interactions between economic, ecological, and political processes that have shaped land and forest cover in this region for the past 400 or so. The focus needs to be on forest cover change as opposed to deforestation as this could provide a better understanding of the relationship between forest and forest farming systems. There is no doubt that the forest cover in Ashanti Region has changed over the past century from being more uniformly dense to a landscape that has much greater variation in density of forest cover.”

²⁸Practical Action is an international non-governmental organisation (NGO) that uses technology to challenge poverty in developing countries. (see <http://practicalaction.org/about-the-organisation> accessed 1st April 2015).

²⁹ Kumasi Institute of tropical agriculture (KITA) is a Ghanaian NGO which serves as a leading centre for research, technology transfer and education in farming, agriculture, agribusiness and environmental resources management. The (University) College of Tropical Agriculture was registered in May 2010 to take over the tertiary educational programs of the Kumasi Institute of Tropical Agriculture. The latter has been operating a professional farmers' college since 1984. It is the premiere private agricultural college that has been offering technical vocational and other tertiary courses in general agriculture under the supervision of the Ministry of Food and Agriculture, the Ministry of Education, and the Ministry of Manpower Youth and Employment. (<http://kitaghana.org/>)

³⁰SNV is an international not-for-profit development organisation with expertise in sustainable development. (<http://www.snvworld.org/>)

KITA are also involved with the SNV woodstove festival in collaboration with the University of Delft, raising awareness within poor communities, and suggested that he and the cook stove research group could build the stoves in order to gain first-hand experience, and charge only for the materials not labour (see Figure 4.31).



Figure 4.31

A student from KITA clay cook stove research group building the stoves in the kitchen.

4.3.6 The Notion of ‘Control’

The notion of ‘control’ in relation to design and planning kept cropping up during our ongoing design sessions and debates. Some of the group members wanted to control the whole process from architecture, people’s movements, future occupancy of space even after we would have left Ghana, site dimensions even though it was not possible, to the dimensions of the materials despite the fact that timber comes to a maximum length of 3900mm but yet often slightly smaller as there is no standardisation. The compulsion to control and the expectation that the materials would be delivered to the site at a standard size, which ‘we’ specified, made the project and consequently the process more complicated than it was especially in the eyes of the locals.

We called a meeting with Paul, the teachers and us on the school grounds on the 9th November in order to present the latrine and water management proposed plan and get their feedback, especially on the potential location for the latrines. We also presented the drawings of both the canteen and kitchen buildings as we had taken a few pictures of the laptop screen with a mobile phone. We had no access to a printer so that was the most effective way to transfer information to others. The master plan of the school campus as a whole was also discussed in detail. The idea of built-in benches was discarded as all they needed was an empty flexible space for which they would provide the furniture according to the occasion. It transpired that the canteen would also be used for staff meetings, which would require the use of different furniture from those the students would use during their breaks.

4.3.7 Community Labour

It was two weeks into the project that the excavating work for the foundations of the canteen got underway by the masons and members of the community labour (see Figure 4.32). The latter would be called by the Chief to work on community building projects gratis twice a week, usually on Wednesdays and Thursdays. Most labourers are farmers in the nearby farms, thus participating in community labour gratis would be considered undesirable. Nevertheless they have to comply with the Chief’s command to avoid being fined. The fine would be determined by the Chief but would usually amount to a bottle of Schnapps and a crate of eggs.



Figure 4.32

The community labour digging the foundations of the canteen. They offered us help twice a week.

As a matter of fact, there was an argument among all the workers on site as one of them had reportedly insulted another, which created delay in the excavation for the foundations. Paul asked the Chief to punish the worker who offended the rest by a sort of fine comprising a bottle of Schnapps and a crate of eggs.

4.3.8 Local Materials used for Building

After having spent two weeks designing, researching the local building materials and talking to the local masons and carpenters as well as academics, always with Paul's help and consent, we were in a position to start ordering materials such as timber, cement, pozzolana, iron bars for the reinforcement of the concrete foundations, and metal roof sheeting. As already mentioned, building with earth/Atakpame is not allowed in urban areas. The original Atakpame builders in the old days in Ghana were from Benin and born in Ghana when their families migrated there but they have now left Ghana and

gone back to Benin. There were three Ghanaian Atakpame expert builders in the vicinity of Abetenim but were too expensive for the village communities to hire. ‘Most people cannot afford their labour’ Julie explained. As a result the vernacular atakpame technique was discouraged.

The two BRRI experts involved in the project visited us on site and checked the clay soil from the ground near the construction site of another Nka project, mixed it with water and concluded it would not be good to use for our building as there was not enough clay in it. It would need to roll into a soft ball ideally. In this part of the world the earth does not contain enough clay so we have to improve it by binding it. The earth walls of another Nka Foundation project fell on their own weight as the concrete pillars on either side of the walls did not bind with the earth (see Figure 4.33). Neither the concrete pillars nor the earth walls had binders in them which resulted in the earth walls collapsing.



Figure 4.33

This is a project implemented by another Nka Foundation group from Italy. The detailing needed to be revised after the group had left Abetenim, as the concrete pillars on the corners did not bind with the earth walls, which resulted in the earth walls collapsing. One solution would be to reinforce the Atakpame walls with Pozzolana cement which acts as a binder for cement and earth.

The maintenance of the earth walls is key in preserving them. Every year they patch it up like a clay plaster. ‘In the North of Ghana there is a particular season for maintaining the walls, it’s like a family culture, they go from house to house to re-plaster with clay.’ Trevor Marchand (2009: 21) while describing the annual re-plastering of Djenné’s Mosque, say: ‘this “awesome, messy, meticulous and fun” festival takes place each spring and requires the cooperation of all townsfolk. The *barey to* arrange the date, organize the labour, and secure all necessary materials and equipment. In return, prominent townspeople furnish gifts of grain, rice, millet porridge, and money, and these are divided amongst the masons.’

The BRRI experts visited us on site on November 21st in order to look at the excavated trenches of the canteen and kitchen foundations. They brought fifteen bags of pozzolana from the BRRI factory, eight of which would be used for the canteen and the rest for the kitchen in the stabilisation of the earth blocks. This time we had already purchased the cement on its own from elsewhere but the experts suggested that we could order bags of pozzolana and cement mix from the BRRI should we require any more (see Figure 4.34).



Figure 4.34

A bag of Pozzolana cement mix produced and sold by the BRRI.

They also confirmed that their consultation would be gratis and their wish for ongoing collaboration with Nka's projects in Abetenim. In addition, they suggested that we use between 6% to 10% pozzolana mix (mix: one part pozzolana to three parts cement), and that the slab of the canteen would need to be poured at the same time as the slab of the surrounding terrace, as otherwise there could be cracks in the slab and termites could go through. We could also space the timber posts further apart at 1500mm from centre to centre which meant that the concrete foundation pads would have to be spaced further apart too. The seasoning of the timber would be necessary before using it for building. The notion of time again cropped up as both Thomas and Michael recommended to allow enough time, possible two weeks for the timber posts to season. It would take one week to source the timber and approximately two weeks to season it. Optimistically the timber would be delivered on site by December 8th. The timber used for the construction of the canteen's frame would be sourced from a tree which the locals refer to as the 'poor man's soup' (oriemfosama in Twi). Paul explained that this type of tree is 'cheap and lasts long so poor people prefer it.' The metal roof sheeting would take a couple of days to be delivered on site once we placed an order. The timber used for the formwork of the previous Nka project was reused for the canteen and kitchen. So was the extra steel reinforcement bars used in the concrete foundations of the canteen. We had proposed to use raffia palm mats for shading the canteen (see Figure 4.35) but discarded the idea as soon as we discovered that another Nka group had already used them in a previous project and soon had to remove them because of deformation. Cutting the raffia palm can be dangerous so it would require skilled workers. They would be harvested fresh and would therefore shrink, get deformed and break easily once they dried, so would need to be replaced every year. Another consideration that deterred us from using them was their cost, which increased from 40GHC to 120GHC per roll since 2009.

Some of the statements provided in this sub-chapter about the materials, their maintenance as well as necessary treatment prior to using them in construction, may be common knowledge. However, this knowledge is important in the context of the research as it may shed light on: the reasons that certain decisions and choices were made; the challenges other researchers and/or practitioners would need to consider if given an opportunity to work in a similar context or project.



Figure 4.35

A roll of raffia palm matt cut and made locally by a skilled worker.

4.3.9 The Visit from Two Architecture Students

On November 21st, a couple of architecture students from KNUST, Nora and Alexander, visited us in Abetenim to discuss how they could be involved in the building process of the center as well as future Nka projects. Nora was in her fifth year and had participated in building the Kindergarden project for three weeks the previous summer. Alexander who was also the president of the Architecture students' association at KNUST, was a mature student in his final year and had also been practising for some years prior to his degree. His inspiration was the Accra-based architect, Tony Yaw Asare, who had been working with earth for many years. Alexander was political, pragmatic and seemed tuned into the current affairs in Ghana, whereas Nora may have had romanticised the idea of building with mud.

Alexander explained that casting concrete blocks would be considered an investment for most people in the rural areas who would not earn more than 100GHC per month so building a house for themselves and their families would not be easy. They would slowly save money to cast concrete blocks which they usually stored next to their house so that one day they would be able to accumulate enough blocks to build a modern and permanent house (see Figure 4.36 – 4.39). Modernity was a recurring theme in my fieldwork in Abetenim, and what the locals were talking about and wishing for. Marchand (2009: 18), also conveys the theme of modernity in his writings about the masons of Djenné and referring to the latter years of the 1980s and argues that ‘their once familiar scope of practices was confronted by a rapid encroachment of imported building materials and new technologies including cement breezeblocks, corrugated steel sheeting, and the use of formwork, poured concrete and steel reinforcing.



Figure 4.36

A pile of cast concrete blocks typically stored next to old earth houses, which are left without repairing or re-plastering so they naturally deteriorate and collapse. The owners will build their new home in their place made from concrete blocks.



Figure 4.37

An atakpame house, half destroyed with only one room surviving still, and a pile of cast concrete blocks stored next to it waiting to be part of the newstructure.



Figure 4.38

Cast concrete blocks stored next to a new modern dwelling under construction at the time of my fieldwork in Abetenim. This building belongs to our landlady's mother, who is considered quite well-off according to local standards.



Figure 4.39

Another new modern dwelling under construction, next to a wattle and daub building and an Atakpame one in the background.

Concrete promises to last longer than mud in this context. Building with mud or Atakpame is a specialised skill nowadays and labour is costly. Maintenance of mud or Atakpame buildings, which is key in this context, needs to take place every year which the local people cannot afford, whereas concrete doesn't require any. Also, as the people in rural areas used to build mud walls without any foundations, the intense rain easily destroys their buildings. In Abetenim many buildings are almost in ruins and often families live and sleep in one room in order to avoid wall-less spaces (see Figure 4.40 – 4.41). Yet their aspiration is to embrace modernity, in the unique manner which is perceived and practised in this context, and to be able one day to build their modern and more 'permanent' houses from cast concrete blocks. Hence, they save money and gradually invest in concrete blocks, which they usually store next to their dwellings, until they acquire enough quantity to be able to build their new modern houses. At the same time the existing mud or Atakpame houses slowly fall into ruins due to lack of maintenance. One of the reasons for this is that the locals' priority is to invest in concrete blocks and not in the maintenance of the Atakpame houses.



Figure 4.40

One of the eroded earth Atakpame buildings in Abetanim. They fall in ruins due to intense rainfalls, lack of maintenance and lack of foundations when they were built. In this case, all its external mud plaster is eroded and so is part of the Atakpame wall. It is only a matter of time for this structure to collapse.



Figure 4.41

Another eroded Atakpame earth building in Abetanim. Here we see that its external mud plaster is eroded at the bottom as there no foundations, but its top part is still undamaged because of the roof overhang that protects it.

Another reason that the existing mud or Atakpame buildings slowly fall into ruins is the combination of the worsening climatic conditions, such as the intense rainfalls, which destroy them, together with the fact that these earth structures were built without any foundations, which makes them prone to deterioration. One example is Kamal's house – one of the masons who lives with his mother and two younger sisters in their family house- which has only one room left intact so his whole family have moved in that. Alexander described how building with mud would often not be viable and explained that, 'to take time to convince people to use it and to use it correctly, it would probably be easier to just let them build with concrete.' Building with earth, including earth bricks and rammed earth and so on, could present one of the solutions to tackling the national housing problem in Ghana. Yet there are still reasons for political actors to discourage it in formal urban settings. Some of these reasons include, but are not limited to, the following: building with local materials is a much slower process than using the conventional modern methods; that formal testing may not have been carried out and for which standards may not exist; the necessary process of spending a considerable length of time trying to influence the locals' mindset about using earth for their dwellings, as Alexander has also argues. The latter broached the fact that in Ghana architects were generally believed to be rich because of their expensive education and because they could make a lot of money if they were involved in large-scale projects in urban areas, for example skyscrapers and hotels. He explained:

“There is no chance to use mud/earth in such projects or in urban areas. If you are an architect and you need to earn money to pay your bills and provide for your family then you aim to get a job with one of these practices in Accra or Kumasi. And if building with mud is what drives you, then you somehow make yourself an outsider and refuse to earn money or live in the cities as building with mud is not allowed in the cities. You people come from a very different context and can support these ideas and come out here to build with mud because your universities or institutions fund this type of work. In Ghana universities or institutions don't support this type of work so you would need to fund it yourself which means you come from an affluent background.”

Addressing Nora, he suggested that she ‘may be able to support this idea because her family can fund it.’ But the people *we* were trying to convince were very poor; their aspirations differed largely from ours and we would need to dedicate time to try to convince them that building with mud may eventually be better for them. Part of the context of our work was the locals’ aspirations to build a ‘strong and permanent’ house and their struggle to survive.

Nora’s attitude to the subject seemed to contradict with Alexander’s as she emphasized the aesthetics of mud architecture over any other advantages. The latter caused her views to come across as more nostalgic and romanticised. Her own thesis focused on the rehabilitation of the alleged ‘witches’ in the Northern regions of Ghana and specifically the ‘witch camps’, which are villages that offer refuge to the women referred to as ‘witches’, who would flee their homes as their communities condemn them for practising witchcraft, and therefore pursue and punish them. Nora was interested in promoting the idea of building mud houses for the witches. She was also interested in designing and building a water tower for the Nka Foundation site so the visitors and participants of earth architecture workshops could have running water. The idea to have a water tower just in the Nka Foundation site, while there was no running water anywhere else in the village, was contested by most of us.

4.3.10 The Need of a Contract

The *metal man*, who was also Julie’s brother, would be the one to cut and weld the metal rods and plates for the timber posts. We had asked him to make a sample before ordering a large number of them. He would use an electric welding machine and as there had been no electricity over the past few days in Abetenim, he would have to hire out a workshop in nearby Juaben. This would essentially cause an increase in the cost of the metal work. The ‘metal man’ started making the iron bars two weeks after we had started designing. On November 21st he paid us a visit after dinner to show us the sample of the metal foot (see Figure 4.42 – 4.43). The holes for the bolts did not seem to be neither the right size nor equal between them. This was possibly because he had used a welding machine instead of a drilling machine to pierce holes in the metal with a view to save 100GHC.



Figure 4.42

The sample of a metal foot, which the ‘metal man’ prepared for us to approve before we order more to be made

We immediately held a meeting as the unevenness of the holes would likely cause the canteen building to be unsteady so decided to pay the extra 100GHC to ensure its safety. I proposed we could opt for the silver (non-coloured) instead of the coloured metal roof sheeting as we would save 50GHC per pack, almost 300GHC in total for the required amount of sheeting. This way we could afford drilling holes through the metal feet.



Figure 4.43

The sample of a section of a pillar, which consist of the metal foot and the timber pillar that supports the roof of the canteen.

Almost three weeks after arriving in Abetenim, we held a meeting at our guesthouse with Paul, Bashir and Kofi, the chief mason and chief carpenter respectively, in order to present the drawings of the scheme as well as discuss labour costs and timeline (see Figure 4.44 – 4.46). This proved to be a difficult meeting as Kofi suggested a fee of 4,000 GHC based on three carpenters working for about one month. He and the two junior carpenters would be working on the school canteen project exclusively which implied they would be bound by a contract. The alternative was that there would be no contract if he and another senior carpenter would be appointed on a daily basis at 50GHC per person per day with the occasional assistance of a junior carpenter at 20GHC per day, as their fees differed according to their ranking. The latter option indicated a longer involvement with the project as they would be simultaneously working on other schemes. Our negotiations were inconclusive and we requested a few more days to consider the two options, that is to either offer a contract or not.



Figure 4.44

The presentation of the drawings of the scheme building to the chief mason and chief carpenter.

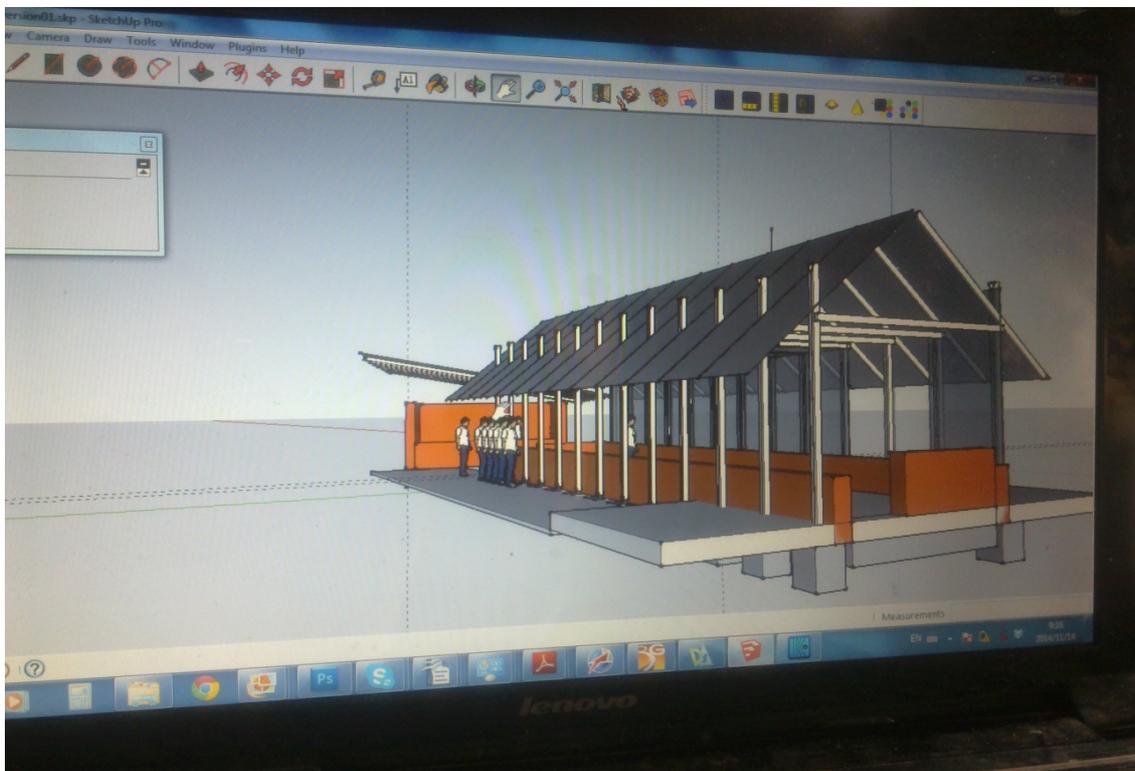


Figure 4.45

One of the 3d CAD drawings of the canteen in the foreground, and kitchen in the background as part of the presentation to the chief mason and chief carpenter.

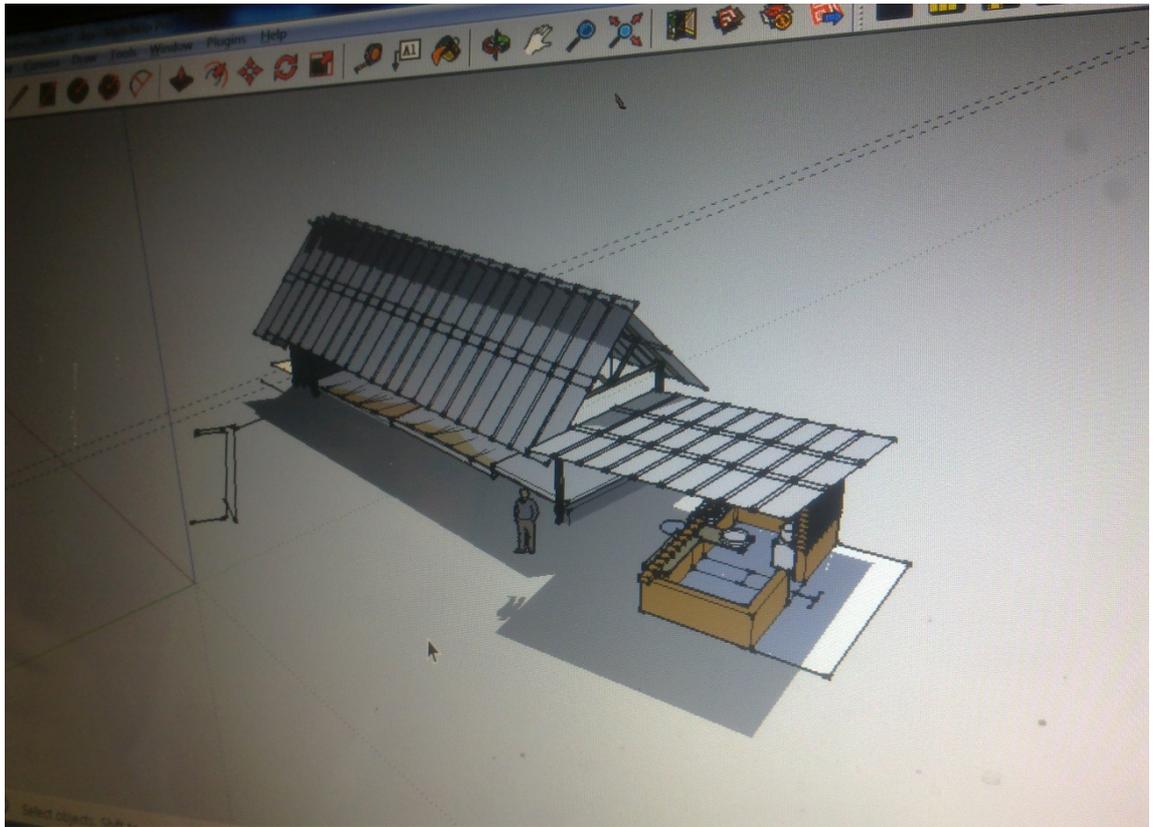


Figure 4.46

Another one of the 3d CAD drawings of the scheme, as part of the presentation to the chief mason and chief carpenter.

This brought to mind the conversation I had with Kofi, a quantity surveyor at the BRRI, while waiting to interview Michael on Monday 24th November. Kofi was involved in a collaborative research project with a Nigeria-based academic, investigating the working conditions of builders and masons in Ghana and Nigeria. He explained that ‘often the young people who end up becoming masons or builders were the ones who didn’t do well at school so that was probably the only option they had.’ Kamal, one of the junior masons in Abetenim, aspired to become a policeman but could not afford the school fees for the three-year course required in order to join the police force. There was much playful banter about his ‘dream’ among the rest of the masons. Marchand (2009: 56) describes a similar situation about the Dogon and Bozo builders and notes that ‘they could not move beyond the lowly status of labourer, and ambitions to do so curtailed primarily with jests.’

Kofi elucidated that most of the builders would not be bound by a contract which meant ‘they would need to own and provide their own tools, clothing, on-site meals and also pay for their travel to the building site and the contractors would not even cover them for health and safety.’ Ostensibly there are a few masons in permanent employment onsite, with more job security and better paid, who would also train the younger ones.

4.3.11 Making the Earth Bricks

On Sunday November 23rd we collected samples of soil from the three different recommended sites in order to experiment with testing them ourselves. Thomas, the materials scientist from the BRRI, had already collected some with a view to test it properly at their lab. We tried the two tests, namely the ‘particle size by sedimentation’ and the ‘roll’ test, recommended by Rowland Keable in his book ‘Rammed Earth Structures: A Code of Practice (1996, 2005)’. After following the book’s suggestions step by step we rolled the three different clay samples into three balls which we left to dry in the sun (see Figure 4.47). Recalling Thomas’ advice that the type of soil good enough for building would need to roll into a soft ball ideally when mixed with water’, we considered the soil from the area near the Chief’s Palace to be the best option but would still need to make the brick samples in order to compare.



Figure 4.47

The three balls made of different clay samples in order to test the three different types of soil. This is one of the tests recommended by Rowland Keable in his book ‘Rammed Earth Structures: A Code of Practice’ (1996, 2005).

A couple of days later, in order to make the earth bricks we needed to dig soil from the two potential pits; one located adjacent to the Chief's palace and the other in the slope near the junior high school. The soil from the former pit was almost red in colour and looked much smoother and mouldable, containing much less aggregate than the soil from the latter pit, which was darker in colour and contained much more organic matter. We dug enough quantity so as to make one earth brick of each. Using a couple of buckets we collected soil from the two pits and unloaded it outside Kamal's, a junior mason, house in order to make the earth brick samples. The earth brick compressor (see Figure 4.48) was commissioned by the Nka Foundation and made for Bashir, the chief mason. The latter together with his two junior masons brought the manual machine for compressing the earth bricks, an excessively cumbersome metal compressor, and started cleaning it with cooking oil which was given to us by Kamal's mother who had used it to fry the bean cakes for the millet porridge that morning.



Figure 4.48

The earth brick compressor handmade by a silversmith from a village next to Abetenim, and presented to the Chief of Abetenim.

After adjusting the compressor I helped the masons prepare the pozzolana-cement mix, then added the mixture to the pile of soil and slowly poured water turning it into mud. The experts at BRRRI suggested 10% of ‘pozzolana-cement’ mix in the soil. For the ‘pozzolana-cement’ mix itself we were advised to use one part pozzolana to three parts cement. After mixing all the materials together the two junior masons poured the mixture into the compressor, smoothed the top surface using a piece of old drape, in this case an old shirt, and finally compressed a few times until the first brick was ready (see Figure 4.49 – 4.50). The same process was repeated using the other soil sample and we finally had two earth bricks which were left to dry in the sun for four days (see Figure 4.51).

The following Friday the community labour was called to work off-schedule on the collection of soil from the pit next to the Chief’s palace. They dug two cars of earth on two different days, transferred it to the school campus and unloaded it under the mango tree behind the primary school building. Paul made all the arrangements for the car hire. The soil had to be wet and left overnight before mixing it with cement and pozzolana for the stabilised earth bricks. For the total amount of stabilised earth bricks required we mixed two cars of earth with three and a half bags of cement and one and one fourth bags of pozzolana. The next morning the two masons and the junior carpenter, Hussain, Kamal and Kwame respectively, myself as well as another member of our group started making the earth bricks at six thirty in order to get as many bricks made as possible before noon. The large canopy of the mango tree kept the sun out of our work space but even under that it got very hot at noon.

In his study of Djenné’s masons, Marchand’s description of the earth brick making process correlates closely with my own field first-hand experience and observations. Mixing the wet earth with cement and pozzolana proved to be a laborious process. The mixture had to look and feel homogenous before any attempt to start making the bricks. We all used the spades to mix the materials together. The headpans were the tools of measurement for the cement and pozzolana. One headpan of ‘pozzolana-cement mix’ to nine headpans of earth, where ‘pozzolana-cement mix’ was one part pozzolana to three parts cement as per the BRRRI experts’ recommendations. Hussain, allegedly the strongest man in Abetenim and hence the most resilient mason in the area, was responsible for compressing the bricks as it was the most gruelling task. First we ‘lined’ the compressor with cooking oil and then started making the bricks.



Figure 4.49

The shirt of one of the workers is used to smoothen the top surface of the brick before it is removed from the metal compressor and put to dry in the sun.



Figure 4.50

The earth brick compressor: the first sample is made.



Figure 4.51

Making the earth brick samples using the two different types of soil found locally.

We managed to make two hundred and seventy stabilised earth bricks until the sun went down. We laid the bricks in the sun one by one in order to dry (see Figure 4.52 – 4.54). The drying process is critical to the endurance of the bricks which the more spaced apart the faster they dry. The unpolished-looking compressor itself, commissioned by the Nka Foundation, had been crudely built manually by metalworkers in the nearby town of Juaben. The experts at BRRI attributed the breakable edges of the bricks to the compressor not being of the required level of quality. This was the only compressor we had in our availability regardless. It meant that we would have to be attentive to the laying of the earth bricks as their more perfect sides would need to be facing on the outside, so as to withstand weathering and corrosion, as the interior would be rendered. After all the required earth bricks were made they stayed in the sun for almost two weeks until they dried throughout.



Figure 4.52

Making of the earth bricks: mixing the soil, cement, pozzolana and water.



Figure 4.53

The first batch of the earth bricks are laid in the sun to dry for four days.



Figure 4.54

The second batch of the earth bricks are laid in the sun to dry.

4.4 The Lecture at KNUST

On Thursday 27th November I was invited by Professor of Appiah to give a lecture to the second year Architecture students at KNUST, which was an indelible experience especially because both the students and the Professor showed interest in the issues I raised. One of the most important issues addressed during the lecture in relation to the community-driven project in Abetenim was the need to understand the local context in order to come up with solutions which could contribute to longer-term sustainable adaptation.

Moreover, other themes discussed entailed: the significance of collaborations and institutional support in the implementation of the project; architecture as a process of unlearning and listening (with reference to Boano's paper at the Development Planning Unit, UCL conference in July 2014); the implications of the choice of building materials; the notion of materials as *fundamental element* in architecture; the duty of architectural education and its relation to practising architecture in that context; the role of the architect/designer and participatory design methods in this context; the meanings of sustainability and participation in architecture, both now necessary parts of most public planning processes; the role of training masons and artisans and working with their existing skills; the role of training in relation to enhancing the existing local building skills; the review of existing indigenous knowledge/building skills in coping with adverse climatic conditions and poverty, as well as reflection on the possibilities of enhancement of existing building skills; the relationship between masons and architects/designers; the physical and cultural forces as determinants of form, materials, and building methods; the gap between the larger narrative and the 'on the ground' experience through direct involvement in community architecture and building; how the NGO's prescriptive narrative of using local materials like earth, in the construction of new projects can be adapted and translated into the local reality; the need to integrate social, physical and cultural change in order to effect broader changes in the community. I also touched upon the need to embody informality in designing and practising.

Additionally, I introduced the students to the 2014 Venice Architecture Biennale titled, 'Fundamentals' curated by Rem Koolhaas, which I had visited just before travelling to Ghana. I specifically referred to two of its exhibitions, namely the 'Elements of

Architecture’ and ‘Absorbing Modernity 1914-2014’. The former explored the universally familiar components of architecture used by any architect in order to unravel their histories, whereas the latter considered the history of the modernisation of the sixty six participant countries with a view to unveiling the role of architecture within different narratives. A similar event to the Venice Biennale but in the African continent is Senegal’s major biennale of contemporary art, namely the Dak’Art³¹ to which Professor Appiah had taken his students the year before.

What’s more, there was an interesting conversation about alternative roofing materials to corrugated tin during the ‘questions and answers’ session after the lecture, as some of the students had proposed a traditional thatched roof for their projects. Professor Appiah prompted them to reconsider the materiality of the roof according to the context they were designing for and generally to be more perceptive to environmental issues. In ‘Sustainable Design in Ghana: An Ethical Reflection’ Rogers and Jensen (2012) describe a design project which focused on the construction of a house in a small village in the Upper East region of Ghana, undertaken by engineering students at Santa Clara University. The paper draws on the fact that ‘rural Ghanaians no longer have access to the timber needed for their traditional thatched roofs’ because of deforestation. As a result a ‘Western’ design had been implemented using zinc roofing sheets whose framing and installation required skilled and costly carpentry, and the ‘roofs were prone to blowing off in high winds.’ The materials and design for roofing, as suggested in the Nka Foundation narrative, ‘could be of vault, fired mud roof, or corrugated zinc sheets, which is the conventional roofing materials because zinc roofing stands the heavy rainfall better.’ It also affirms that ‘modern materials that are not simply expensive but thermally and acoustically problematic.’ Corrugated tin roofs, which would often be considered to be a ‘traditional’ roofing material nowadays, were ubiquitous not only in Abetenim but in most villages and towns around Kumasi despite the fact that tin is both thermally and acoustically problematic. Metal roofing sheets are also prone to corrosion³² as most people, especially in rural areas where there is more poverty, try to cut them themselves in order to save money.

In addition, we spoke about John Turner’s ‘Housing is a Verb’ and his research on informal settlements in Peru, as that to engage with and include informality as part of

³¹Dak’Art transformed into a pan-African biennale in 1996.

³²By cutting the metal sheets themselves the locals destroy the protective layer of zinc.

the design and build process in that context would be unavoidable. We agreed that much of the developed world struggle to allow space for informality. As Ortiz Flores stated at the DPU conference held at UCL in July 2014, ‘there is too much regulation, the new regulation should be *less regulation*.’

As soon as the lecture was over Professor Appiah and I had a conversation about possibilities of future collaboration which could take the shape of co-authoring a paper, and he also suggested that it would have been beneficial if I could have stayed longer so I could give a lecture to the rest of the architecture students. He explained that most architecture students had probably never been to a village like Abetenim and that ‘they are a particular crowd and it would be very useful to sensitise them to these issues.’ Professor Appiah was disconcerted to hear that initially we had been asked by the Nka Foundation to design a traditional compound house. Inasmuch as compound houses are unique incremental creations involving many centuries’ traditions and other dynamic and ever-changing processes, Professor Appiah considered it almost insulting that a group of foreign designers had presumed that the ‘replication’ of one of these structures would be possible in this context. We would be unaware of the real complexity inherent in the development of a compound house. Here, it is worth mentioning that compound houses, both the single-storey traditional compound house and the multi-storey compound house, constitute the traditional house type in Ghana and are usually built by accretion according to Afram (2009: 77). Single-storey traditional compound houses are ‘*made up of an unroofed courtyard surrounded by a series of rooms with a simple pitched roof*’ (Afram, 2009: 75). Each of these rooms are occupied by either different individuals or households (see Figures 4.55 & 4.56). Both Afram (2009) and the research architect at the BRRI argue that the compound house typology can be a solution to the housing needs of the urban poor in Ghana. In his paper titled, ‘The traditional Ashanti compound house: A forgotten resource for home ownership of the urban poor’ (2009: 77), Afram writes that:

“The sharing of services and utility spaces by occupant households, although may have its problems, creates a condition which invariably lowers the cost of construction per unit of accommodation. This is in turn experienced in the low rent charges, which makes this house type so popular with the low income class.”

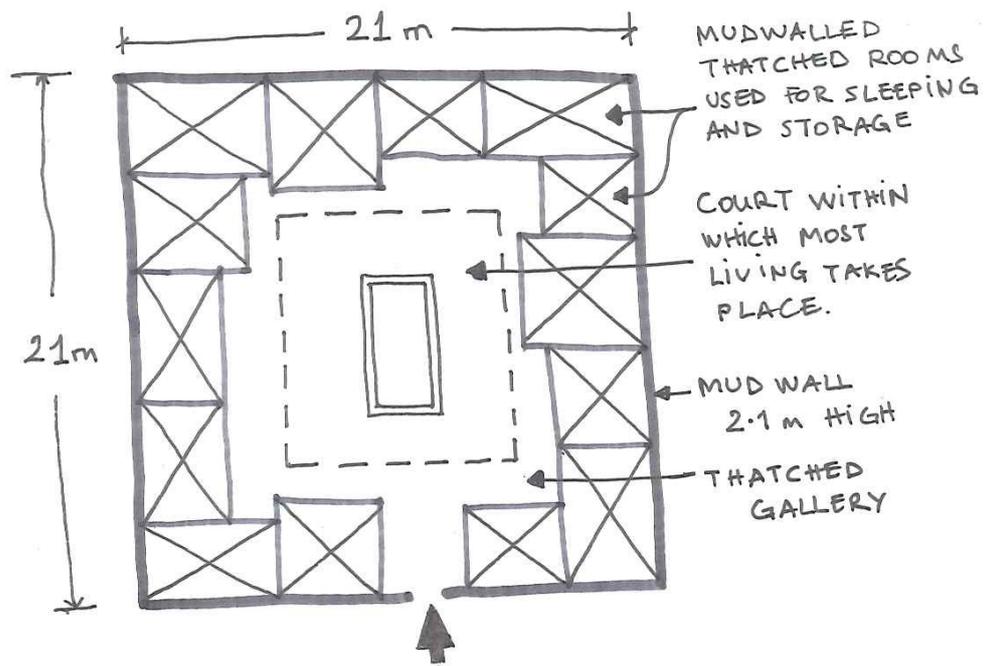


Figure 4.55

Sketch of a typical medium-sized compound house showing the room arrangement around the internal courtyard.

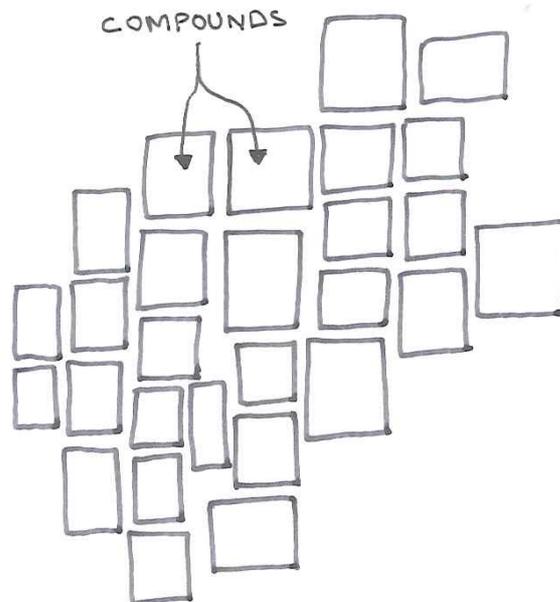


Figure 4.56

Diagram of a typical town composed of compound houses in the Ashanti region.

Although the compound house typology presents an indigenous and viable solution to the precarious housing circumstances of the urban poor, there are significant challenges in aspiring to build a compound house in an urban setting like Accra, where it is actually discouraged. This is an issue broached by the research architect at the BRRI, as he argues:

“Nowadays people can’t even build compound houses in urban settings. They don’t necessarily tell you that you can’t build a compound house but they have imposed such restrictions that they have made it impossible for anyone to build one. Unless you employ a rather expensive architect who goes and talks to the people at the city board then you can do it. There’s always a way, isn’t there?”

All the above information regarding the compound house typology would not be able to form part of this debate if I had not been in Ghana. Neither Professor Appiah, the research architect at the BRRI nor Afram’s paper (2009) would be part of this thesis if I had not been there. With reference to Afram’s paper (ibid.), among other papers, it is worth noting that it is published by the BRRI and is available only at the BRRI onsite library as a hard copy. Thus access to information becomes fundamentally important in determining where one is looking from and at.

4.5 Conclusions

As mentioned previously, this research looks at the process of the ‘on the ground’ experience through direct involvement in community architecture and building. For this reason, I participated in the Earth Architecture workshop from the period of 6th November to 7th December 2014. Due to lack of sufficient funds I was able to be part of the process only for the first four weeks of its stipulated eight-week duration. Eventually both the buildings of the canteen and kitchen were completed within the eight-week timeframe allocated to us, which mainly depended on the funds we had raised (see Figures 4.57 to 4.60, which show the building process). By the end of the first week of January 2015, both buildings were handed over to the local community, who have been using them till today. Paul, the Nka Foundation coordinator and Principal of the Abetenim Municipal Assembly Junior High School and Primary school, has sent us pictures of the buildings as used and occupied by the school children and other locals (see Figures 4.61 – 4.66).



Figure 4.57

Abetenim's mason pouring the concrete floor slab of the kitchen (Source: Nka Foundation).



Figure 4.58

The perforated mud brick wall of the kitchen; the mud bricks were made onsite by the local masons and our Nka group (Source: Nka Foundation).



Figure 4.59

The canteen timber structure is kept simple and the presence of the building is kept to a bare minimum (Source: Nka Foundation).



Figure 4.60

The canteen roof design focuses on its primary function as a canopy for the pupils, the teachers and the local community as and when needed (Source: Nka Foundation).



Figure 4.61

The canteen & kitchen as used by the school children (Source: Nka Foundation).



Figure 4.62

The canteen used by the school children during lunch break. The low walls are made from stabilised earth bricks. The timber pillars support the roof (Source: Nka Foundation).



Figure 4.63

The interior of the kitchen showing the clay stoves (Source: Nka Foundation).



Figure 4.64

The interior of the kitchen used by the cooks for food preparation (Source: Nka Foundation).



Figure 4.65

The exterior space between the kitchen and the canteen as used by the school children during their lunch break (Source: Nka Foundation).



Figure 4.66

The interior of the canteen showing the low walls built from the stabilised earth bricks, which were made on site, the timber pillars and roof structure as well as the underside of the corrugated metal roof (Source: Nka Foundation).

In short, the ethnographic method entails that the researcher gets to know and learn through engagement, which requires an ability to unlearn. Conducting participant observation as part of the ethnographic approach in Abetenim necessitated, among other things, my first hand involvement in the building process of the school canteen and kitchen. This process of physical making allowed me access to observe and research the wider complexities involved in building with earth, as well as to gain empirical knowledge of the material itself and the construction processes in this context. The combination of doing in-depth fieldwork, hands on practice and theory has given me a

unique understanding of the way such building techniques can be improved but also how they are viewed by the community.

I would not have discovered such invaluable insights had I not been present in Ghana. Thus, the fieldwork highlights that there is immense potential in employing ethnography as part of the design and build process within community projects in this context. In addition, it emphasises the value of engaging people on their own terms, listening to the local community's needs, and knowing what their capabilities are; it calls for the role of the architect in the field to be reconsidered towards one of 'listening' and 'unlearning' instead of imposing our own ideas of what those needs should be. The suggestion that architectural research and practice may benefit substantially from the ethnographic method is debated extensively in the following chapters and mainly in chapters 7 and 8.

Further, one of the themes which has emerged from my fieldwork in Ghana, and which is considered and debated at length in the following chapters and mainly in chapter 6, is the detachment of the Western-trained architects and designers from the actual physical construction site and processes of construction; from engaging with the realities of physical making; from gaining empirical knowledge about building materials and their behaviour and idiosyncrasies and so on. Marchand (2009: 61), referring to the modern Western architect's claim on rationality as opposed to the organic way of thinking and designing and building, writes that 'Reason, was the defining attribute of Western-trained architects and planners whose spaces were conceptualised objectively with the mind as opposed to being made with the body sensually immersed in its environment.' This very lack of bodily immersion in the space(s) and buildings of whose design I have been involved with in conventional architectural practice, is one of the driving forces that leads me to seek being part of the physical making process too. I always felt detached from the latter since I was at university reading my first degree in Architecture. Moreover, in "The Thinking Hand: Existential and Embodied Wisdom in Architecture" (2009), Juhani Pallasmaa illustrates the extraordinary power and capacity of the human hand. He writes that traditionally the architectural profession was considered as a craft; that, 'architectural ideas were created in close interaction with the actual physical construction at the site' (Pallasmaa, 2009: 64), and that it was not until the Renaissance period that the medium of drawing became a means of envisioning architecture. Referring to the profession in the West, Pallasmaa (2009: 65) agrees with Marchand (2009), in that, the modern era has reinforced specialisation and caused the

consequent distance, both practical and mental, between the architect's practice and the construction site and the realities of physical making, as opposed to "being immersed in the material and physical processes of making".

Additionally, the combination of the two disciplinary approaches, specifically of architecture and ethnography, has given the research a unique understanding of the ways that earth building techniques can be improved in the given context. The importance of thinking and designing in a holistic manner and according to climate and culture is highlighted. The fieldwork in Ghana, and the thesis at large, draws on approaches to the resilience and the potential for adaptation through architecture, workmanship and the physical work of construction and the realities of making. Also, modernity, specifically in relation to building materials and techniques, is a recurring theme during my fieldwork in Abetenim, and what the locals were talking about and wishing for. Marchand (2009: 18), also conveys the theme of modernity in his writings about the masons of Djenné and referring to the latter years of the 1980s and argues that, 'their once familiar scope of practices was confronted by a rapid encroachment of imported building materials and new technologies including cement breezeblocks, corrugated steel sheeting, and the use of formwork, poured concrete and steel reinforcing.' It therefore transpires that the focus needs to be on the locally available materials and the locally existing skills as opposed to the lack of certain materials or certain expertise as this could provide a better understanding of the relationship between building materials and skills set and wider networks which may contribute to the reinforcement of the latter. In other words, the fieldwork emphasises the need to 'see' this context, and the South at large, beyond its challenges and shortages, and instead focus on its strengths and resilience. Finally, the fieldwork experience and direct involvement in the construction workshop in Abetenim highlights that it should not be a matter of choice between the traditional and the modern; rather, the focus should be on the syncretism of the two which can contribute to longer-term sustainable adaptation in this context.

The following chapter, specifically Chapter 5, comprises four distinct secondary case studies illustrated by the research participants as typical examples of initiatives, projects and organisations, which utilize local materials, building practices and labour, as well as and various forms of training in order to implement their work on the ground. Both the primary fieldwork in rural Ghana and the four case studies are

considered as a lens through which the thesis investigates how different interests envision the social and spatial reordering of the area. This creates a comparative context through which similarities and differences are drawn out in order to first, understand the local social context in which these building practices are considered. Second, it ensures realistic and grounded recommendations.

Chapter 5

Building resilience through community projects

Chapter 5: Building resilience through community projects

5.1 Overview

In what follows is a concise description of four distinct case studies illustrated by the research participants as typical examples of initiatives, projects and organisations, which utilize local materials, building practices and labour, various forms of training, and which entail collaborations with local actors in order to implement their work on the ground. As explained in Chapter 3, these case studies comprise the secondary research data, and are situated in four different countries, specifically Pakistan, Swaziland, Algeria, and Zimbabwe, draw on approaches to the resilience and the potential for adaptation through the use of local available materials, architecture, workmanship, the physical work of construction and the realities of making, and consequently the empowerment of the local communities at hand. They are considered as a lens through which the research investigates how different interests envision the social and spatial reordering of the area. This creates a comparative context through which similarities and differences are drawn out in order to first, understand the local social context in which these building practices are considered. Second, it ensures realistic and grounded recommendations. Moreover, they provide a dialogue which enables the exploration of designing building/making and thinking in a holistic manner and from a culture and climate first approach, which addresses and engages with the specificities of the different contexts from a South-centric perspective.

As stated in chapter 3 besides the primary fieldwork in Ghana (see chapter 4), the research purposefully selects and makes use of the ensuing 4 case studies out of the 14 interviews, because each one of the four embodies a unique paradigm demonstrating diverse ways of enhancing resilience at a local level through the use of local available materials and building/making techniques; and because through the use of the ethnographic approach, or in other words through ‘being there’, they inform architectural research and practice in a given context and help imbue the local culture into the built environment. Case Study 1, ‘The Heritage Foundation of Pakistan’, is connected to the participant A3, who is involved in the rehabilitation and provision of housing for the devastated communities in the global South who have been affected by natural disasters, through a UK government department administering humanitarian aid

overseas. The focus and expertise of his work is on use of sustainable materials, thus inhibiting carbon emissions, veering away from the use of industrialized products, such as fired brick, cement and steel. This case study is looked at from the perspective of an expert involved with a foreign government department administering funds, technical and institutional support to a local Trust in Pakistan, who have set up an eco-training centre as part of their work on post-flood reconstruction and building resilience at a community level in the region of Sindh.

Case Study 2, 'The women-led collaborative project in Swaziland', is connected to the participant A5. The focus is on transferring knowledge and skills to women's groups facing extreme calamities in destitute communities in rural Swaziland, in order to help them to become more resilient long-term. This is looked at from the perspective of a foreign NGO operating in the South, and the UK, in order to transfer skills to enhance livelihoods at a local level.

Case Study 3, 'Capterre, Algeria', is connected to the participant A7. The focus is on the local knowledge and the preservation of the local vernacular skills in order to re-educate local expert masons on improved vernacular building methods, with a view to enhance resilience at community level. This is illustrated from the perspective of an architect and earthen architecture expert working with a State-funded local NGO involved with the rehabilitation of heritage in rural Algeria.

Case Study 4, 'Creating a National Standard for earth building in Zimbabwe', is connected to the participant A8. Its focus is on the implementation of Standards for earth building in Zimbabwe and the importance of institutional support in order to strengthen the capacity for adaptation and resilience at a local level. This is from the perspective of a rammed earth expert, practitioner, trainer and academic, who has long been involved in the adoption of rammed earth as a Standard across the Southern African Development Community (SADC)³³ region.

³³The Southern African Development Community (SADC) is a Regional Economic Community comprising 15 Member States; Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. Established in 1992, SADC is committed to Regional Integration and poverty eradication within Southern Africa through economic development and ensuring peace and security.

All four secondary case studies deal with similar core issues and challenges in the field, which manifests that there are convergent themes across the South. They cover a wide range of approaches to resilience and adaptation through the use of local available materials and skills in construction processes, which they explore empirically from a variety of geographic regions, from different perspectives and steeped in very diverse circumstances. This reinforces the idea that a South-to-South dialogue may benefit the periphery. The ensuing studies consider how being immersed in the field, that is by 'being there', engaging with the local community on all levels including physical making, facilitates the holistic understanding of the local contexts and thus informs the design and build practice in the South in a way which empowers the communities at hand; they focus on building upon existing knowledge about locally available materials and existing skills, and explore the practices of designing, building and making at its deepest in order to be able to (re) interpret them and thus enhance the resilience at a local level. They focus on and intensify the available skills, knowledge, and local resources despite the scarcity of means and lack of time. They regard training, such as the material and physical processes of making and/or as part of capacity building, as a tool and concept to think about resilience and empowerment of the local community at hand. Finally, they emphasise the value of collaboration(s) with local and non-local actors in the field, institutions and affected communities alike, who are from diverse backgrounds, expertise and capacity, in order to implement their work on the ground in meaningful and coherent ways.

As I explain in chapter 3 (see 3.2.1 Change of field site), I had planned to undertake my primary fieldwork in Karachi with the Heritage Foundation of Pakistan (HF), a local Trust who have set up an eco-training centre as part of their work on post-flood reconstruction in the region of Sindh. The plan was to participate in their construction training workshops and gain precious insights into the project and community and concurrently carry out a number of semi-structured interviews with the HF's director, the renowned architect, heritage conservationist and humanitarian aid worker Yasmeen Lari, the research team, and other stakeholders in the field. Although this initial plan did not materialise due to political conflict in the region, I had the opportunity to join the Earth Architecture workshop in Ghana through the Nka Foundation instead. Nevertheless, prior and during the initial months of my PhD, I met up with the founder of Heritage Foundation Yasmeen Lari and also had several email exchanges and Skype conversations. The participant A3, who works with DFID and is a humanitarian aid

worker and lime expert involved in reconstruction projects in various regions of the global South including Pakistan, works closely with the HF and in particular with Lari. In fact, it was the participant A3 who put me in touch with Lari and the HF in 2011 while I was collaborating with Reset Development, a UK charity, on a two-year programme titled ‘Affordable Low-Carbon and cyclone resilient housing in Sathkira, Southwest Bangladesh’ (see chapter 3, 3.2.1 Change of field site). The participant A3 had been a collaborator of Reset Development before. Therefore, I had been in contact with them and following their work in Pakistan for almost 2 years prior to starting my PhD. As soon as the participant A3 returned to Edinburgh in August 2014 for a couple of weeks before heading back to Pakistan and Indonesia, I grasped the opportunity for an interview, when we discussed their work with the Heritage Foundation mostly. Hence, the first case study illustrated here is about the latter.

5.2 Case Study 1: The Heritage Foundation of Pakistan

The work of the Heritage Foundation (HF) of Pakistan involves, among other activities, the training of local artisans on building for disaster risk resistant construction with improved vernacular methodologies using earth, lime and bamboo in order that it is seismic as well as flood resistant. The HF approach encourages self-building and nurtures self-reliance. The research participant who discussed their work with me is a Humanitarian Advisor for the UK Department for International Development (DFID) based in Islamabad, Pakistan and collaborates with the Heritage Foundation on various projects. He has been working through DFID with the Heritage Foundation since the immense flooding in southern Pakistan in 2010, to help deliver genuinely affordable, sustainable, flood proof and climate protected homes built with locally sourced materials, such as bamboo, clay and lime, utilizing local skills and labour.

The Heritage Foundation of Pakistan is headed by its founder, Yasmeen Lari, who is as well as Pakistan's first female architect, an architect and architectural historian, heritage conservationist and humanitarian aid worker (see Figure 5.1). She is best known for her involvement in the ways architecture can provide social justice and grounds for an equitable society. After she retired from her architectural practice in 2000 she devoted her attention to projects in rural Pakistan. Since the devastating earthquake in 2005, she has devised several programmes for post-disaster communities.



Figure 5.1

Yasmeen Lari, co-founder of Heritage Foundation – who have been working with bamboo and lime in Kashmir, Swat valley and Sindh (Source: Participant A3).

The list includes Heritage and Tradition for Rehabilitation and Development, Build Back Safer with Vernacular Methodologies (BBSVM), and Women centred Community Based Disaster Risk Management (CBDRM). These programmes have formed the basis for the World’s largest zero carbon footprint shelter program, as well as disaster-compliant low cost initiatives, which have fostered pride and self reliance among communities. By linking heritage with rehabilitation and development through green sustainable vernacular construction techniques and revitalization of craft skills, the programmes have led to large-scale economic empowerment of women and economic regeneration within communities (see www.heritagefoundationpak.org).

Emphasizing the significance of collaboration in order to implement projects successfully, or at least with more success on the ground than what otherwise may be, the participant mentioned the work of a local field collaborator to the Heritage Foundation namely the HANDS project Pakistan. HANDS’ work is steeped in training and educating people how to build better with bamboo, how to make better structures and use lime which they had not used before in that part of Pakistan despite its availability (see Figure 5.2). Another principal collaborator of the Heritage Foundation is the International Organisation for Migration (IOM).



Figure 5.2

The critical elements to affordable, flood resistant and sturdy homes: bamboo and lime (Source: Participant A3).

Their work involves bringing in the Heritage Foundation crew to put staff from various local NGOs through comprehensive training programmes and workshops. The latter are performed at a didactic level, followed by putting theory into practice at the Heritage Foundation test village specifically the eco-village Moak Sharif in the Tando Allahyar district of Sindh. The trainees go back to their village and start working. The IOM trainers who have been through numerous workshops with Yasmeen Lari for a while or even the Heritage Foundation crew provide some monitoring. Stressing the importance of effective site monitoring the participant states:

“Inspection and monitoring is really challenging to do beyond a few hundred houses, you know try to do it to 20,000 houses across a few hundred villages is very difficult. So IOM are very organised in having many many cars, many many people, managers, and sub-team field managers, and that’s about a good team. That all sounds great and IOM did an amazing job run by a Portuguese engineer from Lisbon called Manuel and under his almost fascist management, we would call him Salazar, but you know he really got the job done.”

Upon realising that none of the above collaborators had any clue on using lime properly the participant contacted two of his friends (S. Holmes and B. Rowan) who are the leading lime experts in the UK. The former is the president of the UK Lime Forum and has written some of the most important books on the subject besides his involvement in a large number of restoration projects. The latter's work is on actual delivering and training for straw bale and natural build housing in the UK. So this combination of academic and practical experience over decades not just a few years, as well as their love for teaching and sharing knowledge is aptly described below:

“They are phenomenal. They are genuinely passionately interested in it in every single detail and also about communicating it to other people. That’s why Bee is so excellent, I mean my God you can know everything about something but can you tell someone else in a way that they will remember it? You have to transmit it with love and that’s why she is a phenomenal teacher.”

In 2012 the participant A3 suggested to HANDS project Pakistan that they get involved with Holmes and Rowan in relation to training on using lime properly which they (HANDS) had not used before in that part of Pakistan despite its availability. HANDS immediately agreed as they themselves needed expert guidance on using lime in order to educate local communities on how to build better structures with it (see Figure 5.3). Between 2011 and 2013 the Heritage Foundation in collaboration with the IOM and HANDS supported the reconstruction of 52,000 houses in Southern Sindh, which were low-cost and low-carbon houses, with a major emphasis on community based training in specific design adaptations, such as extended roof eaves, and material use, such as improved soil analysis, use of (hydraulic lime), and so on. In 2013 DFID approved an £11m grant so that the three partners continue their successful shelter work in the same region. Thus, from October 2013 the three partners embarked on an 18 month programme to support communities to rebuild 50,000 more flood-resistant shelters (The information about the DFID approved grant was disclosed to me by the participant A3). Also, an artist friend of Rowan agreed to create some drawings showing instructions in so that communities who do not read or write could see the process step by step, from slaking to taking protective measures for their eyes to seeing different mixes depending on the soil type.



Figure 5.3

Lime is “slaked” with water in a pit for days in advance (Source: Participant A3).

A step by step guide with drawings showing each step of the process is vital for the dissemination of information as well as lessons learnt from various projects as the participant A3 advocates:

“Even when we look in the UK for a guide on building with lime, you don’t find many books there. Very few actually have drawings and step by step explanations. None of them will tell you these are the mixes to use because that depends on your soil type although if you are using just a simple mortar mix I suppose it’s not that hard but it usually is hard, you need to do all these tests.”

Another important aspect of the work that the Heritage Foundation is involved with is the use of non-conventional sustainable materials such as bamboo, lime and earth, for disaster risk resistant construction to prevent environmental degradation. The use of lime is highlighted not only within the work of the Heritage Foundation but also of other humanitarian agencies operating in Pakistan at large, such as the IOM, HANDS, ACTED, Strawbuild, and so on, especially from 2011 onwards. This is because limestone, an ingredient commonly available in Pakistan, ‘when burned and combined with local clay-rich soil or pozzolans (locally available burnt brick dust or burnt rice husk ash) can create low cost, flood resilient building components: foundations, wall blocks, renders, plasters and floor and roof screeds that remain stable in wet conditions and under water’ (International Organisation for Migration 2015) (see Figure 5.4).



Figure 5.4

Critical DRR measures: house on raised platform, lime-strengthened external plaster, roof protruding over walls with longer eaves than usual (Source: Participant A3).

Monsoon floods (or extreme rains) in the years between 2010 and 2012 left an average of 700,000 houses per year devastated in rural Sindh, which means approximately 5 million people destitute each year (ibid.). Thus, the need for more robust housing is critical across the region. The provision of housing and rehabilitation of the destitute communities is what the HF are involved with; with limited resources and funds they provide housing of high standard of construction which withstands fierce rainfalls and flooding. The Heritage Foundation are experts on the vernacular building methodologies of this region, which includes local, natural materials such as earth for the walls (whether of adobe, cob or wattle and daub), and thatch for the roofs (ibid.). In addition, both Lari and the participant argue that local communities are familiar with and skilled in building with these materials; yet, they need training on how to improve them in order to withstand intense rainfalls and flooding (This information was disclosed to me by Lari through an email, and the participant during the interview in Edinburgh). Since earth building is vulnerable when exposed to water – it either erodes or even dissolves – a large part of the HF’s work focuses on improving the vernacular methodologies of this region by training and educating the affected communities on how to effectively use lime to stabilize earth buildings. Lime, besides being low carbon, is considered more affordable than conventional materials, such as cement, fired bricks and so on, in this context. Hence, this makes lime a significant material for the flood prone areas of Pakistan, and certainly within the work undertaken by the HF in the region. The most important elements of the flood proof homes built by Lari and the Heritage Foundation are the roof and walls. With reference to the roof they stuck rigidly to the idea of using five compound bamboo joints and no main ridge beam (see Figures 5.5, 5.6 & 5.7). These roofs are almost flat on a small incline with good overhangs. They are covered in mud, not stabilised with lime, and because the bamboo is susceptible to insects and decay the roof needs to be replaced every five to fifteen years. In comparison, the roofs made by HANDS are built with one single steel beam with approximately a foot and a half of overhang on each side and then bamboo rafters going down which can be painted and changed easily. Both roof types have good overhangs. The environmental impact of the two in terms of carbon emissions as calculated by the participant (using the table of embodied energy for building materials provided by the University of Bath), and considering that a 50kg steel beam is used as in the case of HANDS, is actually very small.



Figure 5.5

These roofs are far stronger than typical roofs made from steel girders and bamboo poles (partially because of the shorter distances between each girder & rafter). So they can be used as “refuge platforms” in case of future flooding (Source: Participant A3).



Figure 5.6

An extended eave built by local people during Heritage Foundation training. This will prevent rain flooding into the top of the wall. The ring beam runs below these bamboo girders, now out of site, covered in earth plaster (Source: Participant A3).



Figure 5.7

Bamboo rafters placed at around 50cm centres on top of the bamboo girders. This roof offers greater structural integrity than the popular model of two steel girders and widely spaced bamboo rafters (Source: Participant A3).

The main difference is in their cost as the houses delivered by HANDS are cheaper despite the use of steel. In relation to the walls, the most important criterion for both organisations was to find a means to make the walls withstand the effect of being immersed in water for hundreds of days. What Holmes and Rowan did in collaboration with HANDS was to show them that clay and lime together, measured and used in the right proportions, can be utterly water resistant. The training of the communities therefore entailed the making of hydraulic lime as the participant describes:

“Stafford and Bee go to villages with a bucket, and there’s a block in the bucket, and there are five buckets, each one with a different block of different mixes and you can take the block out and touch it and feel it, and some of them had disintegrated completely. If they don’t resist water there’s too much clay. And you take this block out and say this is really hard, it’s gone hard under water and you imagine that in your wall under water, lots of them and foundations built with this stuff. It’s not going to fall apart, it will get hard, it’s hydraulic you have mobilised it, the physical phenomenon of clay and lime binding together to make hydraulic lime. It seems really appropriate. So the walls can be thinner and there’s so much less work because you know it’s resilient whereas the Heritage Foundation’s walls have a lime plaster render on the outside which is susceptible to cracking as it has not been dried properly or cured. The water gets in and the wall will start to soften up but it’s so thick so it will take so many months for it to actually go through so we don’t know.”

The question here is whether or not the use of lime and clay locally is vernacular was brought up several times during the interview. The use of lime and clay may not be part of recent vernacular traditions but one which most probably dates back to the architecture that developed under the patronage of Mughal Emperors period, from 1600 to 1850. But ‘these are different peoples’ the participant argues referring to the Mughals. In an attempt to define the essence of the local vernacular the participant judiciously alludes to the restoration of the Mughal round domed roofs, as he states:

“I climbed on to one of these amazing round domed roofs once when there was a very old guy doing some restoration and he explained to me exactly what they put on it which was gypsum which is like polyfiller and they can shape that, followed by a 2:1 lime mix, so slake lime with sand with a bunch of hessian fibre. He left it in the sun and then on top of that took powdered soap stone which makes it go like eggshell and it is completely waterproof, it makes it go very smooth very white and protects the lime and the lime protects the gypsum and all of that creates a really thick mass. I think that’s the vernacular. Those are all locally accessible materials. They have this ancient way of burning the lime and the gypsum in these incredible kilns using renewable bushes.”

The Heritage Foundation have undertaken a study of the five local different types of housing which existed before the immense flooding in the region of Sindh in southern Pakistan in 2010. Some of the houses stand up quite well to floods considering that this is the principal climate related challenge in that context. Sindh, as described by the participant A3, is an enormous flat plane about half the size of Italy, virtually flat for hundreds of miles. Out of the 48 million people populating it, some 23 millions of them live in scattered villages (<http://www.pakinformation.com/population/sindh.html>). The local vernacular tradition for coping with this destructive natural disaster dates back to the Indus Valley Civilization which is 2500-1700 BC whereby they would build massive raised bands similar to small mountains where they built their cities and upon which they baked bricks using local clay, mud, and rammed earth (<https://www.britannica.com/topic/Indus-civilization>). During the interview the participant A3 explained that, with respect to the types of materials used as part of the vernacular traditions in the region, one mostly encounters the wattle and daube method, which is sticks and mud, whereas further north in Sindh and other parts of the country, thick walls made out of mud cob are used essentially. On this account the extensive use of bamboo structurally by the Heritage Foundation raises questions as to whether bamboo is commonly used in vernacular architecture in this context. The participant A3 also disclosed important information about bamboo in this context, a summary of which is as follows: Bamboo does not grow naturally in the area as it needs a lot of water and that much of the water locally is slightly saline brackish, which makes it unsuitable. Hence the HF source their bamboo from plantations on private farms in Punjab, Sindh,

and Khyber-Pakhtunkhwa (KP), and managed by the organisation itself. By the end of the 2011 reconstruction project the HF were reaching maximum supply capacity of bamboo and the price was starting to increase, which made it unaffordable for a short period of time. The participant A3 demonstrated that importing bamboo from either India or Bangladesh has proved a problematic endeavour, which led to the idea to start bamboo production locally in every village so that in a few years each community has their own bamboo, and that their main predicament would be funding such an initiative as they have very limited funds allocated per village. The cultivation and production of bamboo touches upon various factors of a community's life such as, sanitation, toilet provision, the integration of services with the housing facilities, public health, seeing the interconnectedness of all these aspects as a whole not just a series of parts, thus in other words sustainability and its relation to the system as a whole, as the participant A3 cleverly describes:

“We need water to start the plantation in every village which we don't have for many months of the year. There's no water, so you probably connect it with the sewage or grey water outlets but most people don't have any toilets or any plumbing or any drained water so you would have to either persuade the people to pay for that or build it yourself with your money. It's a huge complication on top of all. It would be nice for it to be integrated but at this point in time it's not integrated.”

In addition, the incapacity and weakness of the different sectors of development, such as housing, agriculture, sanitation and education to be integrated and/or connected with one another in order to obtain a better understanding of the community and its needs, and eventually be able to collaborate with one another remains an issue. This is broached by the participant A3, as he addresses the shortcomings of shelter programmes:

“It's really interesting to see how much training people have had or bringing them up to speed on public health and how many people just still don't build their own toilets. At the moment the women have to go out into the bush in the dark so they won't be seen by these guys. Then there is the risk of being raped. This is a huge problem. We can't even talk about housing or agriculture or education without facing the facts of violence

against women and girls. And yet you have a shelter program, you don't have a girls' protection program. But can you integrate something into your shelter program to protect the girls? Maybe a solar light will give her a little bit more safety at night or positioning the toilets to a place that's safer to the house."

With reference to the new houses which the HF are involved in building in collaboration with their various field partners, there is a lack of toilet provision despite them striving to persuade the partners that the onus should be on the beneficiaries building their own toilets in order to tackle the open defecation problem. This would mean that the beneficiaries use the same materials to build toilet blocks while building their houses. The beneficiaries can neither claim ownership of the houses nor the land. These households live below the poverty line and generally have almost no legal status but because they do have to be legally recognised in the country, they have a civil ID card which generally confirms what district they come from but not a street address unless they live in the city. Thus, the landowners allow them to live in the villages as they constitute their workforce, in other words manual labourers in the fields. All the harvesting of wheat, rice, all the spraying with chemicals, all the weeding, etc., is done manually which keeps millions of people employed to some degree. The labourers earn about forty five to sixty dollars per month and a piece of land to build on, but without any services. Contributing to the imbalance is the fact that the state provides them with neither infrastructure nor services. Touching on the process of allocated funds for school buildings in this context, the participant A3 explains how the corruption at the local/community level makes it impossible for school furniture, toilets or maintenance to be had, as he states:

"The State has a contract to provide education to every child in Pakistan. Most kids in Pakistan don't get that and when they do the quality of the teaching is so low they would be better at home learning to do something useful. Yes it's so bad and utterly corrupted they would give 120 dollars per quarter for the school materials and furniture and so on and that is almost always shared by the school authorities and the head of the school and the head of the village who will share that money to have a party. The teacher told me all about it. And you never see furniture in the school, you never see toilets in the schools, there's no maintenance. It couldn't be worse off. The

British Government's big thing in Pakistan is education so they are spending hundreds of millions on that and we realised that to do anything for education you go for low-cost private schools cause the cost per child per year is much less than to prop up that awful state system which is just not functioning. It's awful and at that scale it's just scary."

Finally, the work of the Heritage Foundation emphasises the value of collaboration with local and non-local actors in the field in order to implement their work on the ground. These are collaborations with actors from diverse backgrounds, expertise and capacity, in order to gain a more holistic understanding of the affected community, and to impact the community at hand in meaningful and coherent ways. The empowerment of the local communities is considered as the highest common factor within the work of the Heritage Foundation as the building materials they choose to build with are explored and developed locally, that is in the periphery itself, which makes a meaningful contribution to the communities at hand (see Figure 5.8 & 5.9). Here, the category of building materials is considered as a tool to think about the resilience and empowerment of the local people. Echoing Turner's view that, 'A material is not interesting for what it is but for what it can do for society' (Turner, 1972), the Heritage Foundation's cultivation and production of bamboo touches upon factors such as, sanitation, toilet provision, services, infrastructure, public health, and sustainability. One of the programs for post-disaster communities, which the Heritage Foundation have devised is the Build Back Safer with Vernacular Methodologies (BBSVM), which entails the improvement of vernacular methodologies and enables the reconciliation of the two narratives, the global and the local. This results in improved vernacular methodologies in order to cope with the increasingly diverse climatic conditions and poverty. Their work combines heritage with rehabilitation and development through green sustainable vernacular construction techniques and revitalization of craft skills, in order to achieve longer term sustainable adaptation in this context. The improvement of vernacular methodologies entails the use of the indigenous local approaches and materials as a basis, which are informed by globalised methods and thinking in a way that is meaningful to the affected communities. In addition, their work reinforces the idea that the only way to make a contribution to the field of post-disaster reconstruction is to rethink it from culture. Finally, the work of the Heritage Foundation demonstrates that despite the scarcity of means, lack of resources and time, focuses on and intensifies the available skills, knowledge, and resources, and privileges the collective benefit.

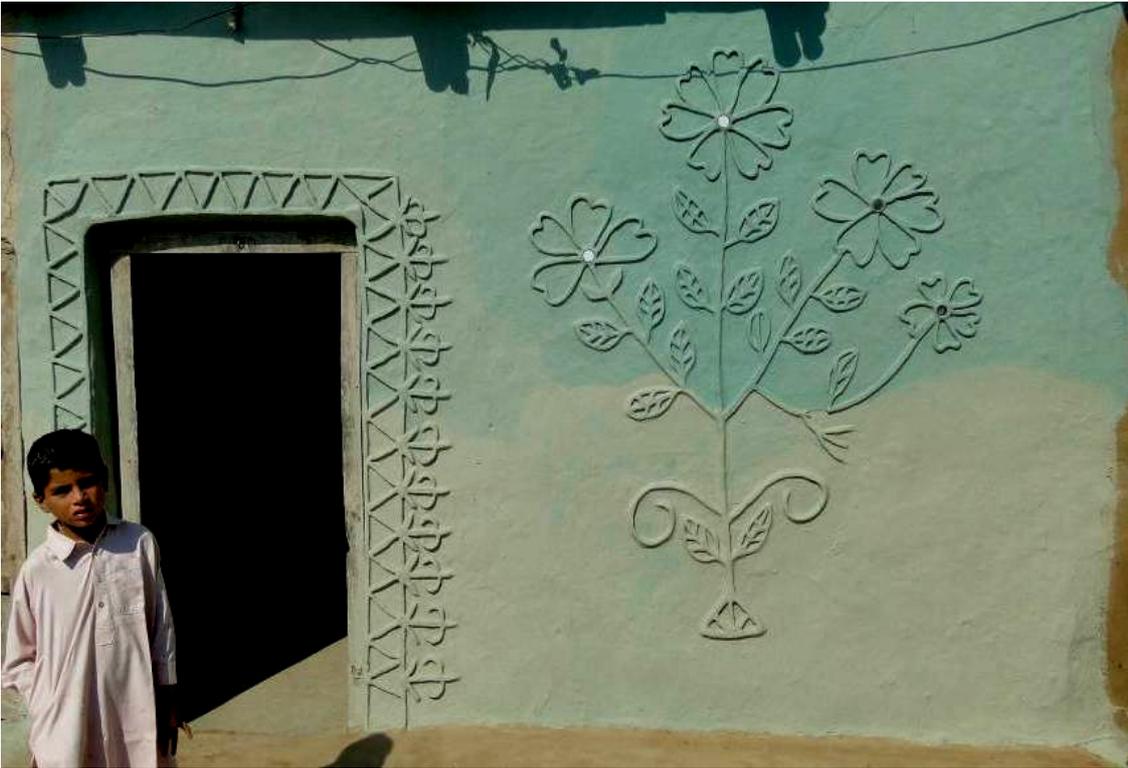


Figure 5.8



Figure 5.9

(Figures 5.8 & 5.9) Proud of their new homes, some local people are decorating them – showing their pride and ownership (Source: Participant A3).

5.3 Case Study 2: The Women-led collaborative project in Swaziland³⁴

This section is about a collaborative project, which was completed in Swaziland in August 2013 by five organizations, specifically, The Women into Construction, Positive Women, Swaziland Positive Living (SWAPOL), Tools 4 Life, and Carpentry Skills for the Women of Swaziland. The research participant A5 who discussed the project with me is from The Women into Construction team who ran the project in the field. ‘The latter is an independent not-for-profit organization that promotes gender equality in construction. They provide bespoke support to women wishing to work in the construction industry, and assist contractors to recruit highly motivated, trained women, helping to reduce skills gaps and create a more gender-equal work-force’ (see <http://www.womenintoconstruction.org>). The opportunity for a project in rural Swaziland came about because local HIV positive women were looking for ways to make their communities more self-reliant and resilient, and they realized that there is a market for carpentry products, particularly benches, tables and coffins. They then asked SWAPOL to help them access the training they needed to build these. SWAPOL is a non-governmental organization operating throughout Swaziland to ensure that people living with HIV/AIDS and affected communities receive the assistance and support they need. SWAPOL in turn approached Positive Women, who have been instrumental in setting up the Tools 4 Life project. In short the idea was that the Women into Construction/Positive Women, Tools 4 Life team would set up a group of Swazi women to be able to run their own companies (see Figure 5.10). There were two groups of women from two different parts of Swaziland and set up two cooperatives to work together. Then the idea was to give them a microloan enough for them to be able to buy the timber and to continue. Here is how the participant A5 and her Women into Construction team found out about the need for training in rural Swaziland:

“I was reporting back to our funders one time and they said ‘oh we have been approached by a charity and local HIV positive women in Swaziland have asked for carpentry skills. They want to be able to build things that they can sell and particularly coffins. When I went over there you could see a community that if it wasn’t for HIV would work very well. And even though 26% of the population in Swaziland is HIV positive,

³⁴(For further information on the project, see: <http://www.positivewomen.org/>)

which is the highest in the world, there was real stigma about having HIV. There were some communities where there was 70% but even still if people know you are HIV positive they don't really want you in their community so it makes things very difficult."

There is the wider belief that rural communities grow their own food, they are quite self-sufficient, build their own round houses made of mud and earth which have mud floors and are cool inside which is much needed in Swaziland. But in this particular village 'things were really quite desperate; communities are starving and are in a very difficult situation'. A whole generation had been lost through HIV 'so there were children and there were the old people and in the middle there was hardly anyone, there were certainly no men'. What further adds to their vulnerability is that traditionally women in Swaziland have no rights to property; they are treated very much as minors and have the same rights as children. It is all done through the husband so anything they do has to have approval from the men in the community. And with the latter having either died of HIV or gone to South Africa for work, this community is left with women trying to look after the elderly and the children.



Figure 5.10
The team: the carpenters, film crew, and Swazi women trainees (Source: Participant A5).

Thus, they have formed a support group who managed to indirectly contact the Women into Construction team, and ask them to bring a group of young female carpenters out to Swaziland and set up a project to teach the women how to make things that they can sell. The key priority for the team then was to enable and empower the local women to take a big step and stand up for themselves so that they help everyone else in their community. It took the Women into Construction/Positive Women, Tools 4 Life team a few days to swiftly sort out the timber upon arrival in Swaziland before they could actually start the training workshop. In addition they brought over tools and paid for the materials as well as for the actual project. The local charity had organised for the training to take place in a little community centre and had also organised the local women participants. The team spent one month sharing their carpentry skills with eight Swazi women who learnt how to build benches, tables and coffins (see Figures 5.11 & 5.12). Referring to the nature of the training itself the participant A5 stated:

“I think both training and awareness of what you are building is really important. We were just building things for the women to sell so that the community could be more resilient but actually what we were building was an understanding and appreciation of the methods of building that have thrown up over the centuries and which are very effective. People tend to think that new is best and we saw a lot of communities where you would have these little round mud huts with a thatched roof. But then people would want to build with breeze blocks because they see it as the Western way and think it’s going to be better. People need to be made aware of how good their existing methods are and how that can be built on.”

Once the training workshop was completed the Swazi women realised that in order to set up their own businesses they would need some additional skills on business training. They have since formed two co-operatives in their villages and have also organized bank accounts. Each co-operative has its own workshop and both groups have several orders, mainly for benches. At the time of the interview which was in September 2014, the participant A5 briefly mentioned that transferring the skills to others would be the next stage of the project. Hence a plan to go back to Swaziland and develop the project further was articulated as follows:



Figure 5.11

The Swazi women are trained on carpentry skills as a way of pulling themselves and their families out of poverty, and giving them some financial stability (Source: Participant A5).



Figure 5.12

The Swazi women trainees assembling benches outside (Source: Participant A5).

“When we go back the plan is for us to teach the women that we worked with and also some new women. But the women themselves had already talked about showing others, not just women but some of their children you know, passing on those skills and now they have got the tools as well, we left the tools with them. And show them how to look after them, how to sharpen them and that kind of thing. And then the next stage hopefully in a few years’ time will be to bring some of the women from Swaziland to Malawi to teach the Malawian women to build up a similar project.”

This is a successful example of a community development project which demonstrates continuity, and community empowerment, as the Western-trained practitioners really listened to the community’s needs, and asked the right questions in the field. The project genuinely involved and empowered the local community through the training and building process by teaching them skills to enhance their livelihoods and work as design professionals in destitute communities; the kind of skills required for places, which have no infrastructure, and where design is not part of the development agenda discourse; the kind of skills required to deal with the constraints of real world problems, like poverty, scarcity of means, lack of resources and time, inequalities, peripheries, access to sanitation, housing shortage, informality, and so on and so forth. This case study has many similarities with the primary fieldwork in Abetenim, as they both discuss how the use of ethnography as part of the training and design practice facilitates the holistic understanding of the local context and empowers the communities at hand. This is a paradigm that considers the empowerment of the local communities as the highest common factor. This case study considers the category of training as a tool and concept to think about resilience and empowerment of the local people. Finally, this collaborative community development project emphasises the value of collaboration with local and non-local actors in the field in order to implement their work on the ground, and demonstrates that despite the scarcity of means, lack of resources and time, focuses on and intensifies the available skills, knowledge, and existing resources, and privileges the collective benefit.

5.4 Case Study 3: CapTerre, Algeria

The Algerian Centre for Earthen Cultural Heritage, which is called CapTerre, is a public administrative institution under the Ministry of Culture. Founded in 2012, the centre is located in Timimoun, in the province of Adrar. CapTerre's mission is to promote and raise the profile of earthen cultural heritage and associated know-how, with a view to rehabilitating the image of Algerian earthen architecture, and to ensure sustainable protection and preservation to the Algerian earthen architectural heritage. Their objective entails advocating architectural heritage in and of Algeria and promoting awareness that earthen architecture is universal and it is not located only in desert climates. There are innumerable examples of earth buildings all over the world. In the West earth building design has been adapted to the local climatic conditions despite the less ideal climates. The work of CapTerre involves, among other activities, the training of local masons on '*local forgotten building techniques*'.

The research participant A7 from CapTerre spoke to me in detail about a project he was involved with at the time of the interview. Its scope entailed the rebuilding of the four original walls made of adobe³⁵, which date back over one hundred years, surrounding the cemetery situated in the centre of the heritage town of Timimoun in the south of Algeria. The participant A7 disclosed to me the difficulties of experiencing obstacles from the local authorities as initially the latter intended to destroy all four walls due to lack of interest in preserving them. So they did destroy three of them and rebuilt them with cement until Cap Terre intervened in order for the fourth wall facing the main street to be retained and reinstated (see Figures 5.13 & 5.14).



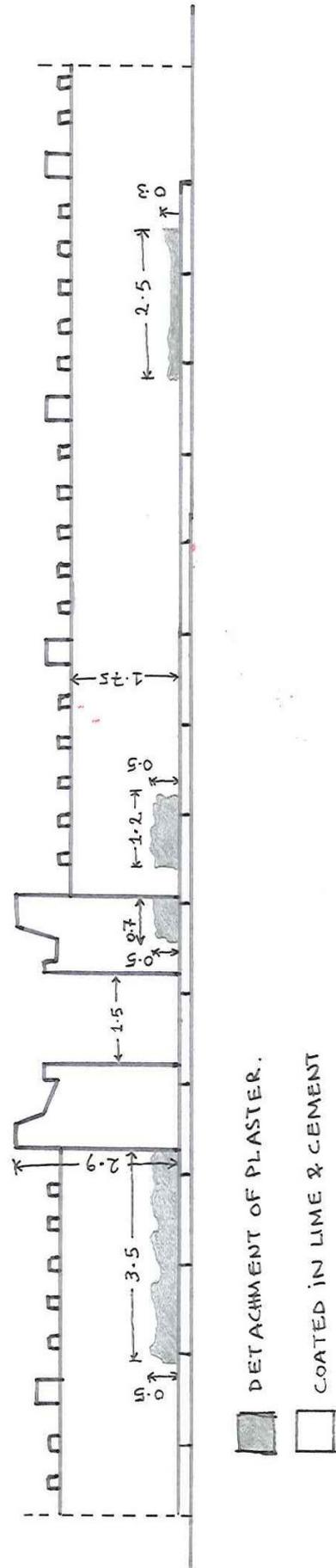
Figure 5.13

The only remaining original adobe wall, which CapTerre was involved in reinstating (Source: Participant A7).

³⁵Adobe is a building material made from earth and often organic material.

Figure 5.14

Sketch of the front elevation of the cemetery entrance showing the areas in the adobe wall, where the plaster is detached.



The participant A7 explains in detail how the story unfolds:

“It was ridiculous because the walls were good, they did their job, it was just the plaster you know. They did the plastering many times but they put cement plastering. Then they wanted to rebuild them in cement and they started with the first one, the second one, the third one and with the fourth one we said ‘no we have to stop this, this is ridiculous because the wall was perfect we just have to renew the plaster’ so we told them no. They don’t even give us the money to continue the project because there was money for this project until we told them we don’t need money, we just need workers from your side and materials, machines to transport the materials. So they agreed the first time and then we started working.”

Therefore in April 2015 he was appointed to run the training of local masons on reinstating the remaining adobe wall of the cemetery (see Figures 5.15 & 5.16). The local authorities finally assisted CapTerre by providing them with four masons to be trained. CapTerre were there *‘to also teach them how to control the earth mixes and the ratios and how to prepare the earth, how to prepare the wall and all of that but ultimately the masons know their work’*. Explaining the reason each material is used became of utmost importance albeit these are materials, which the masons are familiar with. As the quote illustrates quite successfully when one is so familiar with their surroundings they often fail to see what is special and valuable about them:

“Before we started working on the wall we did many tests to find out the properties of the clay we wanted to use, to find out the perfect mix between sand and earth. The traditional way to do the plasters is that only the experienced masons know the perfect ratio because they just use their eyes to measure the ratio. But that was not working all the time. They were using just their eyes instead of doing the test and didn’t even use straw. They don’t use straw in the traditional way so that’s why they don’t agree with CapTerre with the earth construction so I was trying to explain that to them and the reason we use each material. They were surprised because they found that everything we do has a reason. They said that ‘it’s our tradition to work with earth and we didn’t even know’. We did some tests to find out the perfect mixes.”



Figure 5.15

Local masons are trained on preparing the earth mixes and rebuilding the wall (view of the adobe wall from inside the cemetery) (Source: Participant A7).



Figure 5.16

Local masons are trained on preparing the earth mixes and rebuilding the wall (view of the adobe wall from the street) (Source: Participant A7).

CapTerre's technique of adding straw to the lime plasters demonstrates the need to improve local traditional materials, like lime, in order to enhance their durability and look. Here, by improving the case study refers to the process of adding straw to the mixture in order to strengthen the durability and resilience of earth buildings. Ghanaian architect and educator Joe Osae-Addo (Africatalks 2009) further highlights the need to blend modern approaches to thinking about materials, designing and building, with indigenous qualities and knowledge in order to achieve long term sustainability in the continent.

In addition, this echoes the work of the Heritage Foundation (see paragraph 5.2) which entails the improvement of vernacular methodologies in order to cope with the increasingly diverse climatic conditions and poverty. There are similarities between the work of CapTerre and the Heritage Foundation, in the sense that both combine heritage with rehabilitation and development through improved vernacular building techniques and revitalization of craft skills, in order to achieve longer term sustainable adaptation in this context.

In the African continent clay is found in abundance and according to Kéré (Louisiana Channel 2014), it is considered to be 'the poor people's material' in Burkina Faso where Kéré hails from. In reality, it used to be the poor man's material in the past as clay is a resource they have always had in abundance. In addition, there were skilled masons and other artisans familiar with building with clay, as the apprenticeship system was still part of the local culture, and used to keep the craft of building with earth alive. Yet towards to the latter years of the 1980s the processes of globalisation had an immense impact on the cultural heritage, including the vernacular building techniques, and gradually caused the lack of skilled or qualified labour and consequently the decline of this craft. As mentioned earlier in this chapter, Marchand (2009: 18), also discusses the impact of modernity and globalisation on the masons of Djenné, and argues that, 'their once familiar scope of practices was confronted by a rapid encroachment of imported building materials and new technologies including cement breezeblocks, corrugated steel sheeting, and the use of formwork, poured concrete and steel reinforcing.' A similar situation one also witnesses in rural Ghana, as described in chapter 4, as Atakpame (earth) building is associated with poverty and considered to be a thing of the past; it does not embody modernity the way the latter is perceived in this context. As a result, the existing Atakpame houses slowly fall into ruins due to lack of maintenance.

Yet the locals' aspiration is to embrace modernity, in the unique manner which is perceived and practised in this context, and to be able one day to afford a modern and more 'permanent' house from cast concrete blocks. Clay is a resource they have in abundance in rural Ghana too but there is no skilled labour to build with it. In chapter 4, it is mentioned that in Abetenim and the surrounding villages there are only two skilled masons who are qualified to build with Atakpame, and they are from Benin. Nowadays skilled labour is considered to be unaffordable in this context.

Harking back to the context of Algeria, giving earth a voice is fundamental. The materials needed for the masons' training on rebuilding the walls, such as lime and straw to mix with the plaster, clay and sand, can be found naturally in the region. Lime can be found naturally everywhere in close proximity to Timimoun, and it is very low in price. Clay and sand are also found locally as 'the desert contains these everywhere'. The available earth contained 90% of clay, which meant that they had to mix it with sand. Hence, a mixture of clay, sand and straw was used for the inner face of the wall, whereas for the outer one lime was added to the mixture in order to protect the wall against rain (see Figure 5.17).

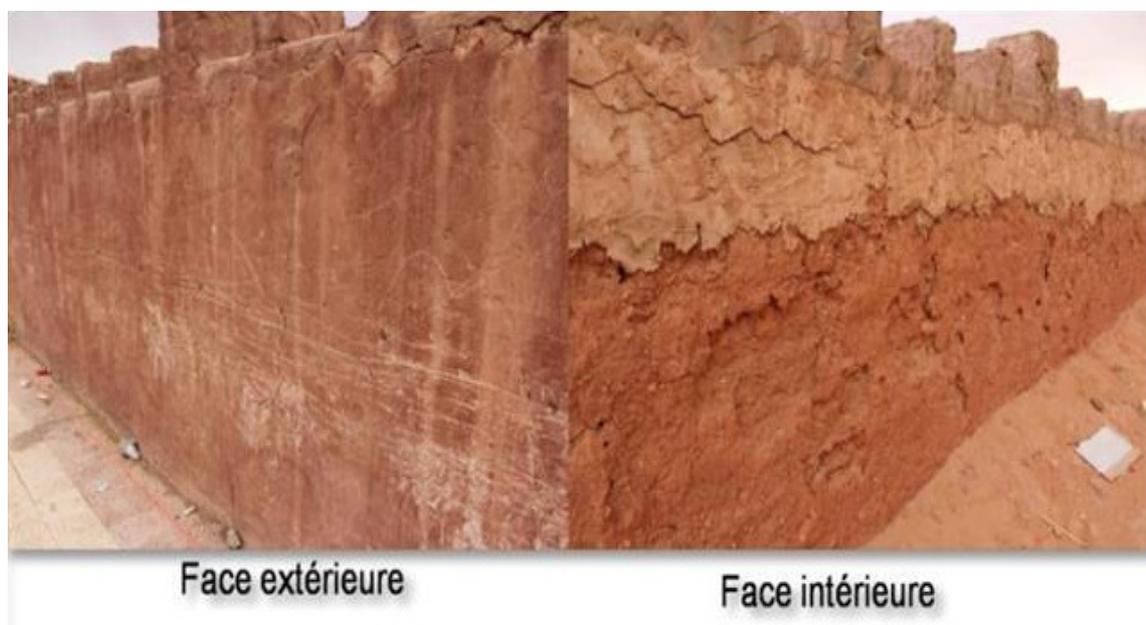


Figure 5.17

From left to right: view of the adobe wall from the street; view of the adobe wall from inside the cemetery (Source: Participant A7).

CapTerre opted for a thin layer of lime on the external render of the plaster as the front side is exposed to rain. This is how the participant A7 describes the step-by-step preparation of the mixtures demonstrating that there is a reason for each material used, as he states:

“The backside was not exposed to the rain so we didn’t need to use lime. In our job we have to study we have to do economics so if we don’t need to use lime then we won’t use it. Everything has a reason to use it. And for the front side of the wall we used 5% of lime. First of all we put the lime in the water to make it like a paste so we used 5% in the mix and then we did the next layer. When we found the right mixes for each layer we started preparing the earth and bringing it to the site and then started carrying the straw. We took off the old plastering which was not in perfect condition and we took off two layers of adobe because it was in a bad condition, and then we brought new adobe so we put two layers on. We started by preparing the wall and put some water before applying the first layer, which was a mix between straw, clay earth and sand. One part earth, three parts sand and one part straw was the perfect ratio. The first layer it was one centimetre thick. The sand was between two to five millimetres because on the first layer we had to apply a good layer of sand for the coming layer. After taking off the old plaster we tried to make the wall smooth so we started with the joints between the bricks because there was a space between them so we tried to do the plaster between the bricks. When we finished the first layer we did the next one, it was the same mix but we just replaced the sand with smaller sand and then we cut the straw in smaller size.”

Few days into the masons’ training programme on the techniques of adobe the local authorities decided to stop supporting the labourers financially, which caused the project to subsequently slow down. The participant A7 took the initiative to start working with the labourers in order for the work to get done. His passion and love for his work and his genuine interest in the reputation of CapTerre locally and beyond compensated for the lack of financial support. He did so as he aspired to finish the project and present the anticipated result. The following quote demonstrates that the focus should be on the building process instead on the end product, by drawing attention to the building techniques themselves rather than the wall. This is what he says:

“Every time I talked to the masons about the advantages of building with earth they were surprised and sad at the same time because they had left these techniques to work with cement and additional materials. My intention then was not to focus on rebuilding of the wall itself; it was rather to focus on making them understand that we can do everything using only earth, with only natural materials and local materials. I focussed on teaching them that rather than working on the wall because we can easily build the wall while it’s ultimately the techniques that we have to keep, it’s not the building. It’s really their culture and tradition but they forgot their techniques since they stopped working with earth.”

Therefore, one may construe that maintaining and improving the traditional earth building techniques may empower the community and enhance resilience at local level. The participant A7’s statement alludes to Marchand’s monograph, *‘The Masons of Djenné³⁶’* (2009), which entails an ethnographic study of a team of mud-brick masons in Djenné, Mali. Marchand also draws the attention to the apprenticeship system itself (2009: 27), which is a form of training, rather than the buildings, by highlighting its value as the tradition most worthy of support and conservation. Architect Kéré also brings to the fore the lack of qualified skilled labour or artisans in traditional rural communities similar to his own in the village of Gando in Burkina Faso. For him one of the challenges is to teach his community to use modern skills in order to be able to understand the process and even repair the building(s) if necessary. Furthermore, the primary fieldwork in the village of Abetenim in rural Ghana makes use of local building materials and resources as much as possible. As described in chapter three, ‘In the Field: The Earth Architecture Workshop in Ghana’, in Abetenim I became increasingly aware of the fact that the village lacked skilled masons and artisans in various earth building techniques. There is a challenge with training them to go back into their communities and use local materials like earth in a way that they withstand corrosion and become resilient to heavy rain falls.

³⁶ In 2001 Marchand, a trained architect as well as a professor of Social Anthropology, with expertise in the subjects of architecture, craftwork, skills, and learning, resumed fieldwork in West Africa, this time labouring as an apprentice, with a team of mud-brick masons in Djenné, Mali renowned for its mud-brick architecture, monumental mosque, and merchant-traders' houses. The study was supported by the British Academy and resulted in a monograph, *The Masons of Djenné* (2009). The book was recipient of the Elliot P. Skinner Award (Association for Africanist Anthropology), Melville J. Herskovits Award (African Studies Association), and Amaury Talbot Prize for African Anthropology (Royal Anthropological Institute) (see: <https://www.soas.ac.uk/staff/staff31381.php>).

The participant A7 elucidates how the process of working with earth every day is a learning curve; one learns something new every day. He visited and became familiar with the Algerian desert and its indigenous people, the Berbers, after joining CapTerre and getting involved with the project in Timimoun. Originally from the north of Algeria he identifies as being Berber himself. He explains that Berbers have two different cultures, they are at the same time Berber and they are also African. The issue of globalisation and how its downsides are manifested locally is brought up by the participant as the use of cement in Algeria is discussed. Cement is brought to the desert from the Northern part of Algeria and it is perceived to be very expensive by the locals. In an attempt to shed some light on the reasons why cement is still used extensively in this context despite its many drawbacks, the participant A7 argues:

“There are many reasons for that. It’s due to corruption because with bringing additional materials from outside of the country they (the State) get advantages, they get money, the construction industry people, the businessmen, it’s a circle who get money from that. So why would they care about people when they have money? They don’t care about people or about their safety. They care more about making money than to teach people how to improve their earth building techniques.”

Moreover, CapTerre’s work emphasises the priority to create awareness within local communities about the value of the local building materials and methods suitable for the local climate and context, as opposed to western ways of building and concepts of modernisation. Thus, the case study draws on the necessity to change people’s mindset about the local vernacular architecture and building materials, which are more affordable and suitable for the local climate, and looks at the process of the ‘on the ground’ experience through direct involvement in community architecture and building. Ultimately, CapTerre’s work emphasises the preservation of earthen architectural heritage and building techniques. Echoing Koolhaas’ keynote for the 2016 American Institute of Architects (AIA) convention (see: <https://www.fastcodesign.com/3060135/innovation-by-design/rem-koolhaas-architecture-has-a-serious-problem-today>), ‘*preservation is a path forward*’ and a tool to rethink and adjust globalisation in a way which is meaningful to local communities regardless of location, and which informs our methods of building at a local level.

5.5 Case Study 4: Creating a National Standard for earth building in Zimbabwe

During the interview with the participant A8, a rammed earth expert and practitioner (see chapter 7, section 7.2.1), it became clear how the participant and his team created the national standard for building with earth in Zimbabwe. The story as told by the participant A8 himself goes as follows. In the 1980's there was an organisation called the Commonwealth Secretariat³⁷, which worked within the Commonwealth and was funded from Canada and Australia. Practitioners would be funded from Australia and implement pilot projects to prove costs, feasibility and so on. Upon realising that this model would not go further than described the participant A8 and his team started looking for other funders within the British government, such as the Department for International Development (DfID). Eventually DfID funded them to write a paper about the process of implementing schools and clinics in Africa. Hence, they collaborated with Newcastle University as well as a number of different organisations and as the project and funding came to the end they had to decide in what format to present the conclusions. It was then that they opted for 'the format of a code of practice' because such a document touches upon a number of different areas of a process. These include product standards, process standards, and training standards. The participant A8's following quote demonstrates the adaptability and open-endedness of having a code of practice, asserting that:

“We were thinking about what are the available materials and skills and expertise. So at one end you are thinking about Egypt or South Africa where they have got all of the equipment and at the other end you are thinking about Zambia where you are in a village and there may be some skills but there won't be paper skills, there will be handed on skills and if you are showing somebody something, you have to show them. It is not really looking to be a licensed technology, in other words you can have a code of practice and you can pick it up and say I can do that, I can follow the words, and I have to use my own practical knowledge in order to make this real but there's nothing that I have to pay for.”

³⁷The Commonwealth Secretariat, established in 1965, is the main intergovernmental agency of the Commonwealth, facilitating consultation and co-operation among member governments and countries. It is responsible to member governments collectively.
(<http://www.commonwealthofnations.org/commonwealth/commonwealth-secretariat/>)

After having written the basis of the standard of practice the participant A8 went to work with Zimbabwe Standards. He proposed to the standards organisation locally that they could work together in order to make it into a national standard. The procedure entailed that they together with the Zimbabwean standards organisation would go through their technical committee process to check the document and amend as and if necessary. For instance there were tasks that required the use of a mechanical digger in certain areas, whereas in Zimbabwe the same job would be done with a shovel, which is quite straightforward. The technical committee is a professional group drawn locally from industry, academia, the ministries, and other groups involved in funding or insurance. Therefore, publishing a national standard can be a long process with each committee member informing the document gradually as the following quote demonstrates:

“We set the technical committee for the Zimbabwe standards out once a month for two years, going through everything line by line. If somebody says well we don’t think that this is robust then you have to go off to the university and build something and say oh you know that did work. Then you have got two years of public consultation where you are sending the document out to the architects’ association and the engineers’ institute and see if they will have comments and then you have to deal with that comment if there is. There is quite a robust process but then once it’s published as a standard, once it’s published as a code of practice it doesn’t mean that there are a lot of people lined up the street with the skills ready to do it.”

Publishing a national standard of practice led to talking to Zimbabwe’s regional economic community, namely ZADEC, and subsequently the Southern African Development Community (SADC), which is made up of fifteen member states. A village school in Zimbabwe just as in Ghana, is typically funded by the government, irrespective of whether or not it is able to contribute towards the building costs as it still pays for the teachers’ appointment which necessitates that the school is a government standard building. If there is a national standard they may accept it or equally they may choose not to. The status of a standard as a quasi legal instrument but not necessarily mandatory is illustrated intelligently below, as he asserts:

“Although a standard may not be law it is still a quasi legal instrument and is harder for them to reject it. It may have force in law but no-one stood up in parliament and said we are going to pass this act; so there is this funny thing where something is mandatory or it’s not mandatory. Standards are not mandatory but for instance you have to follow a standard and although a standard is not the law it is sort of backed by law. In Zimbabwe there is the Model Building ByLaws, which is equivalent to the building regulations in the United Kingdom, which say that you can build with any standard material for which there is a standard written. Standards are given an authority in law but it’s a sort of sideways authority in law, it’s not saying that rammed earth standard, it is saying or any other standard. And that gives it strength but it’s also a weakness. So now you have got a national standard but who’s going to do it? Who has got the skills to do it?”

Therefore, establishing a national standard for earth building becomes of paramount importance in this context. It entails engaging with the local markets, collaborations and continuous dialogue with the existing local stakeholders, and necessitates capacity building aiming to subsequently set standards of training, products, equipment, and so on. Capacity building is now widely recognised as a core part of sustainable development. Alluding to the Literature Review (see chapter 2), Lyons et al. (2010) argue that the best use of local skills and materials is achieved if improved vernacular building methodologies are implemented in combination with capacity building. Without capacity building, the enforcement of minimum or *unrealistic* standards, as Turner (1972) refers to them, worsens the housing conditions of the poor as they do not acquire the skills, equipment or products to build with locally available resources.

5.6 Conclusions

As mentioned previously, this research looks at the process of the ‘on the ground’ experience through direct involvement in community architecture and building. The above four case studies, as well as the fieldwork in Ghana, draw on approaches to the resilience and the potential for adaptation through architecture, workmanship, the physical work of construction and the realities of making, and consequently the empowerment of the local communities at hand. Ultimately, they emphasize the

importance of thinking, designing and building/making in a holistic manner and according to culture and climate. Moreover, they provide a dialogue which enables the exploration of architectural practice from a climate and culture first approach, which addresses and engages with the specificities of the context. Most importantly, all the secondary case studies further emphasise the idea that the only way to make a contribution to the discipline of Architecture is to rethink it from culture. As Lokko (Bartlett School of Architecture 2016) asserts, *'the kinds of stories we tell ourselves about ourselves is the most accurate description of culture'*. The case studies also demonstrate that there are convergent themes across the South, which further reinforces the narrative about the potential benefits from a South-to-South dialogue. They endeavour to tell a story differently, one which is looking from the periphery; looking from a South-centric perspective. Thus, this research identifies the need for building practices in these contexts to be seen through the lens of their connections to culture, climate, and governance in order to be considered in their totality.

In addition, the four case studies allude to the 15th International Venice Architecture Biennale titled, *'Reporting from the front'*, which took place in 2016 and was curated by Aravena. The 15th Biennale's focus was on architecture which deals with lack of resources and scarcity of means, and which subverts the status quo to produce buildings for the common good. *'Reporting from the front'* invited practitioners to share the struggles they are facing at home, so the rest of us can get a glimpse of the challenges as well as opportunities this kind of work entails. Aravena argues that:

"We would like to learn from architectures that despite the scarcity of means intensify what is available instead of complaining about what is missing. We would like to understand what design tools are needed to subvert the forces that privilege the individual gain over the collective benefit, reducing We to just Me."

In a similar manner, these case studies *report from the front* in order to: raise critical questions about the practice of design and physical making/building in such circumstances, and how these may be improved and informed through 'being there'. The latter necessitates engaging with the local community and discovering their aspirations, challenges and priorities; engaging with the realities of physical making; and, gaining empirical knowledge about building materials and techniques and so on.

These case studies have many similarities with the primary fieldwork in Abetenim; one of them is that they all consider how ‘being there’ or being immersed in the field, that is engaging with the local community on all levels including physical making, facilitates the holistic understanding of the local context and thus informs the design and build practice in the context of the South, in a way which empowers the communities at hand.

On another note, the current narrative about the discipline of architecture holds that there is a need to reinvent it, or better re-imagine it, and resolve the crisis of its identity (Askland et al., 2014). The crisis of architecture’s identity is brought up by the President of the 13th International Architecture Exhibition, Paolo Baratta (2012, no p.), who calls for a consideration of the fact ‘that something different is possible, that we are not condemned to passive acceptance.’ Baratta (ibid.) argues about Architecture’s ‘difficulty and growing inability to address social issues’, its tendency to use architects to ‘create a spectacle’, and the rift between architecture and society. He (ibid.) highlights that ‘the Biennale should gradually start to highlight the pressing need for and importance of dialogue between architecture and its reference audience, individuals and institutions alike’. In a similar manner, the research considers that these case studies, as well as the primary fieldwork in rural Ghana, may contribute towards re-imagining the discipline and practice of architecture in a meaningful and coherent way; they explore the practices of designing, building and making from the periphery, from the very context they are steeped in, before they are able to (re) interpret them in order to enhance the resilience of the communities at hand. By ‘being there’, the research participants of the four case studies, together with their colleagues, immerse themselves in the field, and participate not only in the physical making process of the project they are involved with, but also in other aspects of the local community’s life, so that they grasp their challenges, strengths, capacities, aspirations and so on. This approach provides them with a vital tool to re-think the intimate connection between designing and building, thinking and physical making. It enables them to critique local situations and ask the right questions about the practice of design and building/making; to reconsider the design process in our rapidly changing world in a way that it becomes more socially-driven; and, echoing Baratta’s words, this approach enables the dialogue between architecture/design and its reference audience, affected communities and institutions alike.

Further, one of the themes, which emerge from the four case studies, and from my fieldwork in Ghana, is the value of engaging people on their own terms, listening to the local community's needs, and discovering what their capabilities and strengths are. All the case studies call for the role of the practitioner in the field to be one of 'listening' and 'unlearning' in order to empower communities through the use of local available materials, improved vernacular building techniques, training and so on. The empowerment of the local communities is considered as the highest common factor within the work of the initiatives illustrated in the case studies. The work illustrated here emphasizes the importance of exploring and thinking about building materials and methods, as well as training and knowledge transfer in a holistic manner and according to culture and climate. In order to cope with the changing social and climatic conditions and poverty, the case studies consider the category of building materials and methods as a tool to enhance the resilience of and empower the local people; they build upon existing skills and capacities, and entail the improvement of vernacular methodologies. The latter entails the reconciliation of the two narratives, the global and the local, and focuses is on the syncretism of the traditional and the modern; not the choice between one or the other. The initiatives' work illustrated in the four case studies develops locally, that is in the periphery itself, it makes a meaningful contribution to the communities at hand. Their work considers the indigenous empirical knowledge as a basis to be informed and shaped by globalised methods and thinking in a way that is meaningful to the affected communities. Their work provides a platform for the dialogue to happen between the indigenous empirical knowledge and skills, and modernity as experienced at a local level.

Moreover, one of the themes which emerge from the secondary case studies as well as my fieldwork in Ghana, and which is considered and debated at length mainly in chapter 6, is the category of training, such as the material and physical processes of making and/or as part of capacity building, as a tool and concept to think about resilience and empowerment of the local community at hand. The empowerment of the local communities is regarded as the highest common factor in all the above case studies. As mentioned earlier in this chapter, Marchand also draws the attention to the apprenticeship system itself (2009: 27), which is a form of training, rather than the buildings, by highlighting its value as the tradition most worthy of support and conservation. Furthermore, the primary fieldwork in the village of Abetenim makes use of local building materials and resources as much as possible but recognises the fact that

the village lacked skilled masons and artisans in various earth building techniques. Without training, encouraging within local communities the use of the local building materials and local vernacular building methods, worsens the housing conditions of the local community as they do not acquire the skills, equipment or products to build with locally available resources. In other words, training, and capacity building, is the connective tissue which enables developing communities to improve and develop over time.

In short, both the primary and secondary case studies focus on and intensify the available skills, knowledge, and resources despite the scarcity of means and lack of time. This approach contributes to longer-term sustainable adaptation and resilience in the context of the South and privileges the collective benefit long-term since it genuinely involves and empowers the communities at hand, by first, discovering what their strengths and capacities are, and second, based and building upon on these strengths and capacities, by teaching them skills to enhance their livelihoods; the kind of skills required to deal with the constraints of real world problems, like poverty, scarcity of means, lack of resources and time, inequalities, peripheries, access to sanitation, housing shortage, and so on. In other words, what emerges is the need to ‘see’ the South at large beyond its challenges and instead focus on building upon existing knowledge; the need to focus on the locally available materials and existing skills as opposed to what is missing. This could provide a better understanding of the relationship between materials, skills sets and wider networks which may contribute to the reinforcement of the latter. Echoing Aravena’s words quoted earlier in this sub-chapter the case studies demonstrate diverse pathways, or (design) tools, needed to aid the forces that privilege the collective benefit over the individual gain, extending *Me* to *We*. The value of collective effort and cooperative building work, emerge as one of the most significant aspects of the work described in the case studies. This has also transpired from the primary fieldwork in Abetenim and is discussed at length in chapter 4, where it became evident through the building process that ‘our’ western cultures celebrated individualism whereas their culture – the local culture in rural Ghana- the collective. Finally, all the above case studies emphasise the value of collaboration(s) with local and non-local actors in the field, who are from diverse backgrounds, expertise and capacity, in order to implement their work on the ground, and to impact the community at hand in meaningful and coherent ways.

The following chapter, specifically chapter 6, discusses the information gathered during the fieldwork by means of semi-structured and unstructured interviews conducted with 14 participants with the intention of understanding their perspective and personal experiences of being involved in the work of community-driven initiatives in the global South. It focuses on themes, which pertain to training, such as the architectural education and practice, and the in-field training.

Chapter 6

Data Analysis Part 1: Architecture and resilience: Challenges for the profession and the discipline

Chapter 6: Data Analysis Part 1: Architecture and resilience: Challenges for the profession and the discipline

6.1 Overview

With reference to analysing the semi-structured and unstructured interviews (see 3.3.1 The Interviews: Whom have I spoken to?, pages 64-67), after conducting thematic analysis in order to draw out the most emergent themes, the research discusses five of them, specifically the architectural education and practice, the in-field training, building materials, collaborations and ethnographic approaches to design. All five themes are discussed and argued through the lens of resilience and adaptation as conveyed by all the research participants (see also Chapter 7).

The data analysis consists of two distinct parts and subsequent chapters: the first one combines and discusses two of the five most emergent research themes, specifically the architectural education and practice, and the in-field training. The second one discusses the building materials. The emerging themes of collaborations and ethnographic approaches to design are discussed in chapter 3 on Methodology, as these findings relate to the research process. All five themes are discussed and argued through the lens of resilience and adaptation as conveyed by all the research participants.

6.2 Introduction

This chapter deals with the themes, which pertain to training, such as the architectural education and practice, and the in-field training. Thus the following are discussed: The urgency for the discipline of architecture to engage with the ongoing narrative about climate change; The need to rethink the discipline and its practice from a broader environmental and cultural perspective; The architects' capacity for systems thinking as a learned and transferrable skill which may be applied in various situations; The flaws of the discipline's curriculum; The challenges of architects involved in humanitarian and development projects in the global South; The role of the community-based organisations within destitute, and often disaster-stricken, communities of the global South; The need for training local masons and Western trained practitioners involved with non-governmental organisations in development projects.

6.3 Architectural Education and Approaches to Resilience and Adaptation

R. Koolhaas, the Pritzker Prize-winning Dutch architect, theorist and founder of the Office for Metropolitan Architecture (OMA), in the edited book titled, 'Rem Koolhaas: conversations with students' (Kwint, 1996: 59), asserts in relation to architectural education:

“The power of architecture is overestimated. Schools are almost steered by a collective unconscious, or subconscious; in certain periods certain issues come to the fore and others are ignored, and a little later the things that were ignored come to the fore, and the other issues are forgotten, and so on in a continuous movement. It is only when individuals put their mark on specific schools and institute a kind of dictatorship that you can really see distinct schools of thought. In a way you are an inevitable part of a general culture, with all the sophistication and blindness that this implies.”

Koolhaas argues that architecture is a dangerous profession because it is “*apoisinous mixture of impotence and omnipotence*”, in the sense that the architect entirely depends on others in order to realise, and very often impose, their megalomaniacal dreams. He also brings up the fact that Architecture is a profession that takes an enormous amount of time, which also makes it dangerous (ibid.). Architects may find it virtually impossible to be able to think at the same time as being intellectually engaged with trying to find solutions to satisfy their clients' brief. He continues the argument (ibid., 45) by stating that although our society continuously reinvents its needs and so is our (public) space thoroughly changing, architects generally tend to look at space through the lens of nostalgia. Thus they are able to neither read the mutations that take place, nor reinvent or reinterpret certain processes as being new versions of occurrences they knew previously in architectural terms. In a conversation about a study of iconography in Europe³⁸ with Hans Ulrich Obrist (1996: 26)', Koolhaas argues that :

³⁸The study, undertaken by AMO, began in 2001 and culminated in a series of exhibitions called “The Image of Europe”. “Founded in 1998, AMO is the think tank pendant to the Office for Metropolitan Architecture (OMA), which Rem Koolhaas established in London in 1975 together with Elia Zenghelis, Zoe Zenghelis, and Madelon Vriesendorp. AMO focuses on ideas, the speculative, the virtual, and the unbuilt” (Koolhaas, 2006: 22).

“We are living in a completely paradoxical moment of modernisation, where all modernisation is driven by nostalgia, on every level. Yet, we are absolutely disinterested in the past, in history. There are more and more instruments of memory and less and less actual remembrance. That’s quite a perverse thing. Nostalgia means living permanently in a form of denial, and what is particularly sinister about it is that it is driving the left as much as the right, intellectuals as much as the general population. What is underneath all of this, and indeed the essential operation that is necessary, is to redefine what “modern” means.”

Although Koolhaas’ concerns are European, his description of the status of modernisation and the West’s deluded understanding of what “modern” may entail outside the West, and how nostalgia is pervading the intellectuals of opposing political views as much as the laypeople, speak very directly to our contemporary context and status quo. Thus the imperative for the discipline may be to redefine what “modern” means in relation to materials and methods of designing and building; in other words underneath all of this may be the need to rethink about and redefine how architecture is taught and practised.

Till in his excellent book titled, ‘Architecture depends’ (2009: 5), argues that “architecture has avoided engagement with the uncertainties of the world through a retreat into an autonomous realm”, which he claims to be “deluded”. This incapacity may also have an effect on how architecture views and engages, or not, with the current climate change adaptation discourse. The participants broach the issue of architectural education because that is where most of the principles that define the profession are instigated. They touch upon the pressing demand for architecture’s discipline and profession continuous adaptation to the changing climatic circumstances and the need for the discipline to engage with the ongoing narrative about global warming and climate change. The following excerpt is taken from an interview with an active practitioner and an academic teaching Environmental Design. It echoes the views of all the participants on the urgent need for architecture and architects at large to rethink the discipline and its practice from a broader environmental and cultural perspective. I find it to be compelling enough to set the tone for the discussion which follows in this chapter as it sums up the situation very well, where she states:

“What building do they give awards to? Big flashy ones that are sort of sculpture and very often largely engineering. What is architectural about them? Okay, space, form and light. But what are the issues of our age? Are they space, form and light? No! That’s not the problem. Nobody wants ugly buildings for sure but what are our issues? Yasmeen Lari’s great quote ‘if architecture is going to align itself with the reality of our age we have a lot of work to do’ basically sets the whole tone of this particular discussion, that we are a long way from where we ought to be at the moment.”

Furthermore, this excerpt highlights the urgency for the discipline’s (re)-alignment with the reality and issues of our age in order to cope with what is to come by making a valuable reference to the work of Lari featured in a six-part television documentary series on the Al Jazeera channel titled, ‘Rebel Architecture’³⁹. The episode dedicated to Lari’s work titled, ‘Pakistan: a traditional future’, showcases a part of their shelter system which uses local building techniques and low-cost materials, such as adobe mud for walls and bamboo cross-bracing, in order to rebuild villages in the flood-stricken Sindh region. Through her invaluable contribution towards humanitarian architecture Lari and the HF, as well as all the participants, aim to give vernacular building methodologies a voice and prompt us to consider them as an asset and appropriate means to cope with the adversities of climate change.

The research emphatically conveys the critical issue of how wilfully self-referential architecture can be relying on one’s ability and skill to represent a representation rather than a real situation. The following excerpt from the interview, with the participant A4, evokes the description of a typical teaching design studio experience. It is evocative of personal memories from studying architecture at a UK institution, and conjures up all the participants’ views of how detached the discipline can be and has been from nature and other disciplines. Hence, its detachment from reality ensues as the participant also suggests shrewdly bringing up the example of one of Louis Hellman’s cartoons which depicts a standard practice in the life of architects in the making, as she states:

³⁹A six-part documentary series profiling architects who are using design as a form of activism and resistance to tackle the world’s urban, environmental and social crises. The series follows architects from Vietnam, Nigeria, Spain, Pakistan, Israel/Occupied West Bank and Brazil who believe architecture can do more than iconic towers and luxury flats - turning away from elite "starchitecture" to design for the majority (<http://www.aljazeera.com/programmes/rebelarchitecture/>)

“Hellman⁴⁰ the fantastic architectural cartoonist, particularly 70’s and 80’s, in one of his cartoons from decades ago, basically it’s been going on for so long, shows students drawing a picture of a tree that their tutor is showing them and they are all dutifully copying this picture. And of course out of the window is a tree but he is showing them this picture of a tree and they are copying the picture. What I am talking about is the detachment from reality, you spend most of your architectural education in a studio, you might go onsite, you might go on a fieldtrip and if you are really lucky you might build something for a couple of weeks. But how detached are you from reality?”

Therefore the detachment begins right from the design studio training and continues well into the practice of architecture. This makes the role of the design studio, and architectural education on the whole, fundamental and consequently calls attention to the curriculum. In the United Kingdom the institutions set the curriculum and decide what should be taught as a general rule. Till (2009: 11) parallels architectural education to ‘a relentlessly circling set of boxes of stuff (ideas, knowledge, skills, techniques) moving through its own world.’ The movement makes it feel fresh, but in fact the boxes go nowhere very far.” He very eloquently discusses architecture’s and architects’ literal and symbolic detachment (Till, 2009: 7) from the rest of the society by bringing up the paradigm of the Sheffield School of Architecture building which occupies the top six floors of the nineteen-story building, namely the Arts Tower, and states:

“We look down at the city below and, at this distance, command it as an abstraction. The voices of people are lost; we just observe their functions. Buildings are reduced to form, roads to flows of traffic. Noises are measured, not listened to. Shapes are classified by type, not sensuously enjoyed. (...) And from below, the city looks back and sees us as remote figures of authority.”

⁴⁰Louis Hellman has for the past four decades drawn cartoons commenting on the world of architecture and planning for *The Architects' Journal* and *Building Design* as well as caricaturing famous architects in the style of their buildings for the *Architectural Review*, subsequently collected in a book, *Archi-tetes. The Id in the Grid* (Academy 2000). He has lectured extensively in the UK, Australia and the United States. Louis Hellman received an MBE in 1993 for services to architecture and an Honorary Degree from Oxford Brookes University in 2002. (<http://www.louishellman.co.uk/whoishe.html>)

The architectural critic Reyner Banham in his article titled, “A Black Box: The Secret Profession of Architecture” (1996: 295), criticizes the profession’s disposition to be of esoteric and self-referential nature, and alludes to anthropologists’ comparison of “the teaching studio to a tribal longhouse; the place and the rituals pursued there are almost unique in the annals of western education. One of the things that sustains this uniqueness is the frequency with which students are discouraged from pursuing modes of design that come from outside the studio.” Till (2009: 14), alludes to Paolo Freire’s seminal book titled, ‘The Pedagogy of the Oppressed’ and his critical pedagogy theory and movement⁴¹ in order to discuss architectural education, and argues that the latter “fits all too well the patterns and restrictions of conventional education that are so brilliantly exposed by Freire”. Freire, himself, (1996: 52) berates traditional education for not giving the students the opportunity and freedom nor the tools to engage with the world as a dynamic social system and thus not being able to transform it, as he argues that:

“The teacher talks about reality as if it were motionless, static, compartmentalized, and predictable. Or else he expounds on a topic completely alien to the existential experience of the students. His task is to “fill” the students with the contents of his narration – contents which are detached from reality; disconnected from the totality that engendered them and could give them significance. Words are emptied of their concreteness and become a hollow, alienated and alienating verbosity.”

He draws an analogy between the traditional education and the ‘banking’ system where “knowledge is a gift bestowed by those who consider themselves knowledgeable upon those whom they consider to know nothing. Projecting an absolute ignorance onto others negates education and knowledge as processes of enquiry.” In a similar manner, the Dean of Columbia University’s Graduate School of Architecture, Planning, and Preservation (GSAPP), evokes Freire’s words in his speech to the students at Columbia University where he endorses that the duty and responsibility of education is to offer the students the capacity, tools and freedom to engage with the existing state of affairs and

⁴¹ Paulo Freire, the Brazilian educator and influential theorist, was the first to fully develop and then popularize the theory of critical pedagogy in 1968. Its principles lie in the belief that all education is inherently political and its purpose is the alleviation of oppression and human suffering.

therefore the critical skills to shape the field itself. He goes on to make the following point:

“Education is all about trust; the best teachers embrace the future by trusting the student, supporting the growth of something that cannot yet be seen. The best architects are public intellectuals crafting forms that allow others to see the world differently and perhaps to live differently. It is not enough for us to train students by giving them expertise in already defined fields. We have to give them the capacity and the tools to shape the field itself. Education rather than the contested battleground of late should always be a form of optimism that gives our field a future by trusting the students to see, think and do the things that we cannot.”

With regard to Africa it is worth noting some background information in relation to the education across the continent. There are 54 countries in Africa with a combined population of approximately 900 million people. There are 94 schools of architecture, which equates roughly to one school per 100 million people. The challenges of education and architecture in Africa are discussed extensively and succinctly in Lesley Lokko’s work in the continent. Lokko, currently a professor of Architecture at the University of Cape Town in South Africa, is a writer, educator, and architect, made her publishing debut in 2000 as the editor for ‘White papers, black marks: Architecture, Race, Culture’, which provides a thorough study of the relationship between ‘race’ and architecture. In her keynote presentation on ‘Risk’⁴² at the association of architectural educators (aae) 2016 (Bartlett School of Architecture 2016), Lokko who identifies as being African states:

“One of the reasons that Africa is one of the most interesting places to be right now if you are interested in education, architecture and otherwise, is precisely because of the tensions, insecurities and contradictions that 60 years of freedom and the introduction of democracy have thrown up across most of its 54 countries.”

⁴²aae 2016 is an international peer-reviewed conference on ‘Research-Based Education’ hosted by The Bartlett School of Architecture at UCL from 7 to 9 April 2016 (Bartlett School of Architecture 2016).

Ghana who gained independence from Britain in 1957, was the first country to achieve independence from colonial powers whereas South Africa only transitioned to democracy in 1994. Lokko (ibid.) explains that the South African Academy, where she teaches, is currently defined by transformation; the transformation of tertiary education in a way that it includes histories, experiences, narratives and perspectives that the colonial projects have suppressed. She emphasizes that the imperative for the new generation of African academics is to be able to define, or rather redefine, African modernity as she very eloquently states:

“It has always been my understanding that the job current academics are faced with is not about finding black academics to replace white ones. It’s about making a new generation of African academics both black and white and everything in between who can more accurately and innovatively bring us closer to that definition of African modernity that encompasses all of our complexities, our complications and our contradictions.”

Lokko’s keynote presentation on ‘Risk’ (ibid.) introduces J.M. Coetzee’s “The novel in Africa”, which was published in 1999. In the novel the protagonist of the story is Elizabeth Costello who joins a free cruise on a ship going to Antarctica in exchange for entertaining passengers with a course of lectures. A Nigerian novelist, Emanuel Edugu, is also on the cruise. Both Costello and Edugu are scheduled to talk on their first day out to sea. Her talk is titled, “The Future of the Novel”, Edugu’s, “The Novel in Africa”. Lokko asserts that a small section of the novel spoken by Costello herself gets “directly to the heart of what African students of architecture are struggling with.” This is the quote from Coetzee’s “The novel in Africa” (1999: 13), as Costello states:

“The English novel,” she says, “is written in the first place by English people for English people. The Russian novel is written by Russians for Russians. But the African novel is not written by Africans for Africans. African novelists may write about Africa, about African experience, but they are glancing over their shoulder all the time as they write at the foreigners who will read them. Whether they like it or not they have assumed the role of interpreter, interpreting Africa to the world. Yet how can you explore a world in all its depth if, at the same time, you are having to explain it to outsiders? It is like a scientist trying to give his full creative attention to his

investigation while at the same time explaining what he is doing to a class of ignorant students. It is too much for one person, it can't be achieved, not at the deepest level. That, it seems to me, is the root of your problem. Having to perform your Africanness at the same time as you write it."

Lokko argues that in the context of African schools, it is exactly as Costello describes in the above excerpt; both academics and students inevitably embody both the roles of the interpreters and investigators, explaining their world view, their Africanness, both to themselves and to western-trained eyes and simultaneously exploring it in all its depth. But how can a world be explored at its deepest level if at once it needs to be interpreted and explain to outsiders? In a similar manner, speaking at Architecture ZA⁴³ (AZA) 2012 Biennial Festival in Cape Town (Design Indaba 2012), Ghanaian architect and educator Joe Osae-Addo⁴⁴ also draws attention to the importance of "exploration" in relation to architectural training in the continent.

"In architectural training we assume that everything has to be logical and rational, which is kind of a Bauhaus idea, but I think what could make us different is the exploration and approach to the way we look at design, I think that could be the kernel of a DNA of a certain response in African architecture. I think this is how we built our traditional cities, they were built by farmers, by elders, by craftspeople and the women. And women in the community at large are part of the design process. Often when we look at design we assume that it's only about the formally trained design professional. We need to look at the crafts and the vernacular and reinterpret and engage, all the existing and indigenous ideas and how do we overlay the new ideas based on the need and based on the context? That's the most important thing. I think we are scared to go there."

⁴³Architecture ZA (www.architectureza.org) is a non-profit organisation. The first AZA2010 Biennial Festival was held in September 2010 in Newtown Johannesburg. The Architecture ZA 2010 was Africa's first and largest premier urban culture festival as it brought together leading-edge thinkers and multi-disciplinary practitioners in the built environment from around the globe.

⁴⁴The Ghanaian architect and educator Joe Osae-Addo is Principal of Constructs with offices in Accra and Tamale, Ghana, and in Washington DC and Los Angeles, USA. He is Chairman of ArchiAfrika, a platform that initiates and facilitates research and projects on the terrain of African architecture and architecture in Africa.

6.3.1 Curriculum

Echoing Lokko's concerns about education in Africa, a question of great consequence surfaces: how can students at African universities perform, or interpret, their difference, their Africanness, at the same time as they endeavour to explore it? What does a curriculum of an African institution need to entail in order to serve the needs of its students, and context in which it belongs? Conventionalism holds that there are too many real world problems around the continent for such profound conjecture; that Africa has become the home of poverty, almost identical with the need for sanitation and housing. Lokko's keynote presentation on 'Risk' asserts:

“There is a lot of work to be done to reconfigure a curriculum that better serves our needs, and I am not talking about sanitation upgrades, but rather that gap that Costello or Coetzee speaks about between explanation and exploration.”

In relation to the education in Ghana, the architecture course at the Kwame Nkrumah University of Science and Technology (KNUST) in the city of Kumasi, is like any other architecture course in Europe. It is a 'normative' architecture school where modern architecture is taught. “All schools are surprisingly similar, and everyone is more or less as good as any other”, R. Koolhaas states in relation to architectural education (Kwinter, 1996: 58). During my fieldwork in the village of Abetenim (see Chapter 4) I was invited to give a lecture to the second year degree students about climate change adaptation at KNUST where I spoke about the earth architecture workshop in Abetenim. Since it is typically an elite crowd who study architecture, which has been the case historically even in the UK and Greece where I originally come from, almost none of the students had been to a village before let alone heard of Abetenim. And despite their excitement about the workshop and its potential impact on the local community none of them joined us in Abetenim. The professors at KNUST mentioned that climate change adaptation is not part of the curriculum. Instead the priority is to teach about form and space, which is similar to many schools in the UK. Therefore, how does one influence these students' perception of architecture towards an agenda that is more focused on community empowerment and the support of the local environment rather than aesthetics? The participant A1 when asked whether architectural education in Ghana is geared toward climate change adaptation, explained that there is a module on

Sustainability but the students do not fully grasp its importance as it is only optional and runs for just one a semester to a year. He argues that it should be compulsory and run through the years in order to have an impact on the students, as he describes:

“To even give a lecture or teach a module on Sustainability is a problem. It’s all about makeshift or whilst you are an architect you will be able to handle this course but it’s not so. I know there are people who are well-trained to do some of these things. The people who are teaching it do not even practise it and when you see that all their work and buildings are opposite of what they are preaching then how can you take them seriously?”

The participant A7 involved in reinstating the adobe walls of a cemetery in Timimoun at the time of the interview, emphasises the significance of the architects’ hands-on involvement in the actual building process as opposed to merely forming computer-aided conceptual spaces, by arguing that becoming sensually immersed in the making of the built object is more gratifying. In Algeria too the schools of architecture do not include hands-on training as part of the curriculum, as he states:

“The first time I had participated in the international earthen architecture festival (organised by CapTerre annually) to promote earthen architecture I met some architects who were involved with earth building and I was surprised that they were architects working with earth at the same time and they didn’t have any problem with that. I always thought that an architect must put his hands on his work. To touch my work, to live with my work gets me excited. I had no experience with working with my hands before joining CapTerre. At university we were just taking classes and would sometimes visit a heritage site.”

The United Kingdom based participants emphasize the need for architects and the discipline of architecture to adapt to climate change becoming a priority. The participant A4 explains that by rethinking the curriculum in a way, which may inspire and urge architecture students to look into alternative pathways of improving the living conditions in their own cities may actually contribute towards solving the problems we currently face. She argues that knowing how to plan really well and how to make a decent facade that will fit in with the street scene, does not necessarily imply that

architects really understand the issues of a city and how their buildings respond to that, not in any other than a superficial social context, as she states:

“I feel this with my own teaching that if you can motivate and inspire students to be interested in climate change adaptation, they are already interested because it’s everywhere; massive floods, huge forest fires, vast droughts, the whole of China, the whole of California, flooding, billions of pounds written off the stock market because of loss of natural assets, disruption of business, massive flooding even here in the UK. And then climate disruption affecting agriculture, affecting fisheries, the acidification of the oceans, the loss of arctic ice. So students are highly aware of the issues and they live in cities that are baking hot in the summer, the air-conditioning is not working or goes off or it is too expensive or the air quality is appalling. It’s not just a matter of improving it a little bit; it is how we are going to solve the problem. It’s not good enough to produce a building that is slightly better than the ones we have produced in the past. We have got problems to solve.”

Moreover, one of the participant A4 emphasizes the architects’ capacity for systems thinking as a learned and transferrable skill, which may be applied in various situations. She touched on the idea of systems thinking as one of the discipline’s inherent strength. Here, by system I refer to an interconnected set of elements from both the physical and non-physical context that constitutes our environment, which is increasingly characterized by complexity and chaos. As architecture students, and often further beyond in our career trajectories, we are trained to think about systems rather than merely their elements in isolation which may well be the case with many other professions. We are encouraged to consider elements, interconnections, and function. The participants broach the fact that although traditional architectural training, especially during the final years, enables us to perceive and analyse the patterns that connect the otherwise disparate elements of a given context, it still, in many ways, is lacking in integrating technology and/or practical hands-on experience with design studio practice. The latter is one of the reasons that an increasing number of architecture students and graduates get involved as volunteers in the so-called *social architecture initiatives*, or *socially responsive architecture initiatives* in the global South; their intention to gain hands-on experience with the intention while contributing to the

improvement of the living conditions for the local people. Yet, as mentioned already in chapter 1 (see page 4), not every student can afford to embark on such endeavours as they are costly. Therefore only a certain number of students can afford to participate in such endeavours and gain some hands on experience. This is particularly emphasized by participant A3 who argues that technology can be part of the design studio instead of having it as a separate module, as he points out:

“There are a set of modules in the classroom looking at electrical, gas, water, sewerage, services, all the services of which a lot of technology is involved they would still have to learn at some point in their career or as students about modern services. They would still need to learn that stuff because it would be part of the degree.”

The participants argue that rethinking the solutions to the problems of our era always comes back to the architectural institutions worldwide because they set the curriculum. The question that these institutions worldwide should pose is what the architects of our era need to do. The example of the Victorian architects is brought up as they were able to respond to the problems of their era in such a way that led to a major transformation in cities, specifically the infrastructure for clean water and sanitation, hospitals, schools and decent housing and so on, and they also worked hand in hand with engineers. The participant A4 expresses her resentment about architects and academics often showing blatant ignorance and avoidance of facts, empirical evidence and well-founded arguments concerning the urgency to tackle the consequences of climate change and the critical role that design can play on such matters, saying that:

“Where’s the response at the moment? It’s deafening silence. And so it’s not just a choice of 20 to be ‘green’ architects. All architects should be ‘green’ architects, and they shouldn’t be called ‘green architects’, they should be called architects so it’s understood that every architect is educated. If you want to be a really good architect you have to think from first principles, ‘is this building necessary?’, ‘how am I going to design it?’, ‘what can I use?’ and inform yourself because you are also going to have to justify to or face people who will shut you down, or tell you that you are mad, or just ridicule you, or say that they don’t want you as their architect. You have to give

them the arguments and show them how it benefits them financially, physically, and whatever else.”

The participants are unanimous on the architecture curriculum being flawed in many ways. One of its flaws is that it does not encourage regular visits to building sites in order for the students to see what the building process actually entails. One does not really grasp what this process necessitates until very late in their education and only when they get to practise. Further, it has transpired that the curriculum lacks in teaching about building materials in the physical sense and how they behave when used in combination with others. Moreover, model making and generally the use of models as a physical tool to represent an artefact or structure is conventionally encouraged albeit commonly using cardboard and/or other materials used for centuries in architectural model building. Models are typically used to study aspects of an architectural design or to communicate design ideas but not to study materiality. What may be currently missing is the use of real building materials in order to observe and experience the challenges of their sourcing and utilization in construction. The latter alludes to climate change adaptation, which the curriculum puts hardly any emphasis upon. All participants discuss in length how much the discipline would benefit not only from including climate change adaptation in its discourse and practice but also considering it as a fundamental factor that determines the use of certain materials and the exclusion of others according to the local climate and culture.

With respect to the architecture’s curriculum the participants unanimously agree on the need to rethink it from a broader environmental and cultural perspective, specifically from that of adapting to climate change in order to inform both the discipline and its practice. In addition, setting climate change adaptation as the core of the curriculum and as a lens through which design is considered, may permeate the construction industry, among other sectors, and gradually effect it to go green, since architectural practice is interrelated with the construction industry at large, as the participant A4 wittily states:

“It has taken the RIBA a long time even to acknowledge climate change as an issue that their students should have anything to do with. This actually goes wider to the construction industry as a whole and the political relationship to the construction industry and if there isn’t political will in general towards climate change.”

The curriculum makes a choice about what is going to be taught and prioritises certain issues over others. The participants contend that climate change adaptation should be ‘the core of what we are doing’ and the architectural curriculum should reflect that as it is the most urgent issue our cities face. Instead it still follows a very old-fashioned approach which focuses attention on ‘spatial delight and form, how to be a status architect, how to make a dramatic impact and place-making’. The curriculum, by and large, reflects the ideology and political affiliations of the institutes which set it; if the latter do not believe in climate change then the students will not be taught about that which in turn conflicts with the great number of students who come to the UK to study architecture from cities attacked by climate change and they still do not learn about it. In the end this becomes a vicious circle where the same problems just keep being repeated. The participant A4 states:

“The education system is not based on need, it’s based on greed. It is just about supporting an industry that is based on a false idea of status. And that the architect should be producing these out of date signature buildings. We live in a very rich part of the world but a lot of students are coming from all over the world to study. What kind of message are we giving them? Just to go back and repeat the same mistakes that we make, or maybe do it a bit better. The RIBA really hasn’t grasped the nettle yet. It’s in the curriculum but in such a minor form that it is not the core of what we are doing.”

Having said that, there is some understanding in the curriculum of the urban heat island as a result of climate change, but certain things which are completely standard in many European countries like managing storm water runoff, have not been adopted yet in the United Kingdom. However, the research demonstrates that there is a lot more to adaptation to design than just green infrastructure. It argues that the people responsible for writing the curriculum need to rethink how design needs to be approached, and to look at working with nature approach first and the understanding of our relationship to where everything comes from, as the participant A4, notes:

“Nature approach first is when you work with nature and you bring nature into cities and onto buildings. It solves so many of your problems that the other things are much easier to approach. It is a much better approach than the one we have got which has been added to piecemeal over the years.”

6.4 Architectural practice and development projects in the global South

The Pritzker Prize-winning Dutch architect, theorist and founder of the architecture firm Office for Metropolitan Architecture (OMA), Rem Koolhaas, states in his closing keynote address to the 2016 American Institute of Architects (AIA) convention (see: <https://www.fastcodesign.com/3060135/innovation-by-design/rem-koolhaas-architecture-has-a-serious-problem-today>), that:

“In the last 30 years, architecture has been deeply influenced by the conversion of things: Thatcher and Reagan, moving from a welfare state to a market economy. Architects used to be connected to good intentions, notionally at least. With the market economy, we’ve slowly found ourselves supporting, at best, individual ambitions and, at worst, pure profit motives. In that sense, every crisis perhaps presents an opportunity.”

The imperative that Architecture has a responsibility to become more socially driven is reflected in the work of a number of practitioners, educators and theorists, including those of Kéré Architecture, Elemental, MASS Design Group, the Heritage Foundation of Pakistan, Kunle Adeyemi, Anna Heringer to name but a few. In an interview titled, “Architecture is a wake-up call”⁴⁵ (Louisiana Channel 2014), about his architectural philosophy the Burkinabi architect Kéré talks about the meaning of architecture, for someone who comes from a place where infrastructure does not exist, bringing up the paradigm of the local community in the village of Gando where he hails from, as he states:

⁴⁵Diébédo Francis Kéré was interviewed by Marc-Christoph Wagner, copyright of the Louisiana Museum of Modern Art, 2014. In 1998, with the help of his friends, Kéré set up the association Schulbausteine für Gando to fund the construction of a primary school for his village. Kéré has received the Aga Khan Award for Architecture in 2004 and the Global Award for Sustainable Architecture in 2009, among others. What’s more Kéré is the first African architect to be chosen to design the annual Serpentine gallery pavilion for 2017.

“Architecture can bring a lot to a local society like mine. I have to say that when I started doing architecture in my place people didn’t know the meaning of architects and the word architecture doesn’t exist. But the way that I use my skills to create a kind of architecture makes the people proud. People are self-confident and feel they are so important and they are rich. They have resources, they only don’t know how to use them. So it is a wake-up call.”

Recently there have been a number of practitioners and educators engaged actively in humanitarian aid, and even a greater number of students and young graduates involved in the so-called *social architecture* and *environmental initiatives* in many regions of the global South. For instance, the work of Japanese architect Shigeru Ban entails humanitarian housing and sustainable design, specifically refugee shelters and disaster relief. An increasing number of students and graduates volunteer with NGOs on design and build projects in the global South in order to get some hands-on experience before returning home to look for a job. They volunteer despite their lack of experience or even knowledge of the local culture, materials or the vernacular building techniques of the place they visit and work in. The most persistent criticism posed by the participants is that conventional architecture school commonly offers no modules or career paths which may prepare students by teaching them skills to work as design professionals in dire and adverse situations. But what kind of skills are required for places that are poverty-stricken, have almost no infrastructure, and where design is not part of the development agenda discourse? With reference to the African continent, the Ghanaian architect and educator Joe Osae-Addo, at AZA 2012 Biennial Festival in Cape Town (Design Indaba 2012), highlights the value of creativity in design which is something that architects can contribute to the discourse. He also puts emphasis on the need to ‘see’ Africa beyond its challenges and shortages, and instead focus on its strengths and resilience. Addo very eloquently explains that as African countries transitioned from the indigenous, where design is an integral part of how people live, to the more formal Western approaches of development, the “connective tissue” is lost. Hence he calls for architects to reinterpret the indigenous in order to create that “connective tissue”, as he states below:

“Often in Africa design is taken away from the development agenda of communities and nations, or it is not included in this discourse. I think this is what we, as architects, can bring to the table. How does creativity and design shape in some small way how a development can happen? I encourage people to see Africa beyond its problems. It’s been defined by its problems instead of it being defined by its incredible resilience. We come from a great pedigree of builders and architects, but along the way as we transitioned from the indigenous to the more formal Western kind of environment and training processes, we have lost that tissue, that connective tissue. It’s all around us, it’s just about stepping back, or stepping sideways for a moment to realise that design is a very integral part of how people live in our traditional communities. Design is one aspect, but how do we use design skills to develop opportunities which will have a truly sustainable impact on the people we claim to serve?”

The research also raises questions about the role and responsibility of architects at all levels in extreme circumstances and crisis due to climate change mainly in, but not limited to, the developing world. In her excellent book titled, ‘White papers, black marks: Architecture, Race, Culture’ (2000), editor Lokko provides a thorough study of the relationship between ‘race’ and architecture which examines how racial ideology affects architectural design. Lokko argues that ‘race’ has been an ‘invisible, unknowable quantity’ within architectural discourse and makes a reference to the casual omission of Africa from Bannister Fletcher’s significant book titled, ‘Tree of Architecture’, as she states:

“‘History’, in this instance, is clear: blacks, either as Africans, or as diasporic cultures, have historically had nothing to say about architecture- as a consequence, architecture has had little to say in response.”

A fundamental question immediately surfaces: why Africa and why now? Why is the African context important? Professor Lokko’s keynote presentation on ‘Risk’ (Bartlett School of Architecture 2016), explains that Africa has never been so popular since in 2015 alone there were eight major international exhibitions devoted to the African city. These exhibitions featured more or less the same group of academics and architects who

crisscrossed the globe selling their narrative about what it means to be African in relation to the built environment. With respect to the endless student visits to the continent Lokko also touches upon the symbolic term ‘Otherness’ in architecture, which entails the issues of ‘race, identity and Africa, and points that:

“These endless student visits to Africa, multiple biennale exhibitions (on and about Africa), books, etc. show that in terms of architecture at least no-one really knows yet what it really means to be African, specifically African and modern, and least of all us. None of us yet have anything approximating our built environment narrative. There is crisis of confidence apparent in almost every African I know. The scramble to define African architecture is probably more intense outside the African continent than it is inside it.”

The participant A4 argues that instead of Western students travelling to volunteer on projects, it would seem more beneficial and plausible to fund a group of students from the global South to travel to a school in a Western country and join an architecture training program there. In the following interview excerpt she states:

“It’s all for you. You’ll get a job out of it and that community pulls down that badly built school shack because they keep propping it up for the next ten years and it still overheats in the heat and still doesn’t collect rain water. What about turning that on its head? What about every year you pay for a group of students to come from the global South to your school and you taught them things that you knew about? It’s cause that’s an adventure for you because you’re rich and can afford it. But if you were to turn it around and say well if I am supposedly benefitting that community, okay bring two of their architects and two of their masons and two of their builders over and work with them. See if there are students there you want to support. Maybe there’s a program or a way to get them on an architecture training program they’ve always wanted to do or something. What kind of support, who sets the brief, who sets that agenda?”

The issue of who sets the agenda or who decides the community’s needs is also raised by participant A8, who explains that architects involved in construction projects in the global South ought to understand that they have to do everything in the field; they

cannot possibly afford to take the condescending position that a western-trained architect would traditionally take on site ‘as a sort of machine that you press on’. He argues that this is due to lack of money, or else ‘the oil in the machine’ as he calls it, having himself spent long periods of time over many years of hard and diligent work within destitute communities in Africa. This is how he eloquently puts it into words:

“You will find there are various cogs which have not been inserted or have been removed, one of which of course is money. Maybe one could say that it’s the oil in the machine. Everything has dried up, there may be knowledge but it’s not been lubricated, not moving so you have to do everything. And I think probably the experience you had in Ghana is quite a good one cause you suddenly realise that ‘oh I am an architect, I don’t know this, this or this, and I don’t know this situation or these people or their needs or who decides their needs, or who decides what will be built or won’t be built and suddenly you are in a position that you realise that nobody knows anything so I will have to do everything.”

The valuable and paramount role of the community-based organisations within destitute, and often disaster-stricken, communities of the global South when it comes to voicing the needs and priorities of its people, is emphasised by participant A3, as he states that:

“There is the design aspect, as we are designers and builders involved, but also the problem of voice, of social justice and how much do you want to get involved in that. That is why the role of the community-based organisations is absolutely critical because they are the ones who need to think about and articulate their priorities. And for instance, if the women’s side say, look we are sick of this fear, we are sick of this violence, we’re sick of abuse, then they are raising it as a priority. You cannot raise it as a priority even from the cities let alone from foreigners. It has to be women themselves, or men’s communities themselves saying this is important, we are sick of being poor, we are sick of being abused, or we are sick of losing our house every two years.”

In his interview titled, “Architecture is a wake-up call” Kéré (Louisiana Channel 2015), puts strong emphasis on the fundamental role that the involvement of the local community plays in his projects. In his own words, “without it nothing is working”. Involving people to be part of the project is about identity, empowerment, both social and economic, it is about culture, as he states:

“Architecture is more than buildings, it’s more than a piece of work that can be seen as art, it’s more than that. It is a process of how together with the people you think about the project. At the end you come up with something that people really feel that ‘it is our own, we are part of it, it is something that we have a strong identification with, we see ourselves in that’. Involving people, getting people to be part of the project is the definitely the basis of this kind of work. Without this nothing is working.”

Community-based participatory design is also an integral and fundamental part of Alejandro Aravena’s work whether it entails housing, public space, or infrastructure. He is the Pritzker Prize-winning Chilean architect, writer, educator, and founder of the architecture firm Elemental⁴⁶ since 2001, as well as the curator of the 2016 Venice Architecture Biennale titled, “Reporting the front”. For him community engagement is necessary in order to identify the community’s needs and therefore enable them to raise their priorities, as he states:

“Participatory design is not even with the families trying to find the right answer; it’s mainly trying to identify with precision what is the right question; there’s nothing worse than answering well the wrong question.”

To make the point about the factors, which determine the community’s needs more succinctly and therefore who sets the agenda of what will or will not be built, participant A3 connects Maslow’s⁴⁷ hierarchy of needs and explanation of human actions to the

⁴⁶Elemental is a “Do Tank” focusing on projects of public interest and social impact, including housing, public space, infrastructure, and transportation (see: <http://www.pritzkerprize.com/2016/biography>).

⁴⁷Dr. Abraham Maslow (1954) hypothesized that people are motivated by a hierarchy of needs. Each individual’s needs must be satisfied at the lower levels before they progress to higher, more complex levels. Maslow posited a hierarchy of human needs based on two groupings: deficiency needs and growth needs. Within the deficiency needs, each lower need must be met before moving to the next higher level. According to Maslow, an individual is ready to act upon the growth needs if and only if the deficiency needs are met. For example, individuals at the lowest level seek coping information in order to meet their

value of the work of humanitarian organisations on shelter and sanitation within communities struggling with the very basics. Maslow's hierarchy of needs contends that in all of human society there are the basic survival needs related to deficiency, such as shelter, food, water, and security, etc., and until all these four needs are covered one cannot progress to the next levels which are related to growth. In other words to be able to think and philosophise and have higher level of spiritual and mental realisation, the basic needs need to be satisfied. In short he argues that 'needs must be satisfied at the lower levels before they progress to higher, more complex levels'. The participant A3 draws attention to the significance of the work of humanitarian organisations dealing with people who are still struggling with the very basics of shelter, food, sanitation and security, asserting that:

"In that context you know it's difficult to start talking about these other philosophical things. So in that context our work on shelter, water and basics is very important. And once they have that covered they will seek more things like social justice and rights and improvement, self improvement, more education, and so on."

Moreover, with regard to the type of architects and other building professionals which humanitarian organisations employ to run their shelter program or their technical or post-disaster recovery department, the participant A3 argues that the people recruited by these organisations after a disaster has struck, are predominantly built environment professionals who do not usually have the knowledge of the local climate or culture and are therefore unsuitable for the job, as he explains that:

"Let's take a scenario, the Haiti earthquake in 2011, the tsunami in 2004, floods, etc., hundreds of hundreds of houses come down. People die or they escape, there is a challenge for housing. Usually when they return it's the principle challenge, where are they going to live? They need work, they need money, they need to lie somewhere and have water and so on. And that's where people like us will come in. Organisations like Save the Children, DFID, the Government of Pakistan, the Government of Haiti or the United Nations, will say 'we need people'. Who does building?"

basic needs. Information that is not directly connected to helping a person meet his or her needs in a very short time span is simply left unattended. (<http://tabacco.t-a-b-a-c-o.org/?p=2314>)

Architects and engineers. The person must have a degree in architecture or engineering. So they're getting in people who have never learnt because I have seen the work that they do. Engineering for water and sanitation is very basic; The architecture of it is very simple, this is staff you do in primary grade school. You don't need to be an architect or an engineer."

When participant A3 arrived on the scene, in Pakistan, there was one of the world's biggest housing challenges, specifically the floods in 2010. The Heritage Foundation of Pakistan was the only organisation, who deployed local artisans, improved vernacular methodologies and local materials in order to build approximately two hundred earthquake and flood resistant houses. The participant A3, from his own experience working in the field, explains that although after 2010 the Japanese donors put 50 million dollars into the United Nations Human Settlements Programme (UN-Habitat) and 50 million dollars into the United Nations High Commissioner for Refugees (UNHCR), no effort was made to utilise local resources or labour for housing reconstruction. Emphasising the wilful waste of money and resources as well as the wilful ignorance by not only the foreign agencies but also the locals, the participant A3 states:

"A hundred million dollars and not one overhang, and you have I don't know how many architects and engineers from Italy, Pakistan, Japan, everywhere, working for these agencies. Why don't they understand the need for an eave? They come and say this is Pakistan we need to ask a local, so they go to local engineers. Local engineers have learnt in these terrible schools mostly. The architecture schools in Pakistan are pretty good but the engineering ones are very old fashioned and they say you use cement and steel and you don't need an overhang, and they don't know about lime, it's not part of these schools."

Participant A6 explains her own career trajectory from completing a traditional architecture course in the UK to getting involved with the work of ASF in Africa. After completing her RIBA Part II she undertook a separate Masters course in development emergency practice, which she describes as the most valuable thing she had done in understanding the complexities of development, not from an architectural perspective but from a development theory perspective. She argues that the real challenge to the

architectural organisations working in the field of development is that they to a great degree do not understand those theories and processes; instead they focus solely on construction, which can sometimes be the easiest part in the process. Discussing the impact that foreign aid may have on local communities, the participant expresses her concern and uneasiness with the work of architects involved in development projects despite the good intentions. A lot of the time NGOs ‘complete’ various projects locally supposedly having involved and ‘empowered’ the local community, and eventually return to their countries leaving behind buildings which may be either unfinished or almost impossible to repair given the limitations of the local conditions and resources, not to mention the impact on the local communities who are left in a more vulnerable state than before. Hence, the question whether there is a need for architects or other design practitioners, in development projects emerges repeatedly throughout this research. Bringing to light insider’s information from being involved in such projects in Ghana, participant A6 states that:

“Ghana is the poster child for the development sector because it is considered to be generally stable and there is very large number of NGOs operating there. I am very sceptical about impact and what I find working in some of these villages is that aid, even though a lot of the time is coming from a good place, has reduced the ability for people to help themselves. I will go for a meeting with my local partner not because I am part of that particular program, but because he thinks that we will get seen quicker and will be taken seriously by having me there because it’s not just a young Ghanaian guy. That is changing but unfortunately it is a little bit of a minefield. I always go these events and play devil’s advocate. Architects are very focused on ‘we are going to build a school, we are going to do this, we are going to do that’, so I can say ‘who’s teaching’? There are these images of these dilapidated schools and what’s really needed is that the investment should be in teachers’ training before we even start building. Equally should we be building schools when the government should be doing that and we are taking away that responsibility from the local government? Where is that money going that is allocated for the schools if we are building the schools? Is it being spent in other ways? I think it’s like a minefield of complicated ethical questions.”

6.5 Training in the field

Echoing the quote from the previous paragraphs, the improvement of lives in many different countries has also been the core of the work, which all the participants have been involved with. For instance, participant A8 has worked extensively towards the adoption of a Code of Practice for rammed earth as a Standard, first in Zimbabwe between 1995-98, and then across the SADC⁴⁸ region where rammed earth now has a national standard in 15 countries. Specifically for earth building, he explains that most African countries lack in formal training for masons, which leads to the consequent absence of a training document, in other words qualifications, which alludes to the lack of value. He therefore argues that having National Standards, for earth in this case, may improve the lives of local masons and influence education in Africa, as he states that:

“Learning on the job is a good way to learn but very often it doesn’t have a qualification. So the guy will say well I can do this, and then you find out maybe he can or maybe he cannot. But he doesn’t have a paper that you can say that he has reached level 2 or 3. But there’s no standard and therefore there’s no training, there’s no training document so the general sense is there’s no value. So what it tends to mean is that it pushes the technology down in every way in its social acceptability, in its monetary value, and therefore people won’t then build at that higher level, they won’t think about the detail of this corner or this intersection, they won’t think about how this connects nicely to that, cause there’s no value, it’s just mud. What you are trying to do when thinking about Standards is to give it sort of status and that status is really about ensuring that masons are supported in a number of different ways.”

Furthermore, in an attempt to improve the lives of the local villagers, our group working on a live project in the village of Abetenim in rural Ghana made use of local building materials and resources as much as possible. At the same time we were equally

⁴⁸The Southern African Development Community (SADC) is a Regional Economic Community comprising 15 Member States; Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. Established in 1992, SADC is committed to Regional Integration and poverty eradication within Southern Africa through economic development and ensuring peace and security (<http://www.sadc.int/about-sadc/>)

considering materials, which have become 'local' by now. As described in chapter three, 'In the Field: The Earth Architecture Workshop in Ghana', after having spent a couple of weeks in Abetenim I became increasingly aware of the fact that the village lacked skilled masons and artisans in various earth building techniques. I believed then and still believe now that often there is a challenge with training them to go back into their communities and use these local materials properly. And by properly here I specifically refer to building techniques and methods that help to withstand corrosion and enhance resilience to heavy rain falls. They may be building with earth/mud/adobe but very often they don't use them in the correct way, and consequently their efforts do not reach the most effective result possible. Although the benefits of the materials that the BRRI advocate for and undertake research on are observable and visible, the impact of their work in rural Ghana needs to be looked at. Can the local artisans and masons use these materials? Do they know how to use them? Would it be of more value and use to the local community to focus instead on the training issues affecting their artisans rather than focusing on the preservation of the local vernacular style? All the above concerns may certainly be relevant to other African countries as well as Ghana. Marchand's monograph, *'The Masons of Djenné'*⁴⁹ (2009), entails an ethnographic study of a team of mud-brick masons in Djenné, Mali. Marchand became a labourer and apprentice with the brick masons in order to explore the technical and social processes involved in making mud-brick buildings and renewing the distinctive urban environment of Djenné. He draws the attention to the apprenticeship system itself (2009: 27), which is a form of training, rather than the buildings, by highlighting its value as the tradition most worthy of support and conservation, as he writes:

"Djenné's builders demonstrate that tradition and continuity are necessarily couched in a relation with modernity and change. My argument is that the tradition most worthy of support and conservation is the apprenticeship system itself. This rounded education endows young men with complex skills to innovatively reproduce an urban landscape that is meaningful to their fellow residents. Ultimately ownership of Djenné's architectural heritage

⁴⁹ In 2001 Marchand, a trained architect as well as a professor of Social Anthropology, with expertise in the subjects of architecture, craftwork, skills, and learning, resumed fieldwork in West Africa, this time labouring as an apprentice, with a team of mud-brick masons in Djenné, Mali renowned for its mud-brick architecture, monumental mosque, and merchant-traders' houses. The study was supported by the British Academy and resulted in a monograph, *The Masons of Djenné* (2009). The book was recipient of the Elliot P. Skinner Award (Association for Africanist Anthropology), Melville J. Herskovits Award (African Studies Association), and Amaury Talbot Prize for African Anthropology (Royal Anthropological Institute) (see: <https://www.soas.ac.uk/staff/staff31381.php>).

must be entrusted to those who make its buildings and keep it a living place.”

The need for training local masons and artisans as being a priority in design and build projects since the local communities themselves crave for it, not only in developing countries but other parts of the world too, is pointed out by participant A4 whose quote I find to be apt here, as she states that:

“It doesn’t mean that everybody knows everything and they just need some money. Most people say ‘forget about the money just train us’. So the thing is with the training and education you have a responsibility to have good knowledge of what the options are, but everybody needs to think about nature and the natural systems and how to maintain them or even enhance them. And hopefully to enhance them to be abundant and productive, not just productive for us, I don’t mean just food production or fibre and fuel production for us. It has to be productive for local nature and natural habitat. You get these competing priorities, human priorities but yes training is always what people are asking for. If that training would already exist, if that knowledge would already exist, they would be sorting out their own situation. The fact is that it is possible to sort out, but obviously sometimes that requires changes and supply chains.”

In his interview titled, “Architecture is a wake-up call”, architect Francis Kéré also brings to the fore the lack of qualified skilled labour or artisans in traditional rural communities similar to his own in the village of Gando in Burkina Faso. For him one of the challenges is to teach his community to use modern skills in order to be able to understand the process and even repair the building(s) if necessary, as he states:

“I have to remind you that in the place where I work, you lack qualified labour and technicians so you need to teach the people how to use modern skills. You need the people to understand what you are going to do. So later on they will be able to understand, and even just for the maintenance. Working with the people is fundamental for the kind of work I am doing.”

While doing fieldwork in Abetenim as part of the Nka Foundation I cogitated about the need for training in relation to the role of Western trained architects involved with non-governmental organisations in development projects. I deliberated on the idea of receiving formal training at the BRRI for instance prior to starting construction onsite, as we, and by this I refer to our group members working on the canteen project (see chapter three, ‘In the Field: The Earth Architecture Workshop in Ghana’), came from different and diverse cultural and geographic backgrounds, and were unfamiliar with the local physical and social environment. Hence, it seemed to me that in order for our work to be beneficial and of value to the local community and specifically to the artisans, the overriding priority and investment would be to be trained on various local building techniques prior to starting the actual construction process. In light of the above, hands-on training emerges as a fundamental and integral part of development projects in similar contexts. To make the point more succinctly participant A3 expressed this need in a persuasive manner:

“I know from experience that you don’t learn anything, you don’t learn enough just by attending a class or by listening to the radio. You need hands-on training in the community where you are actually doing stuff with your hands. I know that from going to the Centre for Alternative Technology⁵⁰. It was great and very interesting. You have 10 lectures in a week and you can’t possibly remember all that stuff, and it’s all theoretical. I think over the whole course there was one Materials week where you play with some straw, lime and clay. In that week I happened to be not even there. And the Economics lectures were completely a waste of time. But you know these things happen. The point is I had to be doing it and doing it and doing it and making all the mistakes myself on my house to really learn. But after that period I was able to go to the field, that’s why I recognise that just sending people a leaflet or any information, or even a 10-year course isn’t enough.”

⁵⁰The Centre for Alternative Technology (CAT) was founded in 1973 on the site of the disused Llwyngwern slate quarry near Machynlleth, in Mid Wales. CAT is an education and visitor centre demonstrating practical solutions for sustainability and is concerned with the search for globally sustainable, whole and ecologically sound technologies and ways of life. They cover all aspects of green living: environmental building, eco-sanitation, woodland management, renewable energy, energy efficiency and organic growing (<https://content.cat.org.uk/>)

Furthermore, while on fieldwork in Abetenim I also reflected on the fundamental importance of both training and collaborations in order to achieve effective outcomes and long-term benefits. I am of the opinion that community-driven initiatives, whose narrative and philosophy entail utilising local resources as much as possible in order to enhance resilience at community level, need to demand that the foreign and even local participants they work with should be going through training prior and during the project implementation. By foreign and local participants here I refer to the architects, practitioners, architecture and other students, as well as other interested parties getting involved in *design and build*⁵¹ projects through community-driven initiatives such as the Nka Foundation. With respect to the availability of vocational training available in Ghana participant A8 explains that typically what we find is the crafts or hand skills training which are often quite poor. He demonstrates how important carpentry skills are in that context:

“If there are training schools, they are set up to teach skills which are metal, cement, maybe wood, very often there are no carpentry skills. One of the things that I think is really important is carpentry skills because there are a lot of masonry skills that exist but when you come to put on the roof suddenly it’s like oh! A carpenter can set out the whole site on the ground, they have those skills to set out the site, just like the mason does. Then the carpenter can call masons because they exist around and then the carpenter can put the roof on. So in a way carpentry is quite a useful training but there aren’t any training schools or programs for people coming out of school.”

Vocational training falls within the remit and ethos of the BRRI. The reason the latter have set up the National Artisan Centre is to provide and facilitate training programs. In November 2014 when I interviewed participant A1, they were running a training programme for the duration of five weeks. They run it annually which involves lectures, field visits, and practical sessions which include the following: introduction to and selection of clay bricks; raw materials for brick production; introduction to cement and

⁵¹Design and build is a generic term describing a procurement route in which the main contractor is appointed to design and construct the works, as opposed to a traditional contract, where the client appoints consultants to design the development and then a contractor is appointed to construct the works (http://www.designingbuildings.co.uk/wiki/Design_and_build_procurement_route)

pozzolana; site preparation; brick production processes; compressed earth blocks (CEB); sandcrete block manufacture; concrete making techniques; brick mortar; brick deterioration and repair; termite infestation and control; as well as cost saving techniques. They are also awarded with certificate of participation which is of paramount value, or should be of paramount value, as the lack of formal training for masons poses one of the biggest challenges facing various African countries.

Upon my return back to the UK from Ghana I suggested to the Nka Foundation that training should be incorporated as an imperative in their work as I had found out that the local labour in Abetenim were not even aware of any training opportunities locally. So the argument here is how to enable the local artisans' access to information about training opportunities close to them geographically and in this instance information about training programs at the BRRI. The latter advertise their training programs by means of the radio which usually carries on for about two months before the start of the program, as well as the district assemblies with which the local artisans are commonly registered. The district assemblies relay the disseminated information to their contractors and then their foremen relay it to the artisans. The participant A1 demonstrated that the training takes place at the centre where they are able to manage it with the available limited funds and resources. Ideally they would opt for the training to take place in the various districts instead of the artisans having to commute all the way to the centre. Their aim for the near future is to organise this training outside their premises either regionally or at a district level depending on the funding and resources. With respect to the duration of the training program they were running during my fieldwork in Ghana, the participant A1 explains that:

“We are doing this one for two weeks because now we have realised that people prefer it two weeks rather than one month as most artisans are also working with contractors; some are working with institutions and companies, and it's very difficult for them to give them a leave of one month. Two weeks they can afford, but one month they are hesitant. So we make it in two weeks then you can even break it and say this is part 1 and later you come for part 2. Initially it was one month but now we have reduced it to 2 weeks for specific needs. Depending on your need, if your need can be met in one week or two weeks then fine, it will work for you.”

Pertaining to training the artisans from Abetenim, the only challenge I anticipated them to face if they were to join one of the BRRI construction training programs would be to not be able to earn a livelihood either working in the fields or elsewhere at the same time as attending any program. That would in turn encumber their families immensely as making a living daily ensures their survival. In consideration of the local masons' living conditions and circumstances the participant A1 suggested they could create a tailor measured program for them at the centre, stating that:

“The training programmes- are against payment but it’s very, very minimal. With this one running currently it is supposed to be for one month and you pay 500GHC, for the whole month including their boarding and lodging. These courses are for masons, for artisans, university graduates, whoever. For example like your people in Abetenim, they could come in a group and say yes we want to be trained to do this, so what will be the package for us? And then we could work out something for the entire gang or let me say a group. So it’s tailor measured. But three weeks should be ok. And from Abetenim you could make such an arrangement that it will be daily so they do not sleep here. So they can go and come. I don’t think it’s going to be a problem. So they won’t feel like we have taken them away from their families or they are missing something.”

Discussing the education system in Ghana in relation to the lack of formal training for masons, the participant A1 pointed out that it is widely known that where training is concerned one of the basic problems is the use of not only local materials but even other ones because there is a disconnect between the basic education and the secondary education. He explained that:

“We used to have these JSS (Junior Secondary School) technical workshops which every student was supposed to pass through to develop some of these technical skills where we could have taught all these things. But now most of the students come out without having any knowledge or technical know-how about even construction or building materials. That should have been the basic foundation of those levels. What we found was that most of these artisans that is where their level of education is, at the JSS and then at the most at SS (Secondary School). And then if you have some at the

polytechnics. So that is where we have identified there is a gap; most of the times when we organise this training we call for the ones who are in the system already, not for those that are coming to learn afresh. We have people who are doing masonry work, people who are doing brickwork, people who are in carpentry. When they come we look at their background and what they are lacking and then we fit them in with those ones. So we look at your level and based on the interview we know the things that you might need for the next level, we give you this kind of skill and then you take it away to your district, to your locality.”

6.6 Where do we go from here?

The ensuing excerpt, taken from the interview with the participant A4, is both compelling and inspiring as it succinctly sets the scene for what the future may demand from the discipline of Architecture and practice:

Researcher: *“What is the way forward from here? Given that the architectural curriculum prioritises spatial delight and form, how to be a status architect, and how to make a dramatic impact, where do we need to divert our attention towards?”*

Participant: *“Nature first, not pipes, not carbon markets, not even just CO2 reduction. Let’s think of our relationship to natural systems, how do nature systems work at the moment, how can we support them at a time when they are in critical state of collapse, and how we can stop doing the things that we do at the moment, and do things differently and that is a whole system thinking change.”*

Researcher: *“Do you think there is need architects in development projects in the global South?”*

Participant A4: *“No, not always, so what is the purpose of an architect? I think there’s nothing sacred or holly about being an architect. So the first thing what kind of person are you? They should know how to communicate well, they should know how to listen and they should understand other people’s issues and other people’s problems, and environmental problems and ecological problems, and understand that what they are going to do is*

make it better not make it worse. And if you have an architect like that then they can be useful in all sorts of ways because architectural training can teach people in terms of systems thinking which is what this is about, i.e. juggling lots of things together, seeing the interconnectedness of all those things and that's a useful training."

Researcher: *"What should the role of the architect entail?"*

Participant: *"What an architect ought to be able to do is to understand structure, context and impact and how they can make it the most positive and beneficial building, and not require any energy except maybe for some lighting and how is it going to support nature including human nature, i.e. its occupants."*

Researcher: *"Do you think we will need any architects at all in the future?"*

Participant: *"Do we need any architects at all is a good question. Is your building really necessary? Is your architect really necessary? To people who are commissioning buildings, make sure you know what you want, and then see if they are going to deliver it. Basically the whole thing should be about the performance rather than the product."*

6.7 Concluding remarks

In light of the discussions relating to the challenges posed to architecture, both as a discipline and practice, in addressing resilience and adaptation approaches, the emphasis is placed on the urgency to rethink the discipline and its practice from a broader cultural and environmental perspective, which sets the tone for the ensuing discussion. The findings from all five case studies, both secondary and primary, as well as from the analysis of the 14 interviews, emphasize the importance of thinking, designing and building/making in a holistic manner and according to culture and climate; further they draw attention to the social and cultural context and values, which are embedded in the everyday making of built form, and reposition/rethink the role of the physical element as secondary.

The research demonstrates that architecture has a role of service to the planet, to each other, and to cities. We have not for a long time lived in a culture that has been more for the social good. Thus, in this stage of consumerism and capitalism the emphasis must be on the need to work together to support the planet and natural resources that the

humanity relies on for survival. It is not just about architecture; it is about culture, the environment, politics, as well as governance. The following excerpt calls for a new paradigm of the architects' constitution, one which encapsulates the essence of the core of the discipline and profession at large, and supports and encourages the ideology of 'do no harm'. The architects' constitution, as suggested during the interview with participant A4, also echo Cedric Price⁵²'s approach to architecture and convey the fundamental basic approach of asking first of all, 'Do you really need a building?', and sends an invaluable message to all (future) architecture students, practitioners, educators, and others involved in design and building. The participant A4 eloquently argues that:

“The architects’ constitution should say something like, and I think it does in some respects, do no harm, in which case you’d better try to do something really positive because there are still going to be some impacts. How are going to make up for that? And then of course the question that Cedric Price, the architectural philosopher, said ‘Is your building really necessary?’”

The ensuing discussion is about the issue of architectural education because that is where most of the principles and values that define the profession are initiated. Indeed what surfaces is the imperative for the discipline to 'ask the right question or questions', as Aravena's work also asserts, in order to re-invent and interpret a number of factors which inform and shape our discipline. As already stated, this thesis attempts to focus more on the cultural and social values and context, which are embedded in the everyday making of built form, rather than on its physical and spatial element. Most importantly the findings from the analysis of the 14 interviews as well as from all five case studies, both secondary and primary, draw special attention to the idea of 'modern', as well as the experience of 'modernity', and what this may mean in a non-western context, as opposed to the West's deluded understanding of what "modern" may entail outside the West; in other words how architecture is taught and practised. The discipline of Architecture is incredibly Western according to the periphery; the North looks at the

⁵²Cedric Price (1934-2003) was one of the most visionary architects of the late 20th century. Through projects, drawings and teaching, Cedric Price (1934-2003) overturned the notion of what architecture is by suggesting radical ideas of what it might be. He saw the role of an architect as that of asking the right questions, as Reyner Banham has commented: "...the basic approach is certainly one that appeals to me, a way of really not saying, 'What kind of building do you want?', but almost of asking first of all, 'Do you really need a building?' (<http://design.designmuseum.org/design/cedric-price.html>)

periphery from a North-centric perspective driven by nostalgia and hence tends to project past memories of non-western narratives onto the present, whereas the periphery is dealing with their experience(s) of modernity and transformation. By periphery here I refer to academics, scholars, practitioners and students from the South. The research argues that scholars, practitioners and students from the North need to understand that cultures, building practices included, are not static dynamic entities; they are in a continuous state of flux. In a similar manner our society is also a dynamic system in a state of permanent alteration, continuously reinventing its needs. Architects, in the global North, are generally unable to read the mutations that take place at a societal level and rather have the tendency to look at space through a lens of nostalgia, which is the very thing that impedes the Discipline from 'seeing' what 'modernity' entails outside the West. If one looks closely at the periphery, they realise that it is a living place with organic and dynamic culture, and manifests a strong sense of change. Yet we tend to forget that the processes of modernisation(s) are constantly evolving, informing and shaping our everyday practices of living on every level, from our local values and customs to local arts, everywhere on the globe. Echoing the words of Marchand that, 'tradition and continuity are necessarily couched in a relation with modernity and change (2009: 27), what we perceive as 'local' is also in a state of perpetual alteration. The thesis argues that it should not be about a choice between 'local' as opposed to global; rather it should be about facilitating our 'local' practices to be informed and adjusted to globalized changes in a way that is meaningful to the local communities. At the same time it is also about allowing international influences, i.e. discourse, the construction industry, trade, transactions, etc., to be shaped by our 'local' cultures.

In relation to Africa, the research questions the increasing interest in education and architecture in the continent, expressed by educators, practitioners and students over the past few years. Going by the numerous major international exhibitions devoted to the African cities to the growing number of student visits to the continent, one could say that there is almost a compulsion to define African architecture outside the African continent. The periphery on the other hand seems preoccupied with dealing with their experience of modernity and transformation, which includes histories, experiences, narratives and perspectives that the colonial projects have suppressed. By periphery here I refer to academics, scholars, practitioners and students from and in Africa. A critical point in the research, as it surfaces from the periphery itself, is precisely as Lokko argues, that African academics and students of architecture are struggling with their

‘otherness’, and emphasises the urgency to explore what it really means to be African and at the same time ‘modern’, embodying and embracing ‘modernity’. In an interview published on 11 November 2004 by the *Scotsman* (see: <http://www.scotsman.com/lifestyle/culture/books/meet-the-scottish-jackie-collins-1-561681>), Lokko states:

"I have tried to argue that architecture is not just a technical discipline, it's also a cultural discipline, and issues of history, identity and migration are very much part of the culture," she says. "Different cultures look at space, surface, line, beauty, and have different ways of understanding them. I'm interested in trying to make a space where students can explore these things. Architecture in Britain bangs on endlessly about attracting different sorts of students, but my experience of teaching African and black students is that they feel alienated from it because the discipline is incredibly Western."

The findings from the analysis of the interviews as well as from all five case studies, both secondary and primary, underline the gravity of the meaning and act of “exploration” in relation to architectural training in the continent; they emphasise the need to ‘see’ the South at large beyond its challenges and instead focus on building upon existing knowledge. This pertains to, among others, the need to engage with and reinterpret the indigenous crafts and the vernacular which could be “the kernel of a DNA of a certain response in African architecture”, as Addo argues. Once again, it is about reinterpreting and adjusting the local crafts and the vernacular to globalized changes in a way that is meaningful to the local communities. In order to do so we need to explore them in all their depth. We need to allow the conversation between the ‘local’ and the global to unfold; in other words to reinterpret the indigenous in order to create the “connective tissue”, as Addo argues. This “connective tissue” got lost as African countries transitioned from the indigenous to the more formal Western approaches of not only design but also training or lack of it. Marchand’s ‘The Masons of Djenné (2009) is brought into the discussion as it explores from the periphery the training of the masons locally, specifically the apprenticeship system itself. The value of the apprenticeship system is highlighted and recognised as the tradition most worthy of support and conservation, instead of drawing attention to the buildings. Marchand very eloquently argues that tradition and continuity are necessarily looked at in relation to modernity and change, as he explores the complex relationship of masters, apprentices,

and labourers who encounter the tensions between tradition and modernity as they strive to integrate materials, religions, culture, business, and craft. Therefore formal training for masons in Africa and elsewhere is of utmost importance as it leads to a training document which affects both the mason's qualifications and the value of the material itself, at a local level. In places where there is no apprenticeship system or where modernity has permeated the local building methods and traditions there is lack of skilled masons and artisans in indigenous building techniques. That is due to the loss of the "connective tissue" as it was mentioned earlier. Therefore the challenge is to teach local communities to use modern skills in order to be able to understand the process and even repair the building(s) if necessary. From a Western perspective having National Standards, for local materials including earth, may improve the lives of local masons and influence education in Africa.

Moreover, the research identifies Architecture's weakness in engaging with the uncertainties of our era. It therefore puts forward the urgency for the discipline to (re)-align with the reality and issues of our age in order to cope with what is to come. It brings to the fore the discipline's obligation to engage with the ongoing narrative about global warming. In consequence the redefinition of what "modern" means in relation to materials and methods of designing and building in the global South becomes essential. Thus the research considers vernacular building methodologies to be an asset and appropriate means, which informs current approaches to resilience and adaptation in this context. The issue of Architecture's propensity to be self-referential, and wilful reliance on representation rather than a real event/situation is contested. The detachment begins right from the design studio and is carried through into practice, which makes the role of the design studio training fundamental and consequently calls attention to the curriculum. In view of the above, Paolo Freire's critical pedagogy theory and movement is considered in order to discuss architectural education. In his seminal book titled, 'The Pedagogy of the Oppressed' (1996), Freire argues that education has a duty and a responsibility to offer the students the tools, the capacity and freedom to engage with the existing state of affairs, and therefore be able to transform it. His argument echoes in the work of many scholars and educators, including Lokko, Koolhaas, Wigley and Till to name but a few, as they contend that it is not enough to train students by giving them expertise in already defined fields; education is all about giving the students the critical skills and tools to shape the field itself. Moreover, the research draws attention to the curriculum and the need to rethink it from a broader environmental and cultural

perspective, a 'nature first approach' instead of 'a fabric first approach'. The curriculum needs to include hands-on involvement in the building process as opposed to merely forming computer-aided conceptual spaces.

Finally, conventional architecture school does not offer any career path that prepares students to work as design professionals in destitute communities or deal with the real world problems, like poverty and lack of resources. Yet, there is a growing number of students and graduates involved in the so-called *social architecture* and *environmental initiatives* in many regions of the global South. Consequently, the absence of expertise and lack of knowledge about the local culture, values and materials, more often than not leave communities more vulnerable than before. Urgent questions about the role of architects and whether there is a need for architects and/or other design practitioners in (design and build) as part of development projects in the global South come to the fore repeatedly throughout the research. Further, the findings from the analysis of the interviews as well as from all five case studies, both secondary and primary, draw special attention to the fundamental role that the involvement of the local community plays in development projects which entail design and building; they emphasize the value of engaging people on their own terms, listening to the local community's needs, discovering what their capabilities and strengths are, and therefore enable them to raise their priorities and set the agenda of what will or will not be built.

Chapter 7

Data Analysis Part 2:

The value of local traditional materials In empowering communities in the global South

Chapter 7: Data Analysis Part 2: The value of local traditional materials in empowering communities in the global South

7.1 Overview

This chapter brings together and tackles the emerging theme, which pertains to practice, such as the materials used for building. Thus the following are discussed: Approaches to resilience and adaptation through materials; The value of using building materials suitable for the local climate and context; The role of the building and construction industry in sustainable development; ‘Modernising’ local traditional materials in order to cope with changing climatic conditions; Alternative affordable indigenous building materials: the case of Pozzolana cement in Ghana; The need for National Building Standards in Africa.

7.2 Materials as depicted by the participants

In what follows is a succinct account of three different materials such as earth, cement, and lime, as depicted by the participants as either the most predominant examples in their work, or as in the case of cement, a material we could use less of or even eliminate completely. These accounts include excerpts from the semi-structured interviews which I conducted with them.

7.2.1 Earth: How do you give it that voice?

During the interview with the Algerian architect involved with CapTerre (participant A7) in the rebuilding of adobe⁵³ original walls surrounding the cemetery in the centre of the heritage town of Timimoun in the south of Algeria, the participant A7 illustrates how connected to nature and land human beings feel through earthen/adobe architecture, as he states that:

⁵³Adobe is a building material made from earth and often organic material.

“Feeling the sand under our feet... it takes you to another world, it gives you a better sensation, it makes you feel how much you are related to this land, our land, our Algeria, our paradise.”

The participant A8, a rammed earth expert and practitioner who has worked extensively towards the adoption of a Code of Practice for rammed earth as a Standard, first in Zimbabwe between 1995-98, and then across the SADC⁵⁴ region where rammed earth now has a national standard in 15 countries, speaks about the significance of ‘giving earth a voice’ and puts emphasis on its advocacy in order to influence education in Africa. He also argues that globalization has exposed the global South, and beyond, to romanticised western style modernity and consumerism as well as ways of building, housing and habitation patterns, and made their own culture seem pitiful by comparison. Specifically in relation to Anglophone and Francophone Africa before colonization, the various housing, habitation patterns and building techniques related to the local cultures and traditions of the regions and people. However, the growing globalization, modernization and urbanization in the region, has caused the various local housing and building patterns as well as materials to become westernised, and at the same time a gradual disconnection from the local cultures and resources. This has had an impact on local traditional architectures. I find the following quote to be apt here, as he states:

“It is complicated. It’s not a simple thing how we have fallen into this thing that a material that has built beautiful buildings for many thousands of years has suddenly become something that we don’t talk about and has no voice. How do you give it that voice? You have to do it in lots of different ways. Earth building is very emotional because it’s everywhere⁵⁵.”

⁵⁴The Southern African Development Community (SADC) is a Regional Economic Community comprising 15 Member States; Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. Established in 1992, SADC is committed to Regional Integration and poverty eradication within Southern Africa through economic development and ensuring peace and security (<http://www.sadc.int/about-sadc/>)

⁵⁵ Some of the most prominent earthen architecture, which participant A8 refers to are the following: The Great Mosque of Djenne in Mali; the Old Walled City of Shibam, or ‘the Manhattan of the desert’, in Yemen; The Alhambra Palace in Spain; The Great Wall of China in China; M’Zab Valley village in Ghardaia, Algeria; Ksar Ait Benhaddou in Morocco; Fujian Tulou in China; Meti School in Bangladesh (won the Aga Khan Award 2007); Ricola Kräuterzentrum Building in Switzerland; The Great Wall of Western Australia, a modern housing collective in Pilbara, Western Australia; Koudougou’s Central Market in Koudougou, Burkina-Faso, to mention but a few.

Everybody knows it. They will all tell you my grandfather built his house with earth. But nowadays due to modernity, improvements, etc., earth building is somehow in question in a way that a car isn't. Everybody knows that a car is taking us to a brave new world but they don't understand that necessarily with earth. And so you are making the case for earth, you are that voice for earth and you have to voice that for the architects, for the engineers, surveyors, the builders, for the Ministry of education."

The participant A7 reinforces the idea that globalization's core focus is on profit not people and that global economic activities have exposed the region to western style modernity and ways of construction which are in effect harmful to the local community and environment. In relation to earthen buildings in Timimoun, Algeria, he states:

"In Algeria the use of earth is absolutely not encouraged in the cities, sometimes not even allowed. Even if we take the example of Timimoun the local people started to destroy their earth buildings and homes. Even the authorities help them to do so, they give them money to build the new buildings and houses with cement. It's politics, it's ridiculous. And when I see that I ask myself why do we have to use additional materials even when people know that earthen architecture is perfect for them? If you ask people they say yes we know that. Just ask them one question, how many A/C systems do you use in your house? They told me that for each room they use one A/C. But before when they had their earthen building they didn't even have one A/C. Of course now in Algeria we don't have the problem of energy because we have electricity and all the energy freely. It's not the same as in Europe because in Europe they started to use and to think about earthen architecture, ecology and sustainable architecture because they don't have energy. They lost energy so they need energy. But here energy is for free. They don't even pay the bills of electricity, they only pay half."

Furthermore, the participant A8 highlights that the climate of each locality offers a distinctive natural environment and is a powerful factor on the material choice and use as well as the design of buildings. He brings up the example of a project he was involved with in Zambia two years before the interview, and the fact that, Zambia

makes a lot of good quality mud brick, and they make it in September when in effect the local climate enables the perfect conditions for the bricks to get absolutely dry and ready to be used in just forty eight hours. Thus mud brick is an excellent choice for that context. In the United Kingdom on the other hand it would probably take a month for the mud bricks to dry. The significant relationship between climate and life span and/or durability of construction materials in buildings is also pointed out by the participant A5 involved with a carpentry skills transfer project in Swaziland (see chapter 5), as she describes the traditional round mud houses in the region. Mud can be repaired with new mud when it deteriorates as it is durable to the climatic conditions of the area where they are situated whereas ‘with the breeze blocks little square houses it’s not like that, you just get this filthy pile of breeze blocks’. The participant A3 discusses affordable, sustainable, and flood proof homes for the masses built with bamboo, clay and lime in order to mitigate the immense flooding in southern Pakistan in 2010, and argues that traditional and/or vernacular methods of building should be improved since the greenhouse effect has caused the climate globally to become much more adverse than before. He states:

“These are poor people, they are masses. They didn’t raise their houses up on plinths as they couldn’t afford all the time to make the raiseup. And essentially as you know, if you leave a pure clay mud wall in water for a long time, it will melt layer by layer. As the clay particles go flat they level with too much water, then the next layer starts to go then the next layer, slowly slowly. So the super thick ones didn’t actually melt out much, more of them fell down when the roof fell down cause they had no overhanging eaves, very badly designed roof and so on. So vernacular is not necessarily better at all, it didn’t really work with the wattle and daub. But here we are using two main design changes, one is an overhanging roof, so really getting into the issues around the roof materials cause it is quite an important one.”

The same problem we had in Ghana. I worked in rural Ghana so we had exactly the same problem, we had the local masons, the young ones didn’t know how to build with earth and they had almost nobody to teach them so they abandoned it and started building with cement.

7.2.2 Cement: An addictive powder

This is an excerpt from the interview with the participant A8, who has worked extensively towards the adoption of a Code of Practice for rammed earth as a Standard, first in Zimbabwe between 1995-98, and then across the SADC⁵⁶ region where rammed earth now has a national standard in 15 countries. I find this precisely illustrates how addictive cement can be and how by setting an example of replacing it with something less pernicious to the environment we may effectively contribute towards empowering communities both socially and economically.

Researcher: *“What if there is no lime where you are working?”*

Participant: *“Then if you are going to use cement take the clay out. If you have got clay you can build. One thing that keeps coming up is that when cement comes in it gives us problems, either in covering up properties of old buildings, and making new problems or in reducing the effectiveness of clay in new structures.”*

Researcher: *“We did not want to use cement to stabilise the earth bricks in Ghana but we had to in the end. Besides the fact that it does not bind with earth as it is a completely different material it is also very expensive in Ghana. But when we went to the BRRI and found out about pozzolana and they tested the soils for us, and told us we had to use cement but could replace part of it with pozzolana, we were advised to use these three materials together; earth, pozzolana, and cement. So we did end up using very little cement.”*

Participant: *“Well I had quite a long discussion with one of your colleagues about it before you left for Ghana and the first thing he sends back is this link and says ‘oh and here we are putting cement into the block’, and I just thought oh no! In our culture we have quite expensive powders that are quite addictive, you take a little bit and (sniff) and you go oh actually if I am on a good night out that’s the direction I am going and cement is exactly the*

⁵⁶The Southern African Development Community (SADC) is a Regional Economic Community comprising 15 Member States; [Angola](#), [Botswana](#), [Democratic Republic of Congo](#), [Lesotho](#), [Madagascar](#), [Malawi](#), [Mauritius](#), [Mozambique](#), [Namibia](#), [Seychelles](#), [South Africa](#), [Swaziland](#), [Tanzania](#), [Zambia](#) and [Zimbabwe](#). Established in 1992, SADC is committed to [Regional Integration](#) and [poverty eradication](#) within Southern Africa through [economic development](#) and ensuring [peace and security](#) (<http://www.sadc.int/about-sadc/>)

same, you get one little ‘sniff’ and you are hooked and then you find all these academic papers which are all funded by the cement industry which justify your addiction. But it’s an addiction. You are not free, you are stuck with this thing. And then it takes over in all sorts of funny ways. The BRRI are funded by the government and probably the government is the biggest stakeholder in the cement industry in Ghana. So are they going to fund them and they are not going to promote their beautiful material?”

Researcher: “*What would you have done if you had been with us in Ghana?”*

Participant: “*It’s a difficult question to answer but I wouldn’t have used cement. Maybe I would have used it in the foundation but I wouldn’t be mixing clay materials with cement, it’s just not a good idea. Just be clear about what you are doing. And as soon as you start ‘sniffing’ you are hooked. It gives a sense of security which may in certain circumstances be justified but what you are saying to all of those people in that village is ‘you can’t really do this unless you have got cement’. And the people of that village say well these guys came and built this great structure but we have to have cement. And that’s a very damaging place to start. I would rather you justify to me why you are building with cement, than I have to justify to you why I am building with earth. It always comes the other way round that I have to justify what I am doing. So it’s a really big issue.”*

7.2.3 Lime, as opposed to cement!

Discussing the use of lime instead of cement with participant A4, alludes to the idea of homeostasis, once again, in relation to people’s tendency towards what they know which in this connection is the choice and use of cement as opposed to lime. The participant A4 has been involved in the actual building of the information centre at the Centre for Alternative Technology (CAT), and one of the criteria was no cement, so the use of lime was encouraged instead of Portland cement. Yet again the same fundamental question, ‘as opposed to what?’, is raised with reference to a choice between cement which is a high-embodied-energy material that causes local and global destruction, and lime, also a high-embodied-energy material requiring temperatures higher than those needed to produce Portland cement. Lime has half the CO₂ emissions and draws back CO₂ during its life span. Having said that there would be all the other drawbacks of

local ecological impact, as well as the fact that and cement and lime still have the same transport emission cost. In the United Kingdom lime is sourced from places like Timar in Wales but a lot of it is imported from France. The need to consider how the use of a material is going to improve the situation, how it is going to perform, the need for training on improved vernacular methods of building in order to use lime plasters properly are illustrated in her quote below, as the participant A4 argues:

“Maybe it’s horses for courses at the moment, on the other hand it might be a choice. Lime is a material that takes training to deal with. So how do we teach people about using lime? There’s a lot to learn. Just because one comes from a rural community or a community in the so-called developing world it doesn’t mean that they will know everything about lime and construction with earth or whatever.”

The participant A3 emphasized our dependence on fossil fuels and the significance of divesting from using them in relation to lime production processes, in order to achieve long-term resilience, asserting that:

“If you are using wood to burn the lime kiln and that wood is a renewable wood then the large bulk of the emissions are not actually emissions. What you are getting is some heat generated in the kiln and CO₂ is being emitted by the lime when you burn it but that CO₂ is re-absorbed by the lime so you can neutralise that out. Most countries use coal and gas to do that, but if you are using a renewable heat source to do that your emissions are greatly reduced. Now somebody will have to go and assess independently how many of these lime kilns are using renewable heat source, and how much of our lime comes from those and how much of our lime comes from other ones that use fossil fuels. So the table is there to be challenged.”

7.3 Materials: Why are they important in relation to resilience?

This research is about approaches to resilience and adaptation through the use of local materials; in other words, it is about looking at how local materials can empower communities and build resilience not only at a physical level but also in other ways.

Therefore the research is asking the question ‘how can the use of materials improve resilience?’ The discussion in the following sub-chapters revolves around building materials and their relation to critical issues such as: long-term resilience; the construction industry; the understanding of our relationship to where everything comes from; what working with nature means for materials; what unsustainable means; and issues about whether we should use certain materials as opposed to others. We are now familiar with the prevailing debate and narrative about global warming and climate change, that if humanity wishes to mitigate the effects of climate change and preserve our planet we need to gradually divest from fossil fuels and reinvest in socially responsible alternatives. World renowned academic institutions warn us that the globe is facing severe shortages of fossil fuels and other natural resources, and that by continuing to extract and burn the world’s remaining reserves of oil, coal and gas, the earth’s temperature would raise which would cause long-term climate catastrophe. Overall, climate change is projected to deliver a devastating combination of adverse impacts for the world’s poor, both because of geography and low income, making adaptation to climate change much more difficult (Manu et al., 2009: 210). The building and construction industry is a major area for sustainable development at a global level. The construction industry uses up between 20 to 50 percent of natural resources globally as the built environment is developing continually, and is responsible for about 20 percent of global carbon dioxide (CO₂) emissions (Manu et al., 2009). The gravity of the construction industry’s role in reducing our dependence on fossil fuels is emphasized by the participant A4, asserting that:

“If you end up looking at UK materials and long-term resilience I would take it from the point of view of resilience, meaning taking the fossil fuels out of processes, what does that leave us with? Not taking energy out of processes; it doesn’t mean that everything has to be hand-chopped timber. But if we were to divest, looking at a scenario thirty years from now where we have divested completely from fossil fuels, what does our construction industry look like and what materials are we using? And how does that close the circle so that it’s a long-term sustainable construction industry? So then you would be looking at things like straw bale construction, sure, timber and you might still be importing stuff and you might still be using some cement, but they might be there for looking at renewable energy powered kilns and so on.”

Manu et al. (2009) examine the contribution of global construction industry to climate change in their paper titled, ‘Mitigating Global Climatic Change Through The use Of Green Building Materials’, looking specifically at the current trend of the climatic change in Ghana, and how the effects of the phenomenon can be mitigated by gradually reducing the use of concrete while increasing and encouraging the use of available local green building materials⁵⁷, such as sun dried bricks or blocks, compressed earth blocks (CEB), lime (cottage industry-base) stabilised earth blocks, lateritic stones, Pozzolana Portland cement, and clay plasters. Concrete is generally considered to be one of the most common building materials in the world. The cement industry alone is responsible for approximately 10 percent⁵⁸ of global carbon dioxide (CO₂) emissions (Manu et al., 2009: 209), a large part of which accounts for its transport and freight but also for extracting and heating of limestone⁵⁹ in the first place which is almost entirely fossil-fuel based. The burning of fossil fuels to heat the kiln results in CO₂ emissions indirectly while the heating of limestone releases CO₂ directly. The discussion about concrete, its production and use in construction unleashed some sort of resentment in the participant A4 about how the construction industry is set up to sell products, including concrete as a primary building material, and not ever taking any responsibility to raise awareness about the quality of life for the people who are mostly impacted by these production processes, as she voices:

“Concrete has a high CO₂ emission but also it is mined so there’s local ecological destruction there too. And then you can also look at the quality of life for people in the industries that are supplying these materials, so looking at copper as people often want a copper roof. If you are sourcing that as virgin copper, that comes from a copper mine in the Congo or somewhere else. We know about blood diamonds now but what has the construction industry done to raise awareness for the quality of life for the people who supply our construction greed? So there are those issues. Then

⁵⁷ All these materials and technologies are researched by the CSIR-Building and Road Research Institute and International Centre for Earth Construction- National Superior School of Architecture, Grenoble.

⁵⁸ This percentage was also provided by one of the research participants at the time of the interview in September 2015.

⁵⁹ Limestone is the primary component of cement which in turn is the primary ingredient in concrete. To produce cement, limestone and other clay-like materials are heated in a kiln at 1400°C and then ground to form a lumpy, solid substance called clinker; clinker is then combined with gypsum to form cement (<http://blogs.ei.columbia.edu/2012/05/09/emissions-from-the-cement-industry/>).

if it's timber where does that come from, how far is it coming from and so on, and should you change the design of your building to be able to use a different material?"

The understanding of our relationship to where everything comes from is what in effect all interviews draw attention to as well as our ignorance about where everything comes from. Regardless of whether we end up using concrete for instance or not we should be aware about its production process, where cement comes from, how much energy it produces to make it, as well as the impact its production has on the atmosphere. The latter is part of a Japanese study, which demonstrates that, 'to compensate for the current levels of CO2 emissions from cement production, a barren land area approximately 1.5 times of Indian territory need to be afforested annually' (Manu et al., 2009: 211). A fundamental question posed by a participant is, 'As opposed to what?', as the participant A4 aptly explains:

"As opposed to what? What kind of scale have you got here? What does unsustainable mean? There are issues about whether we should use timber but as opposed to what? If you have a choice between a high-embodied-energy material that causes local destruction then what are your other choices? And the issues that we are facing require systems thinking to look at how is this going to improve the situation, how is it going to perform. What does working with nature mean for materials? Just keep that as your checklist and the lack of biodiversity; working with nature will sort out a lot of those issues, maybe not 100 per cent of those issues but you can address all of them in some way when you work with nature."

The participant A4 alluded to the implementation and provision of housing in relation to all the people in need of housing in the United Kingdom and posed the question 'if we don't want to use conventional materials what else can we do?' In the United Kingdom the industries, agriculture and construction sites are the major sources for waste materials which can be (re)used and at the same time there is a large unused housing stock. She refers to straw bales as a case in point, suggesting that, 'we produce enough waste straw in this country to provide 400,000 homes a year'. Attention is called to the intricate nature of the system, that is the market, which is set up to encourage resource consumption, as she appropriately describes:

“In terms of resources there is a huge amount of waste in the system which is designed to encourage resource consumption because that’s where the profit is. The market is designed to encourage people to use resources. It has taken legislation for this; it wasn’t something that happened naturally. It took legislation to force waste reduction, so if waste reduction wasn’t built into the system why would we need laws to reduce it? It’s built into the system on purpose to encourage extra resource use. There’s a lot we can do already and very easily.”

Furthermore, the participant A5 highlighted a different aspect of waste materials, that of fulfilling the ideal look of a building regardless of the cost, waste, or impact on the environment. She has seen much waste of practices, as one being in the nitty-gritty of the bills would do, and materials being used not quite as specified by the architect/designer, only to end up being ripped out again to practically be replaced with something similar. Thus she proclaims that, ‘this displays an attitude of it doesn’t actually matter about waste, it doesn’t really matter how much it costs; we have to fulfil this ideal’. Having been involved with a carpentry skills transfer project in Swaziland (see Chapter 5), participant A5 explains how the locals do not think about ecological methods of building as they do not typically think in these terms, they in actual fact think about survival. Yet the imperative is to create awareness within the local community about the value of the local culture including local building materials and methods as opposed to western ideas of building and modernisation which are perceived by many locals as being better than their own. The participant A5 describes the local vernacular architecture and building materials as being equally beautiful and much more affordable and suitable for the local climate than some imported ways of building, stating that:

“I think the round wooden huts are beautiful but then there are those kinds of tumbledown breeze block buildings that are just looking really sad. It’s impossible to maintain them properly and they don’t really work in the heat. And they are more expensive but people see them as better. I think that people need to be educated to realise they are not better. It’s such a marginal thing eco-building isn’t it? It’s such a shame.”

In parallel, the participant A5 discusses how creating awareness about the value of using building materials suitable for the local climate and context, as well as waste and material resources, is also of paramount importance among the architectural community in the United Kingdom. Having established an initiative in 2008 to provide opportunities for women to work in construction on the Olympic Park, the participant argues that in order to make an impact and change people's mindsets, one needs to persevere and set an example of integrating sustainable use of materials and resources consistently in their work. She says:

“It’s about changing people’s mindset. I am thinking about homeostasis which means that people revert to what they know, in relation to how actually a lot of the lessons of the London Olympics were not learnt, that people reverted to their traditional methods of building. You have to push very hard to get beyond that homeostasis to create a new homeostasis but it doesn’t happen by just doing one successful project, you have to do two, three, four so that people really take it on board. I just find it outrageous that a glass building has a life span of 25 years and that’s acceptable! To me that’s a temporary construction and it would need to be renewed after 25 years. That’s so much money but also what a waste of materials and resource generally.”

Changing people's mindset, this time in the context of Burkina Faso, is what architect Diébédo Francis Kéré also brings up in an interview titled, “Architecture is a wake-up call”⁶⁰ (Louisiana Channel 2014), highlighting the value of mud and clay as building materials in the village of Gando where he hails from. Clay has no monetary value and alludes to poverty, hence the locals perceive it to be of lower status; it is considered to be ‘the poor people’s material’ in Kéré’s own words but it is what they have in abundance locally. Kéré also stresses the very important challenge of ‘modernising’ a local traditional material like clay, that is improving it in order to enhance its durability and look, so that it becomes more resilient to the changing climatic conditions, like

⁶⁰Diébédo Francis Kéré was interviewed by Marc-Christoph Wagner, copyright of the Louisiana Museum of Modern Art, 2014. In 1998, with the help of his friends, Kéré set up the association Schulbausteine für Gando to fund the construction of a primary school for his village. Kéré has received the Aga Khan Award for Architecture in 2004 and the Global Award for Sustainable Architecture in 2009, among others. What’s more Kéré is the first African architect to be chosen to design the annual Serpentine gallery pavilion for 2017.

extreme rainfalls for instance which cause erosion, as well as it is accepted and preferred by the locals, as he states:

“So my motivation was to create infrastructure for my people, but with lack of financial means. I tried to use both local materials, mostly clay and wood, and then to come out with the modern articulation; to create a building that is modern. This is important because people reject these old materials; they consider clay to be the poor people’s material so nobody wants to have it, it’s not modern. So what I did is just use these very known materials which are easy to use and have been used by everyone since people can think in my own country, and then to create a new building, to create something that is appealing, something that is working, something that people can say wow! So this is how I try to get people to accept that what they have the most is clay. If they can build with clay, we will have a better future because we will use the resource we have. I use clay because it has huge potential and if you happen to modify the structure of it, you can create well working buildings. Another aspect that I have to focus on is the climate. It is very hot in Burkina Faso, the temperature can be around 45 degrees, but clay has a good quality. I would do the same if I had more means.”

As far as Ghana is concerned, in his paper titled, ‘The use of stabilized soil to enhance rural housing’, Ben Hagan (1997) discusses the rural housing problems and government housing policy in Ghana, and the benefit of using lime and cement to enhance the durability of traditional earth construction, with an emphasis on soil blocks. Once again, stabilizing, and improving local traditional materials, such as the soil block, with a mixture of lime and cement, strengthens the durability and resilience of the earth buildings to rainfalls which cause most of the erosion. Ben Hagan (ibid.: 210) writes that:

“About 70% of Ghana’s population dwell in rural areas where a large proportion of the people live in various forms of earth buildings constructed primarily through self-help efforts. These earth buildings are generally susceptible to rapid deterioration, particularly due to the exposure to rain,

and often require regular rehabilitation. (...) The predominance of lateritic soils as a low cost walling material in Ghana is demonstrated by the fact that over 70% of the rural dwellings are earth buildings with the walls made of wattle and daub, swish (locally known as 'Atakpame') and crude adobe."

In their paper titled, 'Need to re-launch the brick and tile revolution as answer to national shelter problems', Boadi et al. (2009) argue that burnt clay bricks, as an alternative affordable indigenous material, presents a suitable way forward to solving the national shelter problem in Ghana. This is part of a Government funded project, which the BRRI of the Council for Scientific and Industrial Research (CSIR) have undertaken in order to research and develop indigenous building materials for housing and other construction projects. In their raw state clay and other soils are very susceptible to the harsh tropical weather; therefore they advocate burnt clay instead which behaves much better in this context where clay is found in abundance. Boadi et al. (2009: 46) contend that in relation to building materials, the overdependence of Ghana on external markets for cement, iron rods and paints, can be overcome by developing and using local affordable substitutes instead, for which there is comparative advantage for local production. The paper (ibid., 55) argues that:

"Governments again complain about high cost of funding of the research institutions and yet does not take advantage of developed materials and technologies like pozzolana and bricks to solve the housing problem by challenging such institutes to fully participate in the commercialization of such technologies. (...) Governments have not found it reasonable to look within for solutions to its problems."

The CSIR-BRRI in Kumasi in partnership with PMC USA has been conducting research and development activities on the production of durable local cementitious materials, and promotes awareness about pozzolana, which is an environmentally friendly replacement of Portland cement, and other earth-based materials produced on site, mainly through publications and the media, press releases, and even through advertisements on the television. Atiemo (2005), an engineer scholar and Director at CSIR-BRRI, in his paper titled, 'Production of pozzolana from some local clays: Prospects for application for housing construction', writes that:

“Earth and cement-based products are the most widely used materials for housing construction in Ghana. Whilst earth buildings predominate in the rural areas (about 95%), cement is mostly used in the cities and urban areas (Ghana Statistical Survey, 2002). Accelerated infrastructure developments by the Government for the past two decades, increased activities of estate developers, and the shift from earth to cement-based houses by individuals have resulted in the increased usage of cement, from 1.2 million tonnes in 1992 to about 2.3 million tonnes in 2003. Cement used in Ghana is either imported or produced from imported clinker and gypsum.”

The BRRI, through laboratory trials and field tests, produces Pozzolanas from clays and bauxite waste that can be blended with Portland cement to produce Pozzolana cement for housing construction, which is a durable and cheaper than cementitious material. Both clay Pozzolanas and bauxite waste Pozzolanas can be used to replace 30% to 40% of Portland cement for both concrete and ordinary construction (Atiemo, 2005; Manu et al., 2009). Both Atiemo (2005) and the research architect at the BRRI, who is one of the research participants, argue that pozzolana cement is much cheaper than Portland cement and therefore by using the former, housing delivery will become more affordable. The research architect at the BRRI broached the imperative to create awareness within communities in all the regions about building materials produced locally, such as pozzolana. Supporting the idea of using local materials and ingredients, and with particular reference to pozzolana cement, is also highlighted by Ghanaian architect and educator Osae-Addo at Architecture ZA (AZA) 2012 Biennial Festival in Cape Town (Design Indaba 2012). He draws attention to the ‘local ingredients and materials’ instead of focusing on space and form, as he notes:

“My main project at the moment, apart from the buildings, is the development of Pozzolana cement. I have got into the production side of the construction industry because I always believe that as architects we need to take a step back and not always focus on edifice making. But what are the local ingredients and materials that we can bring to bear to enhance and enrich the palate of architecture. Pozzolana is locally produced cement.”

The participant A1 explained that the perception of the people is such that even if you want to convince them to use the local materials, it should be something that is refined. They will prefer something closer to the refined product than the rustic or raw state. Ben Hagan (1997: 215) argues that it is due to poor awareness of the laypeople, house owners, artisans as well as local authorities, on the durability and suitability of traditional and local materials, which increases the use of conventional materials in housing. This is also evident in Abetenim where the primary fieldwork was undertaken (see chapter 4 on Abetenim). Indeed, the local community in Abetenim (ibid.) prefer to build, or rebuild, their houses using concrete blocks instead of earth as the former looks much more refined and modern in their eyes. In an interview titled, 'Joe Osae-Addo - Mould-Breaking Ghanaian Architect 1'(Africatalks 2009), architect Osae-Ado draws attention to the imported conventional materials, such as cement among others, which due to Western influences have now become 'local' in Ghana to such an extent that any endeavour to (re)introduce earth or soil-based products is frowned upon by the locals. The perception of the latter is that cement is modern whereas soil/earth-based materials belong to the past and, as it has been mentioned earlier in the thesis, allude to poverty. Osae-Addo eloquently states that:

“The Western idioms have become the new local, for example cement. People actually believe that cement is a local product, it is not. If you try to introduce brick or other soil-based products they think it’s a foreign thing, but this is how we used to be. But the challenge to all this is that you have to build enough workable examples to empower Ghanaian people to actually produce it to feed this new market.”

The importance of partnerships with other organisations, institutes or businesses in order to expand is broached as that the only way forward by the participant A1, who explains that unfortunately they (BRRI) lack government support to do so, as he very aptly describes:

“We have a lot of good will from the public but it ends there. Because it’s like you have this product and it’s good and they will come and ask you for example with the pozzolana. We made a lot of noise about pozzolana; it’s going to reduce cost, it’s good for you, these are the properties and people start making inquiries about where they can find the product. They wanted

to buy in bulk, they come and make the orders but we cannot meet them. So for now we have even stopped advertising because there is a huge backlog of clients and we have to supply them and we are not meeting that demand. The more you make a noise the more restricted you are because you cannot expand.”

Atiemo’s paper (2005: 37) echoes the above view on the need for partnerships in order for the institute (BRRI) to expand and promote the local production of Pozzolana cement in Ghana, as it argues:

“The cost of cement is impacting negatively on housing delivery in Ghana. The production and use of durable and local materials has therefore become very necessary. This study has shown that production and use of Pozzolana cement is a technically and economically viable option. It is, therefore, recommended that serious efforts should be made by the Government of Ghana, in collaboration with the private sector, to promote the local production of Pozzolana cement in Ghana to support the construction industry.”

The need for collaborations and partnerships is also argued by Boadi et al. (2009), in relation to the burnt clay brick and tile revolution in Ghana. They (ibid., 55-56) argue that as a way forward there is an urgency for training local artisans in brick production and laying courses which should be delivered by the BRRI in collaboration with the Ministry for Water Resources Works and Housing; they advocate the study of pottery and ceramics be introduced at schools so students become familiar with clays and clay products at an early age, and also highlight the urgency that local architects should be encouraged to design in bricks. The participant A1 brings up the important political topic of globalisation, its reality and downsides by discussing the general preference, and specifically the politicians’ preference, of using conventional materials instead of utilising local, sustainable resources. He explains that all that laypeople would care about is how soon they would get a shelter and access to a road; they would not care whether the shelter is made from a sustainable material or not. The majority of the politicians in Ghana, similar to many other places, are often corrupt and will only offer the masses the temporary relief they need in return for their political support. Building with local and sustainable materials, like earth bricks and rammed earth, may take much

longer due to the necessary laboratory trials and field tests of the soil for instance prior to using it, thus the use of conventional materials is preferred and encouraged by local political actors. The participant A1 states:

“The politicians will point to it (the shelter) and say that yes I provided this for you. If after three months it’s ripped off he doesn’t care. But do you think he is going for something that is going to take him two, three, four years and he is going to spend a little much higher than it used to be with the conventional materials? No, he is not going for that. People are going to China for all these cheap products because that is the easiest way. Look at what happened in parliament where there is a huge outcry. Why should we go all the way to China for furniture? We have lots of wood, we are exporting wood, why is it that we just could not make our furniture here?”

The necessary formal testing of local traditional materials and technologies prior to them being adopted by state actors and utilised in various construction projects is also mentioned earlier in the thesis in relation to housing reconstruction (see chapter 2, Literature Review). Globalised approaches (materials, building technologies and standards) are adopted by central governments instead of making use of local traditional materials and technologies ‘on the grounds that formal testing may not have been carried out and for which standards may not exist’ (Schilderman 2004; Lyons, 2009).

7.4 The issue of National Standards

Drawing on the importance of building standards, they both necessarily relate to the value in monetary terms, among other aspects. Non-conventional materials, like earth, are generally perceived to be of less or no value in Africa so anew creating awareness about the value of the local building techniques and materials is imperative in this context. Central institutions and international organisations determine the standards for building, housing and planning and specify not only what should be built but also how it should be built (Turner, 1972). The participant A8 made the pivotal argument, in connection with Ghana but also other countries where there are no national standards for earth building, that earth is considered of having no value because there are no

tandards for earth building in this context. I find his quote to be apt here, as he states that:

“There’s no standard and therefore there’s no training; there’s no training document so the general sense is that there’s no value. What it tends to mean is that it pushes the technology down in every way in its social acceptability, in its monetary value, and therefore people won’t then build at that higher level, they won’t think about the detail of this corner or this intersection, cause there’s no value, it’s just mud. By thinking about standards, what you are trying to do is to give it status and that status is really about ensuring that masons are supported in a number of different ways.”

First, ‘the point about the existence of a standard is that it exists’, he explains. It does not though mean that all the people involved in building will consult the standards document in order to make sure that ‘the walls are this thick and they are this high’. Some will look at the standard whereas some others will not; but the fact that it exists will allow them to operate in a different way whereby people consider there is value in that. Second, ‘the point about the standard is also that it takes it out of that expert thing and makes it into a norm’ the participant A8 points out so the difference is that anybody can apply for it. In order to make a rammed earth building the United Kingdom where there is an expert industry, the involvement an engineer is required in the design process because there is not any norm that can be applied by the local building regulator. Thus earth building is discouraged in both the United Kingdom and Ghana because there is not a national standard. Third, the point about the standard is to subsequently establish a training standard. Thus if there is no national standard for earth building for instance, there is consequently no training standard. ‘Why would you train somebody to learn something that there is no standard for?’ illustrates the interrelationship between building standards and training. Once more this is a circular conversation in both the United Kingdom and Ghana because there is not a national standard, and it is a point where one needs to break into that circle and get it to stop going round and round like that.

In Africa alone there are fourteen regional standards for earth bricks which were largely written by CRATerre⁶¹ in the 1990s and became African regional standards in 1996. Some of the countries, mainly the ones located in the francophone region since this is where CRATerre and the stakeholders with whom they have engaged work, have published and adopted. Principally in order to adopt a standard one needs to engage the civil society. The countries of the Anglophone regions could also do the same and in the case of Ghana one would need to engage the Ghanaian architects and engineers. Setting a standard is not only about building materials and how to use them correctly; the process affects the local markets, livelihoods and economy at the same time. ‘*Standards change over time as experience grows and situations change*’, the participant A8 points out, considering that setting the standard necessitates only the beginning of the conversation, which also entails the setting of training standards, products standards, and probably equipment standards and so on. This whole process, namely capacity building, aims to strengthen the abilities of local organizations, systems and individuals, so that they carry out certain essential actions/tasks, in this instance construction using local traditional materials like earth, in a sustainable manner, and to enable them to improve and develop over time. It relates to this piece of paper which says ‘you can do it’. The following excerpt, taken from an interview with participant A8, describes how a foreign NGO could insert themselves into a developing country and help towards making an environment in which local builders can work sustainably, specifically get involved with the process of generating a building standard. It aptly describes that the collaborations and continuous dialogue with the existing local stakeholders are essential in order for their work to have a wider ripple, as the participant A8 states:

“An NGO in West Africa, for instance, could insert themselves into the country more easily because they are working on the basis of a nationally

⁶¹ CRATerre is an international reference in the field of earthen architecture. After having largely contributed to its recognition as a discipline, CRATerre continuously strives to improve and disseminate the body of knowledge and best practices at an international level. It undertakes its activities in three main areas: Conservation and management of earthen architectural heritage; The formation of scientific and technological bases for earthen construction and architecture; Human settlement, housing and improvement of living conditions in society (see <http://craterre.org/>).

derived standard. That means that they are not telling the locals what to do, they are helping them to do it. You have to do everything because there is nobody else. If you have got a standard it's just helpful to have the documents. In a way the most important thing that would be most useful for NGOs to think about is how they might play a role as stakeholders in that process of technical kind of generation and acceptance. What they want to do is make an environment in which builders can work. Organisations coming into a (developing) country need to spend a little bit of time thinking about how they engage with the existing stakeholders. If you come in and you say I am not going to talk to the architects, I am not going to talk to the engineers, I am not going to talk to the Ministry, I am not going to talk to the Standards Body, I am just going to go off and build my beautiful building over here and I am going to ignore all of you but just only involve myself with the local mason. It's great for that mason, it's great for that building but it doesn't have a wider ripple. And you need to have a wider ripple and people in the architecture school and people in the architectural association and people in the engineering school/institute, they need to know that people are coming and talking and there has to be that dialogue. You need them because you generate a standard, you need the cooperation of local stakeholders, you need to talk to the local Standards Organisation, you can't do it on your own, you have to have the local stakeholder buy in. So there's this sort of dialogue but there has been a sort of thing just for NGOs to come along and say 'we are showing you the way', never mind those people over there ... Actually you need to make a national body and you bring in academic partners and you bring in professional partners and maybe you find a funding partner and so on, and it's heritage as well, and then you can move on".

The theme of collaboration is discussed in chapters 3 and 8, both as a research method as well as an integral part of any development project which may involve design and the engagement of local stakeholders, communities and institutions.

7.5 Concluding remarks

The research poses the question ‘how can the use of materials improve resilience?’ in order to explore approaches to resilience and adaptation in the global South through the use of local building materials, and to rethink the idea of what is local in a given context. The emphasis is placed on the urgency to review the use of local materials, including traditional, non-traditional and/or a combination of both, in order to improve resilience at a community level, which sets the tone for the ensuing discussion.

The prevailing narrative about global warming and climate change argues that global climate is projected to continue to change over this century and beyond; the globe is facing severe shortages of fossil fuels and other natural resources; and that humanity needs to gradually divest from fossil fuels and reinvest in socially responsible alternatives. The increasing greenhouse emissions directly affect the global climate causing environmental and societal change to come about at a global level. The control of greenhouse gas emissions, or rather lack of it, in both the developed and developing parts of the world has caused a growing threat of climate change. Overall, developing countries are more vulnerable to the effects of climate change than the developed ones, due to their restricted capacity to mitigate its effects, limited livelihood options and access to services. Specifically, rural areas in developing countries are projected to experience adverse impacts due to geography, low income, lack of infrastructure and so on, which make adaptation to climate change much more difficult. The construction industry has a considerable worldwide environmental impact as it uses up between 20 to 50 percent of natural resources globally since the built environment is developing continually, and is responsible for about 20 percent of global carbon dioxide (CO₂) emissions (Manu et al., 2009). The research findings, such as the findings from the analysis of the interviews as well as all five case studies, both secondary and primary, emphasize the gravity of the construction industry’s role in reducing our dependence on fossil fuels, its CO₂ emissions, and ultimately mitigating the effects of climatic change. The cement industry alone is said to account for approximately 5 to 10 percent of global carbon dioxide (CO₂) emissions, a large part of which accounts for its transport and freight but also for extracting and heating of limestone in the first place which is almost entirely fossil-fuel based (Manu et al., 2009: 209). Yet, concrete is generally considered to be one of the most common building materials in the world. In light of the above, the research findings argue that on a global level, the building and construction industry is a

major area for sustainable development, and suggest that we can diminish our dependence on fossil fuels should we gradually reduce the use of concrete in housing and other construction projects in the global South, while at the same time encourage the use of available local building materials, such as earth among others. Moreover, the research findings put forth the idea that concrete, or the “*addictive powder*” as one of the participant A refers to it, should be used in moderation and preferably be replaced, even partially, by other earth-based materials which are considered local or locally produced, and less pernicious to the environment. The attention is drawn to ‘local ingredients and materials’, and their connection(s) with long-term resilience, the construction industry, nature including human nature, and sustainability. The research findings emphasize the urgency to reconsider the utilization of certain building materials and resources within design and build projects in the South, having the empowerment of the local communities as a highest common factor, not a lowest common denominator. Such interventions may effectively contribute towards empowering communities both socially and economically.

As it is mentioned in Chapter 1 the research sets out to explore the compromise between the global and local perspectives. It investigates how an NGO’s prescriptive narrative of using local materials like earth, in the construction of new projects may be adapted and translated into the local reality, and looks at the process of the ‘on the ground’ experience through direct involvement in community architecture and building. Thus great emphasis is laid upon the priority to create awareness within local communities about the value of the local building materials and methods suitable for the local climate and context, as opposed to western ways of building and concepts of modernisation. This is due to the fact that more often than not the common perception of the locals is that imported, or western, materials and ways of building, are more modern and much better than their own. Thus, the research draws on the necessity to change people’s mindset about the local vernacular architecture and building materials, which are more affordable and suitable for the local climate. In the African continent for instance, clay is found in abundance but since it has no monetary value it alludes to poverty. It is thus considered to be ‘the poor people’s material’, in Kéré’s own words. Therefore, ‘giving earth a voice’ is fundamental in this context. What emerges is the need to ‘modernise’ local traditional materials, which entails improving them in order to enhance their durability and look. Here, by improving the research refers to the process of stabilizing them with a mixture of either local or locally produced materials, such as lime,

pozzolana cement and/or others, in order to strengthen the durability and resilience of earth buildings. I find that Manu et al. (2009: 211) convey the significance of incorporating modernity within existing traditional building methods arguing that, “*the key word is think globally act locally. Every country and society is a stakeholder in the climate change mitigation.*” Ghanaian architect and educator Joe Osae-Addo (Africatalks 2009) further highlights the need to blend Western approaches to thinking about materials, designing and building, with indigenous qualities and knowledge in order to achieve long term sustainability in the continent. He argues that it is not a matter of choice between the two; it is rather the syncretism of the two which can contribute to longer-term sustainable adaptation in this context. He states:

“The magic about Africa as a whole is that we are hybrid. We have been colonised and have been exposed to the best of the West and we also have our indigenous qualities and knowledge base. So it is not one or the other but how do you blend using our indigenous as a basis and then tagging on of course the tried and tested Western approach which will be sustainable in the long term for our benefit and not for that of the West.”

In the context of Ghana, earth and cement-based products are the most commonly used materials for housing construction. Cement is either imported or produced from imported clinker and gypsum, which makes it largely unaffordable for rural communities who aspire to build, or rebuild, with cement as they perceive the latter to be modern, whereas they perceive soil/earth-based materials to belong to the past. Taking into consideration that over 70% of the rural dwellings are earth buildings, and the fact that the changing climatic conditions have had deteriorating effects on them, the imperative is to support the development of alternative affordable indigenous materials, such as clay bricks and pozzolana among others, in order to strengthen their resilience. In light of the above the Building and Road Research Institute (BRRI) of the Council for Scientific and Industrial Research (CSIR) have been undertaking research on developing indigenous building materials for housing using local affordable substitutes, such as pozzolana. The latter is an environmentally friendly replacement of Portland cement (see Chapter 3, page 82). The work of the BRRI aims to mitigate the overdependence of Ghana on external markets, specifically for the production of cement. Osae-Addo (Africatalks 2009) also draws attention to the importance of integrating the indigenous qualities and knowledge with those imported or adopted from

the West, specifically what he calls “inno-native” solutions, in order to create a modern identity of each place and to achieve long term benefits at a local level, as he states:

“Design is the ability to create solutions for the use of humanity. It is about creating very contextual, specific, often innovative, and I coined the word ‘inno-native’ where we use innovative native solutions to solve our problems rather than importing lock stock and barrel, things which haven’t worked in the West yet we bring them here at great expense and are often rejected by us because it is not of us. What kind of design are we trying to implement here? I think it should be context-based, based on local materials and so forth. So by us and for us basically.”

In Ghana, political actors discourage earth building, including local traditional materials and technologies like earth bricks and rammed earth, in formal urban settings, even though the latter may contribute towards tackling the national housing problem. Some of the reasons for this include, but are not limited to, the following: building with local materials is a much slower process than using the conventional modern methods; that formal testing may not have been carried out and for which standards may not exist; the necessary process of spending a considerable length of time trying to influence the locals’ mindset about using earth for their dwellings, as it has already been discussed in one of the above paragraphs. Therefore, establishing a national standard for earth building becomes of paramount importance in this context. It entails engaging with the local markets, collaborations and continuous dialogue with the existing local stakeholders, and necessitates capacity building aiming to subsequently set standards of training, products, equipment, and so on. Capacity building is now widely recognised as a core part of sustainable development. Harking back to the Literature Review (see chapter 2), Lyons et al. (2010) argue that the best use of local skills and materials is achieved if improved vernacular building methodologies are implemented in combination with capacity building. Without capacity building, the enforcement of minimum or *unrealistic* standards, as Turner (1972) refers to them, worsens the housing conditions of the poor as they do not acquire the skills, equipment or products to build with locally available resources. In other words, capacity building is the connective tissue which enables developing communities to improve and develop over time.

Finally, the research contends that Western conceptualizations of the types of building methods and materials suitable for regions of the South are largely based on the ways that we have approached and tackled these issues in the North. Academic and active practitioner Jenkins (Paul Jenkins 2013), points out the urgent need for the academy to become more empirical and inductive again in order to begin to develop new sets of relevant analytical concepts and categories, which will be South-centric, as opposed to the current tendency to translate and apply North-centric narratives within different contexts of the South. Although Jenkins' discussion is about urbanization processes and narratives in the North as opposed to ones in the South, a similar way of thinking can be applied to the challenges of the choice of materials while engaging with design and build projects in developing countries, and more specifically in the African continent, in order to make a meaningful contribution to both the field as well as the local communities from the ground up. Another crucial challenge for new conceptual development which is brought forth both by both Jenkins and the research findings is that this new inductive work needs to be enacted in an endogenous way as opposed to a strictly indigenous way in the South; thus there is a need for the empirical and inductive work to have an internal origin and cause, and focus less on the native. In a way this echoes Ossae-Addo's (Africatalks 2009) suggestion in relation to using the indigenous local approaches and materials as a basis to be informed and shaped by globalised methods and thinking. Jenkins (Paul Jenkins 2013) very comprehensively states:

“We map concepts which are basically North-centric, they have been developed in the North, they are still very much the currency in the North, and those have been translated and taken overseas and brought into different contexts. [...] What I feel we do need to do is to become more empirical and inductive again, to begin to develop new sets of concepts because our conceptualization of the city and what is a good city and what is the process of urbanisation is largely based on the ways that we thought about cities in the North. And this really is not applicable in many ways to the cities in the South. [...] There has to be more new inductive work embedded in an endogenous way as opposed to a strictly indigenous way in the South. These are major challenges for new conceptual development.”

The following chapter, specifically Chapter 8, discusses the research findings, such as the findings from the analysis of the interviews as well as from all five case studies, both secondary and primary, and presents some recommendations. It looks at materials as a tool to think about the levels of resilience and empowerment of local communities in the global South, and focuses on the idea of ‘being there’, that is ‘experiencing fieldwork’ which entails employing the ethnographic method of observation, participation and (face-to-face) interviews, as part of the design and build process within the implementation of community-driven projects undertaken by various NGOs in the global South.

Chapter 8

General discussion, reflections and conclusion

Chapter 8: General discussion, reflections and conclusion

8.1 Overview

This research is undertaken to contribute towards a better and more holistic understanding of some of the issues concerning various approaches to resilience and climate change adaptation through the use of local building materials within small-scale construction projects in the global South, and to rethink the idea of what is local in a given context. It puts forth the idea that the only way to make a contribution to the discipline is to rethink it from culture, and thus accentuates the social and cultural context much more than the mere physical element of the built form. The research also examines how collaborative construction and architectural enterprises in the global South address the existing levels of indigenous knowledge and local skills in order to cope with adverse climatic conditions and poverty. For the purpose of this thesis the following themes are perused and discussed through the lens of the current narrative on climate change: architectural education and practice, in-field training, the use of local materials and its impacts on the local context and beyond, the meaning of collaboration(s), and finally the ethnographic method within design and build projects in the global South.

Beginning with the research questions in the introductory chapter, which addresses the aim, objectives and rationale of this study, a clear outline of the research context has been identified through establishing contextual boundaries. These research questions are as follows:

1. How can local materials and traditional building practices empower local communities and increase the potential for resilience and adaptation in the global South?
2. How can the use of ethnographic research contribute to the advancement of architectural research and practice in a given context and help imbue culture and the spirit of a people into the built environment?

The research addresses these questions in a number of ways. First, through the review of the literature, a holistic framework has been created to describe the overall areas

related to the research, including the cultural, social, theoretical and practical aspects of the context. Second, the primary and secondary⁶² research explores, among other things, how the syncretism of the ethnographic approach and architectural practice, which entails the design and build process, enables solutions that can contribute to longer-term sustainable adaptation in this context. It is important to mention here, as also stated in Chapter 3, 'Methodology: An Ethnographic Approach to Community-Driven Initiatives in the global South', that this research takes an interdisciplinary approach and uses ethnography as part of architectural praxis, that is the design and build process in rural Ghana, in order to facilitate the holistic understanding of the local context and inform the design process. The combination of ethnography and architecture in this context opens up a dialogue which entails the continuous reconsideration, adjustment and negotiation of architecture's boundaries. The strength of ethnography is its holistic endeavour which brings together method, interpretation and writing (Malinowski 1922, Okely 2012). As it becomes clear from all the chapters, the method informs the interpretation and writing, thus, one cannot be treated as separate from the other. A similar approach pertains to addressing the research questions too, as there is so much overlap and interconnectedness among all of them that it is quite a difficult and futile task to attempt answering one without considering the others.

An important aspect of my fieldwork is that of 'multi-sited ethnography' (see chapter 3, sub-chapter 3.1.2 Why an Ethnographic Approach?, pages 50-51). The research design consists of both a geographical and a virtual site in juxtaposition to each other; the former being the fieldwork in Abetenim, southern Ghana, and the latter my long-term involvement with The Architects' Project (TAP) mainly through my role as their online editor. Thus, the fieldwork moves from a rural geographical site to a virtual site through social media networks, mainly Facebook. Both sites have contributed to a more holistic understanding and exploration of the cultural issues that are related to resilience and adaptation in this context. My role within TAP entails undertaking research, almost on a daily basis, on African architecture, both modern and vernacular, issues related to planning and housing in the African continent, as well as initiatives, which make use of local resources, materials and labour. It also entails engaging with the online audience,

⁶² The work of the initiatives, which the secondary case studies illustrate, are also characterised by extensive engagement with the field and collaborative methods in order to implement their projects on the ground.

which consists of active professionals in and outside the architecture and planning industry.

In light of the above, both the Questions 1 and 2 are addressed in all the chapters in different ways. The Question 1 is addressed mainly in Chapters 4, 5, 6, and 7 as they consider building materials and practices as a tool and analytical categories to think about approaches to resilience and adaptation as well as empowerment of the community at hand. The Question 2 is addressed mainly in Chapters 3 on Methodology and Chapters 4 and 5 on the primary fieldwork in Abetenim as well as the secondary case studies. The primary research directly uses the ethnographic method in order to implement their work on the ground, whereas the approach of 'being there' is a prerequisite, in an indirect way, in the work of all the participants who constitute the secondary research. Moreover, the Question 2 is also addressed in both the data analysis chapters, specifically chapters 6 and 7, as 'being there' is a prerequisite in the work of all the participants. What's more, both the questions are addressed holistically by both the primary and secondary research. Therefore, the thesis analyses and discusses the information gathered during the fieldwork, and focuses on themes, which pertain to: training, such as the architectural education and practice, and the in-field training; and ones, which pertain to practice, such as the materials used for building, and collaborations.

Part of this research explores the role of vernacular building practices in coping with, and building resilience to extreme climatic conditions, poverty, or natural disasters in the global South. It examines the influence of different variables on the 'choice' of materials and building methods employed by NGOs in different contexts. Attention is drawn to the local people's strengths, i.e. indigenous knowledge, local skills and materials used for building, and how these can be used to reduce the local people's vulnerability. Further, the research investigates the work of community-driven initiatives involved in small-scale adaptation projects primarily through the lens of a construction project for a small community building in rural Ghana. Secondary case studies include initiatives, projects and organisations located in four different countries namely Pakistan, Algeria, Swaziland, and Zimbabwe. Moreover, it focuses on themes such as the very central relationship between architectural education and practice on the one hand and approaches to resilience and adaptation, materials, ethnographic approaches to research and design, training and collaborations on the other.

Further, the research uses a methodology, which is based on qualitative data collection, and includes a mixture of creative methods such as, participant observation and participation, semi-structured and unstructured audio-recorded interviews, informal conversations as well as the use of social media such as Facebook as being the second 'virtual site'. It is argued that the syncretism of the ethnographic approach and architectural practice in this context, specifically the participatory design methods, enables solutions, which can contribute to longer-term sustainable adaptation. Drawing on its main research site and primary fieldwork in Abetenim, a remote village in southern Ghana, and the researcher's role as a community architect and participant in the Earth Architecture construction workshop through a non-profit organisation (NGO), it discusses how the use of ethnography as part of architectural praxis facilitates the holistic understanding of the local context and informs the design process. It feeds off Anthropological research as a typical methodological approach through participant observation and participation, in order to rethink architecture from a broader cultural perspective. Thus, the research puts forth the idea of exploring the mutual collaboration between the disciplines of architecture and ethnography, which entails the necessary interdisciplinary dialogue and at the same time, empirical experiences of the field itself. But most importantly, it explores how through this dialogue, the practice of architecture and design in the field shifts from a fabric first approach to a climate and culture first approach in order to address the specificities of the context. Hence, the ethnographic method provides a tool for rethinking architectural practice and interrogating its often prescriptive organisational structures. This allows the author to critique local situations and frame important questions about the practice of architecture, and how to approach the design process in the contemporary, rapidly changing world.

8.2 Materials are 'good to think with'⁶³

As mentioned earlier, this thesis is particularly interested in the cultural and social context much more than the mere physical element of the built form. It looks at approaches to the resilience and the potential for adaptation through the lens of building materials within community-driven construction projects in the global South; it looks at

⁶³(Levi-Strauss, 1963: 17). (Levi-Strauss' Totemism and page 17).

materials as tools to think about the levels of resilience and empowerment of local communities in the global South, and rethinks the idea of what is local in a given context. The research findings echo Turner's view that, '*A material is not interesting for what it is but for what it can do for society*' (Turner, 1972). Therefore, by posing the question 'how can the use of materials improve resilience?', this thesis looks at how the use of certain building materials, and the understanding of their limitations and opportunities through the building process, impact local communities in meaningful and coherent ways. It puts forth the idea that the empowerment of the local communities must be the highest common factor within community-driven projects in the global South.

This investigation has led to identifying that the discipline of Architecture, and its practice, lacks in considering culture, and its inherent specificities and complexities, as part of the curriculum and field practice. It has also identified that there is an urgent need and immense potential for combining the ethnographic method with the practice of architecture within design and build community projects undertaken by NGOs in the global South in order to achieve longer term sustainable adaptation. In addition, it puts forth the idea that architectural research at large in this context may benefit substantially from the methodological basis of the disciplines of anthropology and ethnography.

Attending the Development Planning Unit's (DPU) 60th Anniversary Conference at University College London titled, 'Thinking Across Boundaries: Re-Imagining Planning in the Urban Global South' in July 2014 (see chapter 1.1, page 3), prompted me to reflect on the idea that our Western way(s) of engagement with the South unapologetically need to be reconsidered and re-imagined; and that we need to shift from a North-centric approach to a more inductive and empirical approach which supports and empowers local communities in a holistic manner. Moreover, echoing Till (2009), the findings of the research critique architecture's deluded detachment and willing avoidance, and even denial at times, to engage with the uncertainties of the world. This has been discussed in Data Analysis part two (see chapter 7), which is Till's argument about. DPU's own scholar Allen spoke about architecture's '*illusionary sense of autonomy*', in 2014 at the Development Planning Unit's (DPU) 60th Anniversary Conference at University College London titled, 'Thinking Across Boundaries: Re-Imagining Planning in the Urban Global South'. The research argues that the discipline is not autonomous from culture, nature, economics or politics; and, that the built

environment is directly connected to energy provision and waste management. The research findings contend that we are a long way from where we ought to be at the moment and that the discipline needs to urgently (re)-align with the reality and issues of our age in order to cope with what is to come. It is not just about architecture; it is about culture, the environment, politics, as well as governance. The findings demonstrate that architecture has a role of service to the planet, to each other, and to cities. In this stage of consumerism and capitalism, and the realisation that we cannot rely on market solutions nor on top-down approaches to architecture and development, the emphasis must be on the need to work together to support the planet and natural resources that the humanity relies on for survival.

Moreover, and as mentioned earlier in the thesis (see Chapters 1 & 3) during my fieldwork year and prior to travelling to Ghana in order to participate in the earth architecture workshop, I visited the 14th International Venice Architecture Biennale titled, 'Fundamentals', which demonstrated a renewed perspective on thinking about architecture and its practice, one which gave emphasis on research. Part of this biennale examined key moments from a century of modernization and revealed how the forces of diverse material cultures and political environments transformed a universal or non-specific modernity into a specific one. This prompted me to reflect on the global narratives of modernity and to deliberate over the question of how the phenomenon of globalisation, in relation to building materials and trends, is manifested in the lived realities of the South. As Jencks also critiques, this was the first Venice Architecture Biennale which changed the paradigm from practice to research. I contend that this was a pivotal moment for architecture at large as it gave emphasis to the process of making of the built form, instead of presenting the finished artefact, and to culture, which inherently shapes and transforms the built environment, whereas the previous biennales endeavoured to predict architecture's future, reflecting the discipline's compulsive desire to learn what the next step is. This constitutes a fundamental difference between the disciplines of architecture and ethnography, as the latter is defined and valued by its unplanned character. One of the things that doing ethnography brings out is the notion of unpredictability, unforeseeable nature and even the uncertainty of the research journey itself, which is something that architecture is generally not perceived to be comfortable or associated with. Thus, the research puts forth the idea of exploring the mutual collaboration between the two disciplines, which entails the necessary interdisciplinary dialogue and at the same time, and equally, empirical experiences of

and in the field itself. Hence, all the above reflections became the backdrop of and found resonance in my fieldwork experience in Ghana, which was very useful.

Additionally, the research identifies Architecture's weakness in engaging with the uncertainties of our era. It therefore puts forward the urgency for the discipline to (re)-align with the reality and issues of our age in order to cope with what is to come. As mentioned earlier, this thesis is particularly interested in the idea to rethink the role of architecture, both as a discipline and a practice, in addressing approaches to resilience and adaptation from a broader cultural and environmental perspective. It brings to the fore the discipline's obligation to engage with the ongoing narrative about global warming and climate change. Thus, it draws attention to the social and cultural context and values, which are embedded in the everyday making of built form, and repositions the role of the physical element, essentially the aesthetics and edifice, as secondary (see sub-chapter 8.4.2).

Moreover, the research contends that Western conceptualizations of the types of building methods and materials suitable for regions of the South are largely based on the ways that we have approached and tackled these issues in the North, which is an issue that the architectural education and the academia at large bear responsibility for. One of the main themes which is analysed and which all the participants have broached is the issue of architectural education because that is where most of the principles that define the profession are instigated. Hence, this thesis puts the emphasis on the urgent need for the Academy to become more empirical and inductive in order to develop relevant South-centric analytical concepts and categories, which will have resonance on the ground.

As mentioned in the data analysis chapters 6 and 7, there is currently almost a compulsion to define African architecture outside the African continent, and specifically from the North, whereas the periphery is dealing with their experience of modernity and transformation, which includes histories, experiences, narratives and perspectives that the colonial projects have suppressed. By periphery here I refer to academics, scholars, practitioners and students from and in Africa. The research findings, from both the primary and secondary data analysis but also from my ongoing participation as the online editor of the Architects' Project (see sub-chapter 3.3.6), emphasise the need to 'see' Africa, and the South at large, beyond its challenges and

shortages, and instead focus on its strengths and capacity for resilience and adaptation. The discipline of Architecture is incredibly Western according to the periphery. Here, Lokko raises a critical point in relation to the latter that, African academics and students of architecture are struggling with their ‘otherness’ or in Coetzee’s words, their ‘Africanness’; they grapple to explain and interpret their world view, their Africanness, both to themselves and to western-trained eyes and simultaneously explore it in all its depth. By ‘their otherness’ here I refer to the pluralities of the perspectives from the South, as the latter is not homogenous. The Academy from and in the periphery calls for a more South-centric approach and space to explore ‘their otherness’ at its deepest level; it calls for the creation of a space, within academia in the periphery, where students, academics, and other scholars can explore their ‘otherness’. Yet, what is this ‘space’ for? Architecture is a cultural discipline as much as it is technical; it encompasses history, identity, values, issues of modernity and tradition(s), migration, and so on at the same time as considering edifice. Education, architecture included, has a duty and a responsibility to offer the students the tools, the capacity and freedom to engage with the existing state of affairs, and therefore be able to transform it. Yet the existing state of affairs is not static; it is rather in a state of continuous change and flux, as in any other place. Thus, in order for the students in the periphery to engage with the current state of affairs they need to grasp it first, and most importantly they need to explore and understand its origin(s) in depth. By ‘its origins’ here I refer to the indigenous approaches to the thinking and making processes of the built form. At the same time the students need to explore and understand the pluralities of endogenous and global approaches to designing and building, in order to be able to connect the dots between them. Connecting the dots is what Addo refers to as the “connective tissue”, which got lost as African countries transitioned from the indigenous to the more formal Western approaches to designing, making, building, training – including architectural training. Thus by exploring the “connective tissue” in an empirical manner the periphery may be able to interpret and transform the pluralities of endogenous and global approaches in a meaningful and coherent way. This necessitates letting the conversation between the ‘local’ and the global unfold; it necessitates the reinterpretation and adjustment of the local crafts and the vernacular to globalized changes in a way that is meaningful to the local communities. Thus this much needed space within academia in the periphery is for all the above to be explored and unfold; it is for the exploration of what it really means to be ‘other’ and at the same time ‘modern’, embodying and embracing ‘modernity’ from the periphery, that is from

the South. This will ultimately create resilience and enhance the capacity of the South to adapt.

The thesis contends that architectural research in this context needs to shift towards an empirical endogenous way as opposed to a strictly indigenous way, in order to make a meaningful contribution to and in the field. In other words, we need to focus less on the rigidly native and more on the specific. Similarly, as it is also argued in the data analysis, when African countries transitioned from the indigenous, where architecture and building were an integral part of everyday life, to the more formal Western approaches of construction and making, development and training, architectural training included, the ‘connective tissue’ got lost. Hence, this research calls for the need and necessity to re-interpret the indigenous, or the so-called native, in order to create the ‘connective tissue’. Re-interpreting the indigenous entails shifting towards an empirical endogenous way.

As it is mentioned throughout this thesis, the research sets out to explore the compromise between the global and local perspectives. This research uses the earth architecture construction workshop in rural Ghana as a typical example of a community-based initiative making use of local materials in order to empower the local people. By ‘being there’, that is participating in the workshop, this thesis demonstrates how the specific dynamics of culture, economy, environment, governance, ecology, experience of globalisation, narratives of modernity, material cultures and political environment, come together in a unique conversation to transform a global or non-specific narrative into a specific contextual reality. By ‘global narrative’ here I refer to the NGO’s narrative of building with any earth-based techniques.

With reference to the choice of building materials in design and build projects undertaken by NGOs in the global South, the research critiques the current tendency to translate and apply North-centric narratives within different contexts of the South. The findings demonstrate that in order to make a meaningful contribution to both the field and the local communities from the ground up, the choice of building materials needs to be based on South-centric concepts and categories, which are explored and developed from the periphery itself. The fieldwork experience in Abetenim highlights among others the relationship between the universalizing and particularizing narratives

of modernity, and of the selection and use of building materials. It explores how the two narratives, that is the universalizing and particularizing, might be reconciled. The latter entails incorporating modernity within existing traditional building methods, which is further reinforced by the current debates for a view from the global South. The findings call for the need to reconsider the idea of being ‘modern’, as well as the experience of ‘modernity’ in a non-western context. In light of the above, the research argues that we need to focus less on the native, and more on the specific contextual approaches, which entail using the indigenous local approaches and materials as a basis to be informed and shaped by globalised methods and thinking in a way that is meaningful to the local communities. The fieldwork and direct involvement in the construction workshop in Abetenim demonstrates that it should not be a matter of choice between the traditional and the modern; rather, the focus should be on the syncretism of the two which can contribute to longer-term sustainable adaptation in this context.

The data from the interviews, and from both the primary and secondary research, shows that there are direct connections between building materials and their long-term resilience, the construction industry, nature, and sustainability. The research emphasises the use of the ‘local ingredients and materials’ instead of focusing on form and space, which also becomes evident from the primary research in Abetenim. The latter is far more about materials and collaborations in the field, and much less about the space and form of the canteen.

In addition, this research employs the practice of collaboration as a method (see Chapter 2; Methodology, and Chapter 7; Data Analysis part 2), among others of collecting data, throughout the fieldwork and writing-up endeavour. The research data analysis, both the primary and secondary, clearly demonstrates the value of collaboration(s) among local actors in the field. In addition, it argues that disciplinary work is essentially fragmented and incomplete, and recognises the urgency to go beyond disciplinary boundaries and to engage in empirical processes in order to find new and more relevant analytical concepts and categories for a more holistic understanding of the field of the global South. Interdisciplinary collaborations are considered and suggested as a way forward in order to contribute to longer-term sustainable adaptation, in a way that is meaningful to the local communities.

8.3 The value of 'being there'⁶⁴

This research supports and puts forward the idea of 'being there', or in other words 'experiencing fieldwork', that is employing the ethnographic method, which entails participant observation and participation, as well as face-to-face interviews and informal conversations in the field, as part of the design and build process within the implementation of community-driven projects undertaken by various NGOs in the global South. It contends that buildings and materials are symbolic categories which cannot be separated from the locals' worldview, and that the syncretism of the ethnographic method and architectural practice in the field, with specific reference to design and build projects in the global South, contributes towards a better understanding of the process of building with local materials, and towards longer-term sustainable adaptation in this context. The combination of ethnography and architecture in this context opens up a dialogue, which entails the continuous reconsideration, adjustment and negotiation of architecture's boundaries. Although over the past two decades architecture has become more and more responsive to the deep understandings of ethnographic analysis, the focus has remained on professional conduct, and social and ethnographic research of buildings, space and place, whereas studies that explore architectural practice remain limited (Askland et al., 2014: 293). Therefore, this research contends that there is immense potential in employing ethnography as part of the design and build process within community projects in this context. In addition it suggests that the architectural research realm may benefit substantially from the methodological basis of the disciplines of anthropology and ethnography (ibid.).

The ethnographic method is a relational practice; the researcher gets to know and learn through engagement; s/he learns from, not simply about engagement. The latter embodies empirical learning, which requires an ability to unlearn. As mentioned earlier in the thesis, this research looks at the process of the 'on the ground' experience through direct involvement in community architecture and building. This perspective is being informed by the primary fieldwork in Ghana and the UK. The former is considered as the core platform from which lessons can be learned and knowledge can be created and transferred to other NGOs working within a similar geopolitical framework. The combination of an ethnographic approach, that is doing in-depth

⁶⁴'Being there' is the title of the first chapter in Clifford Geertz's 1988 study of anthropological writing.

fieldwork, practice and theory, along with the practice of architecture, produces a unique kind of knowledge and brings out the 'thick description' of how building practices are understood and viewed by the community and how they are practised in Abetenim for instance. Most importantly, the combination of the two disciplinary approaches has given the research a unique understanding of the ways that such building techniques can be improved.

The data analysis from both the primary and secondary research evidently highlights the value of knowing what the local community's needs and capabilities are. The ethnographic approach involves engaging people on their own terms, which is fundamental to ethnography. This approach listens to the community's needs while equally empowering them as it tries to get at how other people live in the world and make sense of it. Ethnography involves the researcher/practitioner engaging with human and non-human beings, with materials and other patterns in the world. It is an open-ended method, dealing with values, ideas and practices, by emphasizing the specificity and complexity as the starting point of any endeavour in the field. Therefore, the research contends that the ethnographic method is a valuable and powerful tool to engage local communities, on their own terms every time, and that it is only by being there, which is through participation, that one can understand the real needs of the community.

Harking back to the primary fieldwork in Abetenim (see Chapter 4), the main method that I employ is participant observation. I worked very closely with my colleagues - we also lived together so the work extended to discussions about the project in the evenings - as well as the local masons and carpenters whose work team I became part of. The benefit of that is that I could get a better understanding of their struggles and aspirations on the building site. The use of the ethnographic method in order to understand the reasons why the use of some materials is 'preferred', the research contends that the beauty and open-endedness of ethnography is that one discovers and is taken down to paths s/he would not have expected prior to starting fieldwork. The ethnographic method is a navigational skill because this is how one assimilates relations; one needs to encounter one's way. Immersed in the flow of everyday 'being there', whether physically working on the earth architecture workshop on site in Abetenim, or making connections and researching elsewhere in the locality, I deliberated over connections,

relevance and what to attend to and what not to attend to. Most importantly I deliberated over how my ‘being there’ could come into conversation with the context.

In Chapter 4 titled, ‘Abetenim Fieldwork’, I briefly mention that our group in Abetenim had initially been asked by the NGO to design a traditional compound⁶⁵ house, which we had to do from a distance before getting to the field. It was only after we had arrived in Abetenim and spoken with the village Chief that we realised what the local community needed instead was a building, which would be used mostly as their school canteen. So ‘being there’ proved to be fundamental. This anecdote came up during interviews and informal conversations in the field, and specifically with academics at KNUST, who were perturbed by the fact that (see Chapter 3 p. 31) western-trained architects and students more often than not propose, design and construct buildings which may not be according to the community’s needs. Inasmuch as compound houses are unique incremental creations involving many centuries’ traditions and other dynamic and ever-changing processes, the scholars at KNUST considered it almost insulting that a group of foreign designers had presumed that the ‘replication’ of one of these structures would be possible in this context. Here, it is worth mentioning that compound houses constitute the traditional house type in Ghana and are usually built by accretion (Afram, 2009). Scholars from the periphery argue that the traditional Ashanti compound house typology can be a solution to the housing needs of the urban poor in Ghana. Although the compound house typology presents an indigenous and viable solution to the precarious housing circumstances of the urban poor, there are significant challenges in aspiring to build a compound house in an urban setting like Accra, where it is actually discouraged. It is worth pointing out that the papers on academic and technical research published by the BRRI, and which are cited in this thesis, are available only at the BRRI reference onsite library as a hard copy. This means that one has to be there in person in order to have access to research undertaken locally, which sometimes may not be feasible. Therefore, the access to information is fundamentally important in determining where one is looking from and at.

Moreover, drawing on the participatory design workshop with the school children (see Chapter 4), in order to discover and voice their needs, this research identifies that there was an evident lack of lavatory facilities on the school site, which the data collected

⁶⁵Single-storey traditional compound houses comprise a series of rooms with a pitched roof surrounding a courtyard with an open roof. Each of these rooms is occupied by either different individuals or households.

from the students' and teachers' themselves highlighted. In actuality, there was need for both lavatory facilities and a canteen building in Abetenim at the time of the fieldwork, which became a contested issue among our group. Nevertheless, the research contends that if we had really 'listened' we would have built lavatory facilities instead. This also goes back to the data analysis on many levels: first, the urgency for the discipline and practice to focus on learning how to ask the right questions rather than how to provide the 'right' solutions; second, the common phenomenon of designers, practitioners, students, and so on, being involved in community projects without having been trained for such circumstances, and who instead focus on construction details and aesthetics as opposed to understanding the community's priorities and needs. Thus, the research calls for the role of the architect and/or expert in the field to be reconsidered towards one of 'listening' and 'unlearning' instead of imposing their own ideas of what those needs should be. The research argues that it should be the local communities who set the agenda and decide what their needs and priorities are, as what they really have as needs may be very different from what 'we' perceive to be their needs. By 'we' here, I refer to Western trained architects, practitioners, students, and/or any other parties involved in such work. In reality, we need to play the role of the enabler(s) and facilitator(s) in the field, and strive to look at engaging with the locals and the built artefact through the lens of questioning. We need to 'be there' and engage with the local community, which involves letting go of what we think we know and re-learn from the situations and engagements we are in. The research calls for a dynamic kind of empirical engagement, one which focuses on learning from the experience of the field and fieldwork, and which does not simply focus on learning about things.

Further, the research echoes Cedric Price⁶⁶'s fundamental basic approach of asking first of all, 'Do you really need a building?', and contends that more often than not a building is not even necessary as the community's priorities may lie elsewhere. Thus spending time in the field and getting to know the local culture is of utmost importance. As one of the participants argues, buildings are very often the last thing

⁶⁶Cedric Price (1934-2003) was one of the most visionary architects of the late 20th century. Through projects, drawings and teaching, Cedric Price (1934-2003) overturned the notion of what architecture is by suggesting radical ideas of what it might be. He saw the role of an architect as that of asking the right questions, as Reyner Banham has commented: "...the basic approach is certainly one that appeals to me, a way of really not saying, 'What kind of building do you want?', but almost of asking first of all, 'Do you really need a building?' (<http://design.designmuseum.org/design/cedric-price.html>)

that places need; they may need training instead, a sanitation system, or rain water collection, and so on and so forth. The research succinctly emphasises the value of communication, understanding, and listening if we really want to know how to ask the right questions, which contribute towards longer-term sustainable solutions.

The thesis reinforces the comparison of ethnographic analysis to vernacular architecture as both offer a holistic approach to humankind, embody completeness and consider the totality of the whole (Askland et al., 2014: 293). Therefore, it identifies the need for building practices in this context to be seen through the lens of their connections to culture, climate, and governance in order to be considered in their totality. Therefore, the ‘right’ question to pose at this point is: What kinds of knowing about the world do we need in order to build an earth structure/dwelling? How can we generalise from that specific place, in this instance rural Ghana, to a more general context? There is no one answer which would fit every design-related and planning situation and every context. The only way to tackle one of these complex issues is to tackle them all in a holistic way. This evokes Calvino’s novel ‘Invisible Cities’ in which he describes the city of Venice under fifty-five different names; each one corresponding to a different layer of the city’s complexity. The whole of Venice is made up of these fifty-five layers of complexity, and therefore in order to ‘see’ it as a whole, one needs to grasp all these different layers at once. This thesis argues that it is not really about the local, it is about the specific. Being specific is quite different to being local, as the specific embodies the endogenous with all its complexities and connections to the global, as opposed to the strictly indigenous, as it has also been discussed earlier in this chapter as well as in the data analysis.

What’s more, ethnography is about the relationship between change and continuity: how do people deal with change and modernity in relation to building materials, the deterioration of their earth dwellings, the influx of imported western materials, like cement, which are now considered to be local. ‘Our’ narratives of modernity and what being modern may mean in relation to building materials differ largely from the narratives of modernity in the South. By ‘our’ here I refer to Western narratives of modernity. One of the potential problems is that academia’s tendency to assume that modernity, or the plurality of modernities, poses a threat to the local culture and building practices. Our discipline more often than not considers modernity in the global South an almost negative factor and a threat to local cultures and in some way perceives

local culture and tradition(s) as static entities existing in some kind of unadulterated fashion.

As mentioned earlier, the ethnographic method facilitates the holistic understanding of the local context and informs the design process in a meaningful and coherent way. This method also allows the research to rethink architecture from a broader cultural perspective, critique local situations and frame questions. 'Being there' is fundamental for western-trained practitioners involved in development projects in the global South, as it is the only way to understand the local culture, the needs of the community and therefore their priorities. Culture, among other things, can only be learned from experience. One of the participants alludes to Maren's book titled, 'The Road to Hell: The Ravaging Effects of Foreign Aid and International Charity' (2002), who argues that NGOs are like any bureaucracy; they first and foremost prioritise their own survival over the needs of the affected communities. This research argues that the students and graduates who get involved with design and build projects in developing countries through NGOs are more often than not ignorant about the culture of the local community, and are ignorant about themselves in the sense that they do not have an awareness that they might be about to do something much worse than not doing anything at all. The research findings demonstrate that having good intentions is not enough; one needs knowledge, experience, humility, and most importantly communication skills, all of which are essential for any meaningful contribution to and in the field. Inevitably the question that surfaces is how does one imbue culture and the spirit of a people into the built environment? The role of culture in design and empowering people is emphasized by a number of scholars and educators, such as Jencks, Osae-Addo (Africatalks 2009), Lokko, Jenkins, Koolhaas, Kerre, to name but a few, who argue that architecture should be rethought through the lens of culture. The research findings, from both the primary and secondary data analysis, further reinforce this argument and put forth the idea that the only way to make a contribution to the discipline is to rethink it from culture, as the latter provides a holistic understanding of architecture's context.

Moreover, the research findings argue that the exploration of 'otherness' in architecture needs to come from the periphery, from the very context it is steeped in, before it is interpreted to Western-trained eyes. As Lokko (Bartlett School of Architecture 2016) asserts, *'the kinds of stories we tell ourselves about ourselves is the most accurate*

description of culture'. Thus, the research suggests that we need to tell a story differently, one which is looking from the periphery; looking from a South-centric perspective. The questions which unapologetically surface ask: Who is telling these stories?; Who has the privilege to tell these stories?; Who is interpreting and writing the culture of a people? Echoing the discussion in Data Analysis Part 1 & 2 (see chapters 6 & 7), the interpretation of culture needs to come from the periphery itself in order to explore it at its deepest level. It cannot at once be interpreted and explained to outsiders, as it risks being defined through someone else's eyes, through someone else's forms, and through someone else's position or space. '*History is not about time, it is about space*', argues theorist McKenzie Wark, in Koolhaas' 2002 compilation '*Mutations*'. Thus, the geographic area, where one looks and writes from becomes fundamental in determining how they perceive and experience the dynamics in the world, and most crucially, what kind of knowledge they subsequently transfer to others. The research findings reflect Wark's view and assert that there is a need for the periphery to have a voice and be allowed space in order to explore the phenomena of globalisation and imperialism as they experience and perceive them from the periphery. The latter may contribute to the way the Western knowledge providers, who may well be academics but not exclusively so, think about architecture and building in the global South.

8.4 Contribution to knowledge

From reading the literature around the impact of climate change and community-driven initiatives in the global South along with the primary fieldwork in rural Ghana, and secondary data from the case studies, some important themes have emerged which suggest a unique and original contribution to knowledge. These are:

8.4.1 Research Methods

The combination of ethnography, typically a method of the discipline of anthropology, and architectural praxis is invaluable in understanding the design process of building with earth, and/or other local materials, and the local social context in a holistic way. The syncretism of ethnographic and participatory design methods enables solutions, which can contribute to longer-term sustainable adaptation in the global South. It is not a top-down approach but instead this approach listens to the community's needs while

equally empowering them. It is only by being there, that is through participation, that one can understand the real needs of the community. Buildings are after all symbolic categories, which cannot be separated from the local's worldview. The ethnographic method is '*good to think with*', as it provides a vital tool to re-think architectural practice and to interrogate its often rigid organizational structures. This enables the research to: critique local situations and ask the right questions about the practice of architecture, question the boundaries of the discipline and its practice in the field, and reconsider the design process in our rapidly changing world.

On a more specific level, this study draws on the primary fieldwork in Abetenim, a remote village in southern Ghana, and the researcher's role as a community architect and participant in the Earth Architecture construction workshop through a non-profit organisation (NGO), in order to: rethink architecture from a broader cultural perspective; think about and raise critical questions about the practice of architecture in such circumstances, and how it can be improved and informed through '*being there*'. Thus, this interdisciplinary dialogue enables the exploration of architectural practice from a climate and culture first approach, which addresses the specificities of the context. The current narrative about the discipline of Architecture holds that there is a need to reinvent it and resolve the crisis of its identity (Askland et al., 2014). When used in combination with architectural praxis in the field, the ethnographic method becomes an effective tool to address these issues, and pushes the boundaries of the discipline in a meaningful way, which enables it to become more socially-driven.

8.4.2 Materials are '*good to think with*': Global Narratives, Local Realities

This research bridges the dearth between the larger discourses of NGOs on building with earth, and/or other local materials, and the local perspectives. Departing from the NGO's prescriptive narrative of using local materials like earth in the construction of new projects, this research looks at the process of the '*on the ground*' experience through direct involvement in community architecture and building. This perspective is being informed by the fieldwork in Ghana and in the UK. The '*on the ground*' experience enables the transformation of a global or non-specific narrative of modernity, i.e. the NGO's narrative of using certain materials, into a specific, or local, contextual one. The latter is a unique set of forces, which evolves from specific

material cultures and political environments. This prompts the thesis to reflect on the global narratives of modernity and to deliberate over the question of how the phenomenon of globalisation, in relation to building materials and trends, is manifested in the lived realities of the South. Therefore, the ‘on the ground’ experience through direct involvement in the process of building and choice of building materials enables the reconciliation of the two narratives of modernity, the global and the local. This results in improved vernacular methodologies in order to cope with the increasingly diverse climatic conditions and poverty. The improvement of vernacular methodologies entails the use of the indigenous local approaches and materials as a basis to be informed and shaped by globalised methods and thinking in a way that is meaningful to the local communities. The fieldwork and direct involvement in the construction workshop in rural Ghana demonstrates that it should not be a matter of choice between the traditional and the modern; rather, the focus should be on the syncretism of the two which can contribute to longer-term sustainable adaptation in this context.

Departing from the argument that the empowerment of the local communities needs to be considered as the highest common factor within community-driven projects in the global South, the research considers the category of building materials as a tool and concept to think about resilience and empowerment of the local people. It poses the fundamental question: ‘how can the use of materials improve resilience?’, which allows the study to rethink the idea of what is local in a given context. The research looks at how the use of certain materials, and the understanding of their limitations and opportunities through the construction process, impact local communities in meaningful and coherent ways.

As stated earlier in the thesis, the research questions the physical and spatial only approach to the built environment, and focuses much more on the cultural and social values, which are embedded in the everyday making of built form. Why then emphasize the physical material use, and consider the category of materials as a tool to explore the cultural and social values in the process of making and building? Why use something physical to explore and focus on something intangible? If one looks closely at Abetenim, they realise that it is a living, changing place with organic and dynamic culture. With the continuous activities of the Nka Foundation in the village, Abetenim manifests a strong sense of change. Modernity and change are necessarily couched in a relation with

tradition and continuity⁶⁷. In a similar manner and looking from the perspective and narrative of the Nka Foundation who advocate and encourage the use of earth, and in the case of our group the use of pozzolana, in the construction of new buildings locally, traditional or vernacular building materials and continuity are unavoidably couched, or expressed, in a relation with modernity, modern materials and methods of building/making, and change. Therefore there is a relationship to be (re)negotiated here; the one between the use of modern imported materials like cement which is the locals' choice, and the use of traditional local materials like earth which is being re-introduced by the Nka Foundation with the aim to create resilience and increase the capacity for adaptation at a local level. The presence of the Nka Foundation locally has had an impact in the lives of the local community, masons included, mostly because they have re-introduced earth as a low-cost low-carbon local material which is available in abundance in rural Ghana, and which Nka advocate should be used in modern articulations instead of imported materials like cement. Echoing Turner's view that, '*A material is not interesting for what it is but for what it can do for society*' (1972), the masons are 'asked', indirectly, to efficiently negotiate the boundaries of 'modernity', the way this is perceived and practiced by themselves and the local community, and to learn modern methods and skills in order to use earth in construction correctly. Through empirically exploring the materials and techniques, the construction site and physical making processes, and after talking to and engaging with the masons, one gets a better grasp of the challenges they face; first, to make a living by mastering and performing the craft they are assigned; second, to learn a 'new' craft, such as building with various modern earth techniques and perform them with mastery; third, to stay true to their aspirations, which may lie elsewhere than the construction site. The locals' association of earth with poverty and not being modern, which is one of the reasons the local community reject using earth in new buildings, is also something that the masons grapple with. Therefore by looking at materials used in construction, how they are used and by whom, one gets a better understanding of the larger social and economic processes that are necessarily taking place in the background.

I participated in the Earth Architecture workshop and worked as a labourer on a construction site with the aim to experience firsthand and learn about materials used locally, and building methods used by local masons, in an embodied manner. This process has enabled me to consider the complex relationship between craftwork and

⁶⁷ Marchand argues, that 'tradition and continuity are necessarily couched in a relation with modernity and change' (2009: 27).

social processes locally; the ways in which perceptions of tradition and modernity are questioned and grappled with, debated, compromised, and translated in practice. In light of the above, the emphasis is placed on the necessity to rethink the use of local materials, including traditional, non-traditional and a combination of both, in order to improve resilience at a community level. On a different note, it is through considering the category of materials as a tool to think about resilience and empowerment of the local people, that the need for training and capacity building emerges (see chapter 4).

The research further reinforces the current debates for a view from the global South. What surfaces is the urgent need to explore what being ‘modern’ means and the experience of ‘modernity’ in a non-western context, as well as the need for architectural research in this context to focus less on the rigidly native and more on the specific. Therefore, this thesis identifies the necessity for creating a space where students, academics, and other scholars can explore their ‘otherness’, their own architectures, cultures, issues of history, and identities. The emphasis is on the urgency to explore what it really means to be ‘other’ and at the same time ‘modern’, embodying and embracing ‘modernity’ from the periphery, that is from the South.

With reference to the choice of building materials in design and build projects undertaken by NGOs in the global South, the research critiques the current tendency to translate and apply North-centric narratives within different contexts of the South. The findings demonstrate that in order to make a meaningful contribution both to the field and the local communities from the ground up, the choice of building materials needs to be based on South-centric concepts and categories, which are explored and developed from the periphery itself.

8.4.3 Collaboration is ‘good to think with’

Finally, I believe that a unique contribution to knowledge is being made through the praxis of ‘collaboration as methodology’, which the research employs during the primary fieldwork in Ghana as well as throughout the extended fieldwork and writing-up endeavour. Here, by collaboration the thesis refers to the teamwork between two or more initiatives, organizations, and/or practitioners, or the combination between these, which work together on the implementation of the same project. The process of

selecting building materials is again a tool to think about collaborations in the field in order to implement the project. In actuality, the process of selecting building materials addresses two distinct layers of collaboration: one among the members of our group affiliated to the NGO, and another between our group and two local institutions. This generates unique knowledge about the way NGOs operate and the challenges faced in choosing materials.

The primary fieldwork entails collaboration of different levels: with the members of the NGO; between the NGO and the local community including the masons; and between the NGO and a local research institution. All the three collaborations take place in order to implement a construction project for a small community building in rural Ghana. The value of collaboration with local actors within research in the global South is emphasized throughout the thesis.

In addition, the research is interested in the ways disciplines work together, and specifically looks at interdisciplinarity, which entails the discipline of architecture to allow influences from the discipline of ethnography to go through its boundaries in order to inform and enrich its content and outcome in the field. The research contends that in the context of the global South, making the borders of the discipline more porous enables us to face the complexity of our global urban/rural future in a much more flexible way.

8.5 Further Research

This thesis addresses the question of some critical issues concerning various approaches to resilience and climate change adaptation through the use of local building materials within small-scale construction projects in the global South, and rethinks the idea of what is local in a given context. In this context, the possible links between local building materials and technologies, the empowerment and resilience of local communities in the rural global South, and local culture, have been widely discussed.

A further contextualization of the findings of this thesis may address the same research question from a different perspective; one which entails looking at the technical aspects of the building materials used in small-scale construction projects undertaken by NGOs in the global South. This may involve, first a longer period of being in the field in order

to work closely with the local university and research institute, and second, an interdisciplinary approach combining materials science and architecture. This approach may look at materials from the point of view of long-term resilience, specifically to explore what taking the fossil fuels out of processes leaves us with, which does not mean taking energy out of processes. It may look at a scenario thirty years from now where we have divested completely from fossil fuels, and explore what our construction industry and the materials we use look like.

Moreover, a different way of expanding the current project, one which I have already started working on in collaboration with Nka Foundation and the Building and Road Research Institute in Ghana, is to organise an international conference based on the themes which have emerged from this research. These are: the themes, which pertain to training, such as the architectural education and practice, and the in-field training, and the ones, which pertain to practice, such as the materials used for building, collaborations and the ethnographic approach to design. This conference is to take place in Ghana at the end of another earth architecture workshop in Abetenim, which is also going to be informed by the findings of this research. The latter will run for the period of two-three months and it will be in collaboration with the local community, the local university and the research institute, and possibly a British university. The construction workshop will entail the training of both the local masons and the participants at the research institute on various methods of earth building, as well as pozzolana cement.

In addition, it has been mentioned earlier in the thesis that having best intentions does not necessarily guarantee enduring solutions in the field. Aquilino (2011: 009), writes that, *“The absence of expertise is a trespass that leaves communities more vulnerable than before. The best intentions are rarely good enough, especially if they are not scrutinized in light of their outcomes.”* In light of the above, it would be very useful and beneficial to local communities and beyond, if the research could expand towards undertaking an impact assessment of what has been built so far in Abetenim in collaboration with a local NGO and/or the local university.

Further, following on from the discussion about the value of earth and building standards in Data Analysis Part 2, it has been instigated by participant A8 that the research expands towards exploring the field in order to make an environment in which local builders can work sustainably, specifically get involved with the process of

generating a building standard. Collaborations and continuous dialogue with the existing local stakeholders are essential in order for this work to have a wider ripple. An area, which may be useful to explore is if standards have an impact. For instance, there may be national standards for earth building in a specific context but may be not used. Therefore, it may be beneficial to investigate what needs to be done so that the standards are used. This may entail developing them with appropriate stakeholders rather than remotely by a standards body and so on. The research findings suggest that setting up a national organisation for earth building standards either in Greece or Ghana would be beneficial as none of these countries has a national body for earth building. The paradigm of establishing one in Greece is prompted participant A8, as Greece is also my country of origin. Therefore, the research may explore the existing skills on earth building as well as document the existing earth buildings locally, which may be considered as best practice in the context of Greece. Principally in order to adopt a standard one needs to engage the civil society, the architects and engineers. Setting a standard is not only about building materials and how to use them correctly; the process affects the local markets, livelihoods and economy at the same time; it necessitates only the beginning of the conversation, which also entails the setting of training standards, products standards, and equipment standards and so on. This whole process aims to strengthen the abilities of local organizations, systems and individuals, so that they carry out certain essential actions/tasks, in this instance construction using local traditional materials like earth, in a sustainable manner, and to enable them to improve and develop over time.

Moreover, it would be beneficial to undertake research on the work of architects and/or academics, who use ethnography, collaborative methods, and undertake extensive fieldwork in order to implement their projects on the ground. Professor Trevor Marchand's work is mentioned repeatedly throughout this thesis, as he is a trained architect and a Professor of Social Anthropology. Marchand's work is characterised by extensive engagement with the field, and his an apprentice-style method in order to investigate skill learning and practice. Marchand has carried out field research, among other projects, on the traditional mud-brick masonry practices in the Hausa Emirate of Zaria, Northern Nigeria; fieldwork in West Africa, which entailed labouring and apprenticing with a team of mud-brick masons in Djenné, Mali; an extensive study of craft knowledge and vocational training in England alongside fine woodwork trainees (see: <https://www.soas.ac.uk/staff/staff31381.php>). The work of Yasmin Lari and the

Heritage Foundation of Pakistan (see: www.heritagefoundationpak.org), which is discussed in Chapter 5 (see sub-chapter 5.2), is another case study that may be researched extensively. In addition, the work of Francis Diebedo Kere, who has been quoted on many occasions in the thesis, may be researched as it entails extensive fieldwork and collaborative methods (see: <http://www.kere-architecture.com/>). Anna Heringer's work (see: <http://www.anna-heringer.com/>) also entails lengthy fieldwork and community participation in the building process. There are many more architects and/or academics than the ones mentioned above, whose practice and research employs ethnography, collaborative methods, and extensive fieldwork. It would be useful and beneficial to local communities, Academia, practice, and beyond, if research, both qualitative and quantitative, is undertaken to investigate the mechanisms of such practices; research, which recognises the larger social, cultural and environmental impact of such endeavours.

Finally, echoing Marchand's argument that the tradition most worthy of support and conservation is the apprenticeship system itself (2009), the research findings contend that there is a need to move beyond specific buildings and extend the discussion to categories that have a general pertinence to traditional know-how and building practices for earthen buildings such as adobe, rammed earth, cob, wattle and daub and so on. In relation to the lack of skilled labour on various earth building techniques in rural Ghana, and the global South at large, the concept of training local masons is one pathway. This would not work in isolation; it would only work in combination with an awareness-raising program about traditional earth building methods locally, and the values of earthen building, such as functional, economic, socioeconomic, emotional, environmental, socio-cultural, aesthetic, identity, continuity, and so on. What's more, the awareness-raising program would need to entail the participation of the local community as well as the cooperation among different stakeholders in order to initiate a dialogue and maintain continuity at a local level.

8.6 Research limitations and challenges

Although this research was carefully prepared, there are some challenges and limitation that affected the flow of the process. Some of the challenges, which have been faced during the research journey, are as follows:

- The access to information, specifically to papers and journals, is fundamentally important during a doctorate study. Although, being based in the UK I have had the opportunity to have access to most journals and papers related to the topic and findings of this research, it has been crucial to review papers authored and research undertaken by scholars from the periphery. By periphery here I refer to the African continent and specifically West Africa and mainly Ghana. The papers on academic and technical research published by the Building and Road Research Institute (BRRI) in Ghana, and which are cited in this thesis, are available only at the BRRI reference onsite library as a hard copy. This means that one has to be there in person in order to have access to research undertaken locally, which I did when I was in Ghana, but sometimes this may not be feasible for other researchers. There are a number of research institutes in other parts of Western Africa which do not publish online and which undertake very relevant research on similar issues as this thesis, and which I have not been able to access. The voices from the periphery may be very different than from the so-called developed countries. Therefore, it is important to include both perspectives in order to position oneself within the field. Thus, a researcher needs to keep in mind that this presents a critical limitation, and compromise with the information available to him/her.
- Although over the past two decades architecture has become more and more responsive to the deep understandings of ethnographic analysis, the focus has remained on professional conduct, and social and ethnographic research of buildings, space and place, whereas studies that explore architectural practice remain limited (Askland et al., 2014: 293). Thus, the lack of such studies has somehow made the design of this study a bit more difficult and time consuming.
- Finally, the canteen building was finished within the stipulated eight-week timeframe that was allocated to us. It is a shame that due to limited funds I was not able to stay in order to see the end product.

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Appendix A: Interview Transcripts

A.1 Interview at the Building and Road Research Institute, Fumesua, Ghana, 24th Nov 2014.

I could start by asking you a few things about yourself, about your work and your background and your interests perhaps.

So I have to mention my name? (Laughing...)

Whatever you like, if you want to mention your name, please do, if you don't then that is fine too.

My name is Joseph A.J. Danquah. I was born on a Saturday anyway. I am forty years old. I work at the Building and Road Research Institute. It is one of the 14 institutes under the Council of Scientific and Industrial research. We are based in Kumasi. I have been here for about twelve years. I finished at Kwame Nkrumah University of Science and Technology in Architecture. That was my basic degree and then I did a Masters also in Architecture, and I have done a postgraduate certificate in Housing Development and Management in Sweden, Lund University. My speciality is generally in Architecture, but specifically in Housing, affordability, sustainability and those things. That's what we are focusing on, especially the local building materials for our country. So that's a little bit about myself. My hobby? Football and reading (laughing).

And the project you are working on here (BRRI)?

Currently what we are working on is using burnt bricks and pozzolana to do an about 3km fence wall for the TAKORADI THERMAL POWER STATION. So we will be going there I think on Wednesday or Thursday. That is what I was discussing with the other colleague, he is a quantity surveyor.

In Takoradi?

Takoradi in the Western region. That's where we have our thermal plant. They had a problem with their fence wall. They used a metal chainlink but it was close to the sea so almost every other year they have to replace it due to the reaction of the seawater with the metal. So they asked us about what is the best material they are supposed to use. We did some investigation and found out that we can use the bricks and then we use pozzolana as a form of stabilising the cement, because the cement also has some chemical in it which reacts with the sea water. We came up with a proposal for them and then we signed a contract. So we started the project in 2010, it's been about 4 years. But there are some ups and downs, you know the way the Ghanaians put it, sometimes it's the fault of the client and sometimes it's the fault of the contractor. But this was a Turn key project, it means we did the design, we did the procurement. So we are supposed to do everything and then hand it over to them. We are supposed to do it in phases, we have finished phase one, and then phase two we are about 75% complete. We are now in phase three which we hope to complete in nine months' time and then hand over. So the component itself is that we have the foundation to be sandcrete block which will have the pozzo-mix in it, and then we have insulation over the foundation up to the top structure. It's about two courses after the foundation, two courses of blockwork, then it comes to the upper surface. When it comes to the top surface we have another course of blockwork, then from there it is ready to receive the solid brick. We have a solid brick that goes about 900mm then after that we have the screen wall. These are the solid bricks we are using, we have this one and another one that is solid, which does not have any perforation. But this is what we prefer to use at that place. So we have this to a height of about 900mm, and after that we have about 1,6m of screen wall. The screen wall is like we have the bricks but they have big holes in them to allow for the sea breeze. This is a thermal plant which emits a lot of heat and we need this kind of circulation all around the place. One for security reasons, the other for safety. So this is what we considered. They didn't want to have that solid wall throughout. It's come out beautifully.

(Pause as Joseph receives phonecall).

Building and local materials. But almost 80% is in bricks. As I was saying last time that the perception of the people is such that even if you want to convince them to use the local material, it should be something that is refined. So they will prefer something closer to the refined product than the rustic or raw state. We are trying to convince them

anyway. The government is not helping much. We are praying that they will see the light. They will see the light so that they can help us otherwise most of the work that we are doing has been on our own initiatives, most attached with the district assemblies. Initially they (district assemblies) used to have their own funds and they could take their own decisions. But now everything is going back to the central government.

So even though there is a district common fund where they are supposed to get some funds that would be dispersed through the district assemblies. Now the central government is still controlling the money and they can be directing any district authority that *This is a project we will be doing at this district and I am the one who is going to fund it and I am bringing a contractor from here to there.* So the concept of the district assembly project has already been defeated. Now it's difficult for them to take their own initiatives, it becomes difficult when you want to convince them or you want to persuade them to do some initiatives on their own. And as a government supported/subvented organisation as we are at the BRRI, there are no funds for us to go and do some of these things and there are some legislations which also restrict us as to how we can even go for partnerships. So these are the things that are restricting us. We have a lot but then it's like yes you have a lot but this is where yours end. So you bring out the product, this is our research, this is what we have come out with, these are the findings. It's left on the shelf. So you are praying that somebody will come and pick it up and go and implement them.

How do you go about disseminating the findings of research?

Most of the times through publications and others through the media, the Press, press release, we can even go to the television. If there is a new finding, a new breakthrough maybe invest technology or product then we advertise. We have a lot of good will from the public but it ends there. Because it's like you have this product and it's good and they will come and ask you for example with the pozzo. We made a lot of noise about pozzolana; it's going to reduce cost, it's good for you, these are the properties and people start making inquiries, *where can we find the product.* They wanted to buy in bulk, they come and make the orders but we cannot meet it. So for now we have even stopped advertising because there is a huge backlog of clients and we have to supply them and we are not meeting that demand. So the more you make a noise then you are

more restricted because you cannot expand. And the government is not taking the initiative to do that or to even support people who want to come into this partnership.

So you don't have the support of the government at all?

They say it with their mouth but deep within there is very little to show for it.

But you know your work I suppose is related to climate change adaptation and I don't know whether the state of Ghana actually believe in climate change at all. Do they? Because many governments don't. For example where I come from they don't believe in climate change, you can see it in the way they implement projects.

I can say yes and no. Yes because we have people who genuinely care about the environment and who genuinely want to implement certain policies or initiatives that will bring about these changes. No because there are also forces out there who are looking at their own interest. So you want to implement this but then there is this force that is pulling you, *don't go here*. We can just make the noise for people to know that yes we care about it but know if you go about it there is a political cost. And we are talking about a political game where we want to win by all means. It's not about what is good, it's about how to win. That is the system here now. They don't care about how they are going to feel the change to the people, whether today or for the future. What they want is the immediate, the four years, the three years, the two years ahead of them, how they can win the next election. That is all that they are looking out for. So it's very difficult to implement decisions or policies that you think that yes this thing is going to have a long-term effect, it is going to benefit us and our children. No, no, no they are not thinking about that. The masses down there in the villages, they are looking at *how soon I am going to get my light*. Do you get it?

Of course.

How soon I am going to get a road to get access, how soon I am going to get a shelter. The masses do not care whether it is from a sustainable material or not. All they need is yes I have a space and its going to take care of me for the next one or two months. And the politician will point to it and say that yes I provided this for you. If after three months it's ripped off he doesn't care. But do you think he is going for something that is

going to take him two, three, four years and he is going to spend a little much higher than it used to be with the conventional materials? No, no, no, he is not going for that. And that is why people are going to China for all these cheap products. You get it? Because that is the easiest way. Look at what happened in parliament where there is a huge outcry. Why should we go all the way to China for furniture? For furniture?! We have lots of wood, we are exporting wood, so why is it that we just could not do our furniture here?

Why don't you make your own furniture here?

It's the politicians.

Ok but there are other bodies to influence besides the State. There is also, I mean you are an architect and you know very well what the architectural education is like here, there is also the body of the architects, the architectural training as well. What is your view on that? Is architectural education geared toward climate change adaptation? Is there anything like that nowadays as part of the architectural education? I was talking with a couple of professors at the KNUST and they mentioned that climate change is not something that they deal with. It's the same case where I studied in the UK, they don't deal with climate change, they actually deal with form. Still nowadays form somehow can still become more important than survival.

Yeah, hmmm climate change to a certain extent; that is a lesser extent not so much. When I was doing my Masters we did a course on Sustainability but the way they take it is different from tackling it to let the students know that yes this is really important. It's not a compulsory course but I believe that it has come to a point whereby some of these courses should be compulsory and should run through the years. But what happens is that they will be doing it for just one year, sometimes a semester. So how do you expect the student to even take it seriously? What runs through is the studio, the design and those ones but if you really want to make an impact then this is what you have to do. If it's not something that is supposed to run through so people take it seriously then... To even give a lecture or teach it is also a problem. It's all about makeshift or whilst you are an architect, you will be able to handle this course but it's not so. I know there are people who are well-trained to do some of these things so the people who are teaching it do not even practise it so how are you going to expect this person to do it? If he is

talking about *you have to use this, these are the effects of this* but you go to that person and you see that all his buildings, his works are opposite of what he is preaching then how can you take this person seriously?

Yes you are right.

And even look at the campuses, if you are going to the KNUST look at the buildings that are being put up. When I go there I get so frustrated because the buildings that are there are not something that you can really be proud of. This is a school of Architecture, the only school of Architecture in Ghana officially. There is another one that we have in the central university but it's private. But for public, government, that's the only school of Architecture that we have.

If you come to London to see the schools of Architecture you will probably have the same opinion. I guess they were built many years ago and they haven't been retrofitted to adapt. I personally think there is nothing wrong with the buildings as they were built then because they were built for a different context.

No, if you look at, if you really look at the ones that were built during Independence up to the eighties, and the ones that are coming up now there is a stark difference. Those ones are still beautiful, those ones are still artistic, because you see that yes they really thought about it, and you see there are a lot of SUSTAINABLE FEATURES with them. But the ones that are coming up currently do not address these things. So it looks like we are retrogressing. The ones that were there are better than the ones that are coming up now.

Are there any new buildings on campus?

Yes. There are a lot of new buildings. And there is this craze about glazing, there is this craze that everything should be glass. If you look at the colour schemes they have, if you look at the real design, we are talking about tropical design... they are missing, they are missing, they are missing on the campuses (e.g. why do we want to have a building that will require air-conditioning all the time or paint every year, when the knust environment is unique forest in itself.?) They have the development office which is supposed to see to the master plan of the university but they also complain to you that

they also have little to say because (laughing). So these are the things that are... I don't know, sometimes there are a lot of ideas about how business can be changed. Have you been to Legon? University of Legon?

No I haven't.

Ok that is quite different, quite sane. U see harmony and synergy at play in all their buildings. Very different from the KNUST.

Where is this university?

It's in Accra. When you go to Accra you can go there, or even when you google just look at the master plan, look at what is happening there. They have a theme running through every building that is in that place. And it's not even a school of Architecture, they don't even have that there. I think the development office is much more functional than this one (KNUST). You see even their roofs, there is a theme that runs through. All their buildings have this clay tile roofing, all of them.

Yes. We, as a group, are working in rural, what is considered to be rural, Ghana. And yes we want to use local materials as much as possible of course. Obviously not just local materials, we will also use others that have now become 'local'. The thing is I have noticed a lack of skill from the masons' and artisans' side and I think sometimes there is a problem with training them to go back and use these local materials properly, cause they may be able to use but sometimes they don't use them in the correct way, and then it doesn't reach the result that you hope to reach. I understand the benefits of the materials that you (BRRI) are trying to promote and it's fantastic, but how does this relate to rural Ghana? Can the artisans there use them? Do they know how to use them? Does training need to be incorporated perhaps instead of actually supporting what is considered to be 'vernacular' nowadays? I am not only referring to Ghana, I am referring to other countries as well. Is it worth perhaps trying to support the training of the local artisans to work with these materials rather than trying to support the local vernacular style? What do you think?

Yes that is well in line with the BRRI, that is why we have set up the National Artisan Centre. (Joseph showing me the printed programme of the training schedule which was

running at the BRRI while we were talking and for the duration of 5 weeks). I am giving a lecture as part of the training tomorrow.

So for training we know that is one of the basic problems when it comes to using local materials and even other ones, because now there is a disconnect between the basic education and the secondary education. We used to have these JSS (JUNIOR SECONDARY SCHOOL) workshops, technical workshops which every student or pupil was supposed to pass through to develop some of these technical skills where we could have taught all these things. But now most of them come out without having any knowledge or technical know-how about even construction, building materials and those things. That should have been the basic foundation of those levels. What we found was that most of these artisans that is where their level of education is, at the GSS and then at the most at SS. And then if you have some at the polytechnics. So that is where we have identified there is a gap there. So most of the times when we organise this training we call for those ones, not for those that are coming to learn afresh but for the ones who are in the system already. We have people who are doing masonry work, people who are doing brickwork, people who are in carpentry. When they come we look at their background and what they are lacking and then we fit them in with those ones. So we look at your level and say fine most of you people are from the JSS and based on the interview we know that these are the things that you might need for the next level, we give you this kind of skill and then you take it away to your district, to your locality. We run the courses occasionally.

Are they against payment?

Yes. But it's very minimal. Very, very minimal. With this one running currently it is supposed to be for one month and you pay 500GHC.

For the whole month?

Yes for the whole month including their boarding and lodging.

So these courses are for whom? Are they for the local masons?

For masons, for artisans, whoever. For example like your people in Abetenim, they could come in a group and say yes we want to be trained to do this, so what will be the package for us? And then we could work out something for the entire gang or let me say a group. So it's tailor measured.

I think this is very important because we are now part of the Nka Foundation which is a community-driven initiative. Perhaps this sort of initiatives who are working with local labourers, perhaps these are the initiatives who should actually demand in a way that the local labour which they are working with should be going through this training in order to accommodate their philosophy, whatever that is. I will definitely suggest it to the Nka Foundation cause I think there has to be some sort of connection there. I think the local labour in Abetenim wouldn't know about this training, you know. So the question is how do people get to know about this course.

We made the announcements, radio announcements. We advertise for a period of time before the start of the program, for about two months before we start the program. And then we also write to the district assemblies. Because most of the times these artisans are registered with their district assemblies. So when we disseminate the information to them, they are supposed to relay back to their contractors and then their foreman relay to the artisans. We are restricted with funding otherwise we could have also gone to the districts and organise training for them at that place instead of them coming here. We are looking at, later on when we have funding it will make it a lot easier for us to move out and organise this training. It can even be regional. It can even be at a district level depending on how the funding is and how and where the resources are. We could have done that but now we are restricted so we are doing it at the centre where we have the resources because we are able to manage with the limited funds that we have.

I think this is a fantastic idea. The only thing I think would be a bit of a problem for them, this community is very poor and to make a living they have to work every day like everybody does, so if you take them away from that context for a month in order to train them, I think that may be a problem for these people because they have to support their families you know.

But three weeks should be ok. And from that place (Abetenim) you could make such an arrangement that it will be daily so they not sleep here. So they can go and come. I

don't think it's going to be a problem. So they won't feel like we have taken them away from their families or they are missing something.

Who has been participating in these courses? Is it younger or ...?

We have ages across the board. We even have some university graduates coming to refresh. We even have doctors joining artisans.

I was going to ask you, so would it be ok for us to join as well?

Yes. But these people are here for only one week.

I think it's important cause we come from very different backgrounds, it's important once you take the decision that you want to work in development cause this is what this types of work would be considered, then you need to be trained, not just come here and start working in an environment you are not familiar with without any training.

Exactly.

So I think it would be a good idea to come here or any similar institution in any other country to receive training so you can then work. It would be fantastic actually.

Exactly.

Does it last for one month?

This one we are doing for two weeks. Because now we have realised that people prefer it two weeks rather than one month cause most artisans are also working with contractors, some are working with institutions and companies, and it's very difficult for them to give them a leave of one month. Two weeks they can afford, but one month they are hesitant. So we make it in two weeks then you can even break it and say this is part 1 and later you come for part 2. Initially it was one month but now we have reduced it to 2 weeks for specific needs. Depending on your need, if your need can be met in one week or two weeks then fine, it will work for you.

Can I ask you something about housing in relation to Abetenim? You know now we have been asked to build a canteen which is great because it's a project for the community and for children especially. So it's a great project but at the same time you walk around Abetenim and you see that most of the people's houses have been damaged for various reasons. I am not going into the reasons but the fact they have been damaged. And because they are very poor they cannot repair so a lot of people previously had two rooms for example, a couple of walls of one room have been damaged so all of them moved to the other room. So it feels a bit... I personally find myself in a very difficult position because I think ok, this money is going into these buildings, which is great, and especially the canteen is great. Cause there have been some other projects which I don't see the use of especially in that context. But then when you try to assess the needs of communities housing has always been the need. I guess historically housing has been the issue of many countries and communities. When you see that happening, how do you go into housing, because you cannot obviously create a house just for one family and not consider the rest. How can you actually work on housing instead of creating all these buildings for foreigners to come and stay? How do you go into a community and work on housing and the provision of shelter for them? It is difficult...

That is a very sensitive and a very difficult subject right from colonial times. It has to do with the localities or the villages. Every village has a Chief. And these are the people who are the main focus when it comes to this development. There are places where you have clans apart from the Chief, you have clans. Or the land belongs for example to this family, which area belongs to that family and so on. There are times that it's the clans that initiate the housing for their needs or for their people. So for example if they have two households you will see that they have this land but then they build for just the two households. As they keep on expanding then they allot some of the plots of the land to them and they also build. You cannot have a wholistic way of saying that I am planning this village right from the start, so it comes just spontaneous out of the blue for a while you see that they are springing up just like mushrooms, and then before a while has passed you see that the village is looking like some way... So it's very difficult and that is also what transfers into the cities. Because the cities also have Chiefs and Kings.

The cities have Chiefs as well?

Yes.

Oh I didn't know this.

Yes they have Chiefs. In Kumasi we have many Chiefs aside the King. Almost all the suburbs have Chiefs. It's like the gradual merging of clusters of towns and villages each with its traditional ruler into a city. The king exercises extreme authority over all the chiefs and subjects both in Ashanti region and affiliates going as far as the north.

Is he like a Mayor?

No, the Mayor is political.

Oh so the Chief is not political?

No, no, no, no. the Mayor is political, he is a political appointment. So he takes charge of the city. But most of the power, most of the things that are supposed to be done, it's the Chiefs who have the power. But they are also sharing the responsibility. And sometimes they are influenced by the politicians. The land belongs to the Chiefs apart from the government vested land. They also want cash, most don't care about how they are going to plan our city, it's about how many plots I am going to sell to get my money. So you may come out with a nice idea, nice masterplan, you have left open spaces, you have provided for the needs of kids, for the market, for the needy people, for the aged, a community centre, a playground etc. He doesn't consider these spaces as something that is going to bring him money. What they need is about plots where people build, they build houses, and that is ready cash. The people come and buy with cash. So you need the spaces and then you divide the spaces in about ten plots for residential and then you sell it. So that is what has brought us to where we are now.

So you have to go through the Chief. So the person you really need to influence is the Chief?

Yes. Once you have the Chief on your side then the next step is to move on to the local authority, what we call the district assembly. So you have the Chief and then you have the assembly behind you. Perfect. Then you are into business.

Do you ever as a researcher or as an initiative go out to talk to Chiefs?

Yes. I remember when we came within this and SIF, Social Investment Fund, GPRS, and it was a Community-driven project that we were doing, but that was not necessarily about local building materials, it was about providing the social facilities at school buildings like toilets and those things for the communities. And it was said that a community has to provide a certain portion of the funding either through bringing money or through labor participating. So when we go, we go and talk to the Chief. We talk to the Chief, here is a project that we are bringing to this community and this is the component that the community is supposed to provide, nearly 30% of that quantum of money. But then the community will say that fine we don't have the physical money for you or to provide for this but we can provide you with human resource. We can just give them some basic training and then they can do the work. That's the actual labour and those things, making of mortar, concrete etc. and then they need household materials, so we say ok we have a forest so all the timber we are going to use we are going to provide for you for free. And they were very happy, very happy to be part of this project. And when you finish you see that they have a sense of ownership because they feel that yes this is something we have put in our energy. When it comes to maintenance we give it to them to maintain it or run it, it's much easier. Nowadays the government does everything and then it leaves it, and they don't feel that they are part of it, and sometimes they don't even consult the Chief. So he is there and then there is this project that coming to his town, he doesn't have any control over it, the contractors go from their locality so they do everything and leave it there. Sometimes the Chief and their places also feel ? 39:09. There have been some instances where they actually rejected a project. They refused to use the project. So the building will be there, the project will be there but they won't be using it. Most of the times for the SIF, what we did was that we identified the needs of the locality. We would hold a forum, we would have the internal committee where the Chief would gather with us and then we discuss what the committee actually needs. Some will say we need a community centre, some will say we need a playground, some will say we need a place of convenience, some will say we need a market, some will say we need this. And then we all come to a consensus and say this is what we need, and we take it from there.

But things are changing now, it's hardly that you see allowing the community themselves to tell you exactly what they need. Everything has become political. Everything has become political.

Of course yes. The Chief as well is a political figure. I mean I understand that the mayor is the politician but the Chief is a political figure if he has so much power.

Yes. He is a political figure and most of the times they are also being influenced. They get corrupted by the politicians, though they are not supposed to declare their or they are not supposed to engage in active politics because it divides your people. Because you cannot say that all your people should support one party, so even if you are leaning towards one party you don't declare it popularly. You may have your feelings but when they are voting you don't know what they are voting for. But there are some Chiefs who openly declare their ideas *I am for this party*. The politicians also have become very wise because they know that if you pass through the Chief you get your win vote. It has weight. They also try to influence them, do you get it? And that is what is happening here... (laughing).

But you see as a foreigner working here it's very important to know all this. Otherwise you don't understand anything about the culture and you can't not understand culture and at the same time practise architecture. It's impossible. One doesn't go without the other so... and politics is very important.

Yes exactly.

I was going to ask you if you have any connections to any other countries not only within Africa but any other countries that have similar economies and perhaps have implemented quite successful projects in planning, in order to have a dialogue with them so that you can support each other and you influence each other. Because your colleague, I don't remember his name...the guy we were talking to this morning?

Kofi?

Yes Kofi. Kofi was saying that he is collaborating with somebody from Nigeria, so they are doing research together. So there is a dialogue there. I am asking because in the

Summer I went to this conference at the DPU in London. The DPU is part of the UCL and they run this very popular unit, the Development Planning Unit. Mostly architects go and do this unit. They are looking at holistic development, i.e. economy, politics, planning, etc., and they are trying to see what ways are the best to go with. Their focus is the Global South. But of course the boundaries of the Global South are constantly changing. I am from Greece and I think we are slowly entering the Global South because of the economic crisis. So I was at the conference and for the whole three days they were talking about the realisation of the importance to have a dialogue, a South to South dialogue, because until very recently there was a North to South dialogue which was not a dialogue exactly. I guess it was North to South and that was it. I am not sure whether the word *dialogue* would fit in that. But now there is this new discourse of South to South dialogue because you cannot impose different modes of planning, which may have been successful in the North, to the South and expect the same result. It's impossible. The cultures are different, the economies are different. So I was wondering if you are in dialogue with any other countries, not only within Africa, but perhaps in South America or Asia, Pakistan, etc. Maybe you find some commonalities in terms of the economy and planning. Well the BRRI is such a fantastic institute. The work and research that comes out from here could be disseminated to other institutes as well. Do you think there is any scope for such a thing?

There is some collaboration with Nigeria, the Nigerian Institute of Architects. Yes there is collaboration with them. There is also collaboration with Egypt but I think since the disturbances there has been a small break for now. But there hasn't been much outside Africa. Most of them have been individuals instead of the institute itself, depending on what you are doing and those things. I remember when I was in Philippines.

Where you working in the Philippines?

No, I went there as part of my studies. We studied their housing and planning. But what we saw was that in that place most of the land belongs to the State. So when it comes to planning it is not so much difficult. Although you have individuals owning certain portions of the land the government is able to negotiate and buy out all the land and then implement the planning scheme and then they sell it back to them with the houses on it. So there the social housing is working so much, it's very effective. But it's not the same as this place. Here everything is individual, individual, individual (laughing). This is my

boundary, this is my bona fide property. So it becomes very difficult trying to bring cohesion in an environment whereby you have a lot of this individualistic attitude. You see every place, everyone is having a fence wall, I am trying to tell you that this is where my boundary is. This is my space, I am not supposed to trespass. Everybody is within his own enclave, he doesn't care what goes out even on the street in front of him. It's like we are all boxed in, you don't feel that kind of, that sense of, let me say, if you look at the old towns, when I say old towns I mean the suburbs, those ones like Dichemso or if you go to Bantama and those places where they have the compound houses, there you see a different form of social life to what is happening at the outskirts. The planning in those areas was different from what is happening now. As I was telling you about our building regulations which is gradually changing now the urban fabric, because in those times we were using the compound houses so you could have a structure that is housing as many as 50 households, and then you have this form of cohesion like a family just like it exists in the village. And each one was looking over the shoulder of the other person. You can leave your kid when you are going to work and then you have somebody looking after it for you. But now because of these regulations you have these individual plots and you have just one household to fill that plot. So if something happens to you nobody cares.

Are the compound houses not supported anymore?

No they are not supported. They are not supported in most of the cities, in the urban centres. Because they tell you that you are not supposed to have a wall within a wall. That's what the building regulation says. So if this is your house, this is your boundary and then you want to create a compound house within, it's like having a double wall. They consider the periphery of the compound house as a wall in itself, so you cannot have this wall within this wall (sketching).

So that's what the building regulation says?

Yes but in the old suburbs you can see that you have a compound house that goes like this, you have another one that goes like this, there is no wall between them. So the peripheries of the compound houses were serving as boundaries in itself. There was nothing like a fence wall attached to it. But for now if you do this it means even the land that will be left will be just about 30%.

Is this what they are enforcing instead of this?

Exactly. So because of that it has also changed our design. So now you don't see architects designing compound houses, we design compact houses which is not tropical enough. (laughing) So that is what is happening because you want to build something that will fit the plot size that you have been allocated.

So the boundaries of the plot size cannot form the wall of your dwelling?

No no.

Oh I didn't realise this.

Because you share the boundary with another person so you can't use this as your wall or as where your building ends.(statutory every dwelling is supposed to leave 3meters from the building to the boundary and 5 meters at the frontage)

So this is directly defeating this model of living, the model of the compound house.

Exactly.

So the creation of new compound houses is not supported?

Exactly.

And does that happen in both rural and urban areas in Ghana?

Much more with the urban centres. And because of that now even people who want to build compound houses, there is a dilemma they want to have the compound house and at the same time they want to protect their boundary. So they still want a fence wall. And that is where the problem is. Because what is happening is that who takes care of this space in a compound house if there was no wall.

And who does it belong to.

Yes. Exactly. So the urban life is also influencing most of our thoughts as to how we came up with this.

So obviously now this has a direct effect on the social structure of the community I suppose.

Yes.

When did this happen? When did this go into the building regulations?

In 1996. But before that there were the local byelaws within the district, metro assemblies, the municipal assemblies. Some of them became laws because there was somebody sitting down and thought that a compound house should not befit an urban centre. The people who drafted the thing itself most of the times it wasn't us. If you have these technocrats putting up or bringing their input into some legislation issue, they will then pass this legislation and legislations are passed by numbers. By numbers I mean politicians. In parliament the majority carries the vote. They pass the law whether it's good or not. Once they know that yes it's for my party they will make sure they draw the line and... It's only when you practise for a while that you see that yes this is a lot of nonsense, it is a lot of nonsense. Our professional body has also been dormant for a while. We are not so, let me say, active in directing policies. But sometimes we also feel that our hands are tight because the Architects' Registration council is supposed to regulate the building industry. But it doesn't have the teeth to bite. So you can talk all the nice things and speak all the things that you want to speak. Whenever there is a collapse of a building and you call us and we explain, we tell them the causes and that is all. There are a lot of recommendations that we have made for the politicians but it's all on their tables, they are on their shelves. And sometimes it becomes disheartening and that is why you see that our successors also say that ok this has been the trend, you will see they don't mind it so what do you do? You just mind your own business. That has been the issue because if the professional bodies could have even come together as one voice and they could have pushed the government to implement things that they want. I know that in Nigeria, the Nigerian Institute of Architects, they are very powerful and they influence decisions. They can call the shots to the government because they can stop a project from being implemented, but not in Ghana. Some people say it's because

of the way we are trained right from the school. The architect does not advertise, his products advertise for himself or herself. You are not supposed to make a lot of noise just like the doctor. So by intuition it's within you, you think that yes we are not supposed to make noise or we are out. Psychologically it is there. You see things that are bad but if you were in another country you would voice it out, you would go to the media. People here would think that you are a politician. People would think that this person why are they speaking so loud... so we think that fine we should use the diplomatic way and we write and we protest, we use the formal way... But it doesn't work. It doesn't work. That is what we have seen, it doesn't work so in an environment like this...

Well in any environment architects should be very political otherwise we would have no influence on anything.

Yes. That's one thing about the technocrat here in Ghana. We are reluctant to verge into active politics because we know that if we have technocrats, people in sensitive positions they could also influence decisions for us. I mean people lobby, when you go out people lobby, but our bodies don't even have the money to lobby. It is money, sometimes you think it's not money but it's money, if you want to implement a bill it means you have to sponsor the bill. And these things take a lot of money and sometimes we also say ok fine, if it means going for this and this and this we cannot do it. So if we had people half the size of the people in parliament but technocrats who understand the building industry, who understand the effects, the cause and effect, when things go that place then they will be able to also show you the way out and implement proper policies. But you go in and you see that people... That's why I say here our politics is different, it's about numbers, it's not about sensibilities, it's not about capabilities. It's about how popular you are, you can be a fisherman, you can even not have gone to school and we have this calibre of people who are now in parliament. So I tell you what do you expect them to bring out? So everything goes there and you see that in a rush they pass it before they have even realised what they have passed.

We need some architects in the parliament I think.

Well we have one architect in the parliament.

Is there?

Yes and fortunately it's my colleague. We finished the same year. He is with the ruling party.

Do you share similar views on the built environment?

Yes, oh he is sometimes frustrated. Sometimes what you want is not what your party wants. Especially when you know that this thing is very, very important for us but because of some political game you know that it is going some way and then you feel frustrated, you feel like you are isolated but you cannot also betray your party. So it's like silently you are torn in the line but then you know this is not good, this is not good. But if you have, let's say you have about 10 architects in the parliament, and you have about 20 engineers and about 50 planners in there. No matter how diverse their political lineage is you will see they will come to a consensus. You may have one or two differences but you see that they will all be tuned towards one side. But when it becomes like you are a lone ranger it is very difficult, it's very very difficult. Those are the things that are happening around us. For me I never want to go into politics.

You don't?

No, no, no, no. I can't, it's a game I can never play. I don't want to even go there.

I guess with politics, you don't have to be in the parliament but you, you are very vocal and you know and understand the system very well.

Here everybody tags you, once you are vocal they start looking at *is this person this is this person that*. The mere fact that you are speaking against something that is not good, you may not be with a party, you may not be even with the opposition, but once you are speaking against it they think you are in the opposition. So they will tag you, they will tag you and assign a party for you even if you want it or not. Once you are vocal, either in the media or wherever it is, they will tag you. That is how vicious our politics are. So it makes us shy away from speaking so much or being so outspoken. We are always careful so as not to be tagged as an anti government or as this or as this because this

would work against you and they will start victimising you. They will start digging up everything and ... So that's what is happening.

But I guess you can be political in a very different way, like you are now, you are trying to influence the built environment through your work, no? That's political. You don't have to be in the parliament to influence things.

Yes. That is passive, that is passive politics.

Is it passive politics?

Yes. It is not active politics. Active is different from passive. Passive means you are trying to influence things in a milder way not so...

Aggressive?

Yes not so aggressive. That's how far I can go.

That reflects the ethos of the profession I suppose. I mean change has to come gradually.

Yes but people are becoming fed up anyway. If only it was to be translated into having the right-minded people going into politics. God help us otherwise the future is very bleak.

Yes but believe me it's not only in relation to Ghana.

I know. People say Ghana politics is vicious. Have you gone outside to see how vicious the UK media is? Or the US media? It's just because you are here that is why you are feeling it, but go outside and you see what is happening there. But there at least there is sanity.

There is sanity? It depends where.

There are systems where you don't see that kind of corruption, it blows up in your face and people are just going free and they care less because nothing is going to happen to them. Out there the game is *don't be caught*. And when you get caught they don't let you go. The system deals with you. Here the system does not deal with you. So you can flaunt your house(assets) whether it was illegally acquired or not. It's all about your lineage to your party. If you are with the ruling party, whatever it is, you don't care less because you have some people in there who are backing you.

So basically you can manipulate the system right? I mean the system is not there as a firm kind of existence. It is flexible.

Yes it's very flexible. That's why you see a lot of corruption cases that are coming up and you haven't seen even a single person being dealt with as a deterrent to people, to the up and coming, the young ones to follow that yes if you do this there is a penalty.

Actually we have a very similar situation in the village. You know we have this community labour twice a week and apparently there was an argument between these people, there was a guy who offended the rest and our landlord and co-ordinator of the Nka Foundation, Frank, was in a dilemma because he wanted to punish this guy as he offended the rest of the workers, and he didn't know how to go about it. So I think he wants him to apologise to them but he is not the one to tell him to apologise, the Chief has to tell him. Frank actually spoke to the Chief and told him that *if you don't ask him to apologise to the rest then I will have to take action and I will sack his child from the school*. This has happened many times, there are some people who offend the rest of the community. And he said that by setting the example, if one does something like that and offends the community then this person will be punished. So there was a very similar situation in Abetenim, a very local small-scale incident.

Yes that is what is happening here. And the Chiefs are playing a big role in this. They are the ones who are fostering the corruption. Because everybody is related to a Chief, so if their relative does something that is wrong then you want to punish the person and you see a delegation of the Chief and others coming to the police station (laughing)...coming to see their relative being released. And sometimes the policeman who is also living there in the community also feels that *eh who am I, the Chief's son or the Chief's nephew or the Chief's relative, who am I to say no, I am not going to grant*

him bale or I am not going to release that person, there is going to be a back clash what if I am in my room and you see this whole community coming after me? (laughing) The system here is different. Plus you don't have so much protection for law enforces. So sometimes they are also thinking that yes this is the law but I am also thinking about my life. So there is that common sense and that kind of system that...

It's very interesting. Thank you so much, thank you. I think I am going to stop here because...

For today yeah?

For today yes. But I am coming tomorrow to interview you again. I am joking. (laughing).

A.2 Interview in Birmingham UK, May 2015.

I understand that you finished your studies here. Did you work here?

Yeah. I only went to Ghana for the last two years. I went back in January 2013 and I wanted to be there for just two to three years to see what the professional climate is like in Ghana. I am in my third year, I have done two years so I am going into my third year. And I think I get it now (laughing)... cause I felt really alien to how architecture is practised in Ghana. I really wanted to understand it because I want a connection with the profession back in Africa.

I generally want to be involved in projects that take place in developing countries cause there is more scope to be innovative.

Working here is great but it's just more exciting to like say what the ASF does. It's quite exciting cause their projects are say maybe there's an emergency and they have to come up with scenarios. I guess that's what it is, it's the scenarios whereas working in the UK things are quite normal, you hardly get a project with a complicated scenario and the parameters are not as intense as what you may get in Africa and in Ghana. So I think that's more exciting about working abroad, either South America or Africa...those kind of environments are more interesting.

I hear you. So then you decided you wanted to go to Ghana and you arrived in Ghana, and how did you...

Well the thing is I went to Ghana in 2008 to work for Joe Addo but it was a Summer. The experience wasn't what I had imagined so I thought I would use that time to travel in Ghana and get more familiar with the country. And so I did that and found it a lot more fruitful.

What exactly did you think you would get out of working with Joe Addo?

Well I wanted a more close working relationship in terms of architecture learning from him but he was quite busy. I mean he was hardly in the office. He comes to the studio but I guess I was expecting someone who was practising in the studio but when I went there I realised that his responsibilities were beyond just sitting in the studio and doing work. Very very busy.

So there was a lot of work there...

There was. This was 2008 so there was but everyone there was ehheh the colleagues I was working with, actually I was more qualified than them cause they were also on their internships so I wasn't really getting any experience from anyone. I had finished my BA, I had worked for eighteen months here in the UK so I wasn't like I was still in my first, second or third year and I had worked a salaried job here so it was like going for worse than I had...

I understand.

Yeah. He wasn't there for me to learn from and I wasn't there because of the pay but at the same time it was like I have sponsored this summer trip and I can't stay here and not be getting the experience or the money that I should be getting so I decided that if I am going to stay here I should just tour the country and expand my horizon. I then wrote to him to say 'sorry it didn't work out and blah blah blah' you know to leave things ok. He said that 'you have a lot of potential and it's a shame that you have left' but at the end everyone left him. The friends I made there I kept contact with and that's the beginning of how I started thinking of maybe I should go back to Ghana after I finish my MA(Arch). So after my MA(Arch) I was just buying time really after three years I went back to work and I worked in London on a contract so after that contract I decided it was time to go to Ghana. So it was either I went at that time or I would get another job and that job I was going to get I didn't want it to be a contract, I would have preferred it if it was without a contract which means it would be for me to ever go to Ghana and take the time that I need to be there to understand it. You know once you are at work you get twenty days of holiday...

That is if you get twenty days. I was getting seventeen!

Ahhh there you go.

So I was like ok I don't have any dependants I am just going to move there. So I went

In the practice that you were working when we met you in Accra?

Yes. I am not with them anymore.

Ah you have left? I remember you saying that you were not very happy working with those colleagues.

Well yes (laughing) you can say that but it's a lot more complicated.

But you are not working with them anymore?

I have friends but their company is not my friend, they chose not to be friends with me. They felt I was very different to them...and you know it's time to move on when you are being seen as a threat. I think their main problem was that I wasn't conforming.

Yes this is a problem when you are at a conventional practice then it becomes a problem.

Yeah and also when you are in a Ghanaian community it's a bigger problem.

Exactly.

Because if I had been white British I think it would have been different, then it's ok to be different.

I believe so too.

But I am not. I am black and I am glad to be Ghanaian so (according to them) I cannot be different to them.

And you speak the language, right?

Yeah of course yes.

But this also has advantages as well you know.

I am not saying I was sad, I mean I was happy. I was relieved cause it happened two weeks before my exams. So I am glad I passed my exams.

Of course. Congratulations, that's fantastic.

Thank you. It was very dramatic around that time.

With the work?

Yeah they were very vindictive. They were horrible, horrible, horrible... when I joined it wasn't as big as it was, then a lot more people joined and it was female dominated. It was like living in each other's pocket and I don't like that. I like to do what I have to do and I don't have to conform to be like you and it was difficult for them to understand that not everyone is like them. But I am happy now cause I had to work there for two years and I wanted that experience to be with a local practice because if I had to work with an international practice in Ghana, I would the experience alright but I wouldn't have learned that way. Like the international practitioners get an idea of what has to be done but not the nitty-gritty of it you know. Knowing the right people ...

That's why it's very useful when you are a foreigner to stay there for as long as you can because you get a chance to understand the local culture a bit better otherwise it's very difficult to work there. Well I found it difficult because I didn't speak the language and I would have loved to speak the language you know so I could speak with everybody but that stops you. You can pick up a few words but if you don't speak it you don't understand the people you know. It's difficult.

I mean for Ghana most people speak English so I think that may not be a very big problem but I can understand maybe on a day-to-day going into a shop or something and you want to be yourself and maybe to have a quick chat with the shopkeeper ...

Also you can speak to the people who live in the village.

Yeah anyway they said hi cause everyone seemed to remember you...

That's very good, I am very honoured. How is Frank?

Doing well but he was very stressed cause of the French people (group). They really stressed him out. I was surprised cause he only seemed be cool and collected, everything under control. At the end the caterer had to leave because of them. Honestly, honestly. After the English team left the French team decided to extend their stay for three months. But then the caterer said no, she didn't want to engage with them anymore now that the English team weren't there. So they were left to cook on their own. Frank said well you are complaining you don't like this, this, this, so now you have the kitchen to yourselves and you can prepare whatever you want. It took them three days to decide they had to leave cause they couldn't cook.

Oh my God they couldn't even cook.

They realised how difficult it was to work and try to prepare lunch, going to buy the food,

They must have seen as well how difficult it is. That's not an easy team.

It was difficult. I felt sorry for them at the end but ...

Sorry for whom? For the French?

Yeah cause it was so sad. Their project coordinators were a couple and only the two of them could extend their visa and their tickets but they left and the project was unfinished. It's still habitable so Frank will finish it eventually but they didn't finish it to the level that they wanted to finish it. That's why they ended up staying there for the three days just to capture some nice photos. Their experience left a worse impression on the community than the Austrian couple who had built that very beautiful rammed earth structure opposite the kitchen building.

Some people are just difficult.

And besides being difficult what they were doing was that they were turning other people against Frank. And Frank is an individual so it didn't make sense to attack the person like say you are not happy with the setup or something, you don't take it out on another person. You find a way to cook cause it's like a three-month project and you are in Africa in a village.

Exactly so you must adapt...

Yeah but the worst thing was there was a psychological thing cause I realised that it's to do with them being anti...anti...

Anti humanity? (Laughing) sorry...

It was like they were superior. It was that kind of old colonial thinking like we are French and we are coming here and we know better than you. Because Frank would give advice on cost of materials and labour and they would ignore Frank and they would go straight to the person who sells timber for example. And obviously if you go straight to the person they would charge you more and they would incur higher prices. So it's things like that and at the end they ran out of money, they had to do the accounts and they were complaining that **36GHC** was a lot because it was 12GHC for breakfast and 12GHC for dinner and it shouldn't be like that. They would go out to Kumasi for pizza and wine two to three times a week.

Oh my God, a luxurious lifestyle!

And they would complain about the cost of accommodation and other things. Because coming to Abetenim you would agree you would be paying a certain amount but they said they would decide how much they would be paying.

Oh my God, I really think that ...have you ever spoken to Barthosa?

No, no we have communicated a lot, we talk a lot we discuss things but he is removed from all the issues.

He is definitely removed I know.

He is removed from all the issues that say Frank has to face or someone like me, he was willing to take up some role in Nka with the projects but he doesn't understand why certain things cannot happen, maybe the way he feels I can let it happen. We have tried to skype but it has never worked out. Either there's light off or the time difference as well.

He is definitely removed physically obviously because he is in the United States. Obviously he doesn't have the understanding that Frank has. I mean if he is not there, he is not there you know. But I think I have already started writing down some observations or you can call them recommendations for him because I think he should know some things do not work, and I also think this is how things within the Nka Foundation would improve.

Many, a lot needs to be done yeah. I mean everyone knows that, Frank knows, everyone who goes and takes a project on board knows.

So how did you set up TAP? TAP is fantastic I must say, congratulations.

Oh thank you. So I went back and within six months into 2013 I started to work out cause I knew I wanted to do something in Ghana which is why I wanted to go back but I didn't know what and I felt really removed from it cause when I went in 2008 I didn't get to experience it the way I wanted. So it was after actually being there in Ghana that I started to observe and analyse the problems, the opportunities and I came up with the background for the project, TAP. So in December we had the first event. So I started with there was one guy named Hassan, he connected me to Sophie (ASF-UK) and DK and I had a meeting with them and presented the idea to them and they gave their feedback. And we went for it. I used Hassan's network, the people he knew, cause at the time I didn't have any connections to anyone apart from my colleagues at the practice. So we had the first event and that went really well. It was more 'let's see what people think', that's the idea.

So what was your initial idea?

The same. It hasn't really changed. It's been developed, it hasn't changed, it's been developed. So the first thing was to start with the 'TAP Exchanges'.

It's about moving it to the point where all the projects are active online and i am just giving things to people to execute but I had a meeting with my former boss from UeL yesterday about how to structure in terms of getting it moving so that it doesn't halt because there is no finance, you know, cause we want it to be self-sufficient and not depending on donations. It's not established as a charity that depends on donors giving funds, but rather me being the network we volunteer when and if we can to do such projects like if it's design or a research project on...and from that then use that money to run it. But at the moment we need a big push in terms of finance to start everything. So he suggested running an international competition to address design, not the structure but to kind of set things into place. For example the TAP Journal, we need to formulate the format for it, set it up so we can push it out like me being the designer of the website, the magazine itself and the book itself printing wise. So running a competition that will kind of get TAP out there so it's a bit more verifiable and get multi-national organisations/companies to back up the competition rather than say oh you are a charity, let's give you money. So if we have it as a competition we can try and search for funding rather than having handouts, we can apply for you can apply for research fund. I think that will be more suitable to TAP than having to set it up as a charity, donate twenty pounds or whatever for this project I don't think we should do that kind of thing. But i think to officially launch it as an organisation we could possibly be quite successful doing the competition.

Do you mean to run a competition?

Run a competition to get people to come up with ideas of lets say we can have a competition between the three areas, the design, the research and the journal. So we can come up with a new journal for Ghana architecture, architecture in Ghana this is the context so people enter this competition with their proposals. And then with the winning competition we raise funds to realise the winning entry for the journal just so that we can have projects that are live and stable because there are loads of ideas, some I have started but I can't follow up because the money will come out from my pocket and I don't have it. But anyway even if I had it it's not sustainable. So we need to have a

more sustainable approach to it. My meeting with Elsie (OWUSU) yesterday went really well. She has this idea that, there's a festival that started a couple of years ago in Accra, James Town the old town of Accra, it's a street art festival and it's getting bigger and bigger.

Is this on once a year?

Once a year. One of the projects I told you about that she (Elsie Owusu) has been trying to get done since 2001, well it's mainly funded by the British Sth Sth Monument, anyway it's through some institution here in the UK, it's a monument that the British government did during the war in James Town. In James Town is an area but they have a port there so they want to revive the monument and regenerate the area but they are starting with the revitalisation of one piece of the monument that has been a bit dilapidated. They want to revive it but obviously there are some bureaucracies alongside it so that project that she is working on. I mentioned to her the street art festival and she is also aware of it and she has been thinking of having an office there in that community.

What is the festival called?

They have online presence, on twitter etc.

It would be very nice to see that.

That's where I met Sophie for the first time. So she spoke to me about this idea that no one else knows about yet but I wanted to tell you cause I want you to be more involved in TAP.

Fantastic. I would like to.

With the TAP Design part, TAP Build, it's about trying to get live projects that give people the opportunity to go out, architects and designers to go out and get their hands dirty. So she mentioned briefly that it might be possible if I can set up a project team from TAP who can maybe put something together for the festival. They want to establish their presence because they want to regenerate the area in that community.

They want to start establishing their presence in the community. So if they can have their office established then they can start engaging with the locals by first of all having a presence through the street festival to engage with them in an architectural way. So that could be that this is a viable project. That would mean that there would be a client.

Exactly, the community itself.

Yeah. And they will fund it obviously. Elsie's company will fund it.

This sounds great, I will look this street art festival up. I have seen some pictures on Facebook of night event in Accra...there are so many postings, like a bombardment of postings, you don't know how to keep up with everything. It's a lot! You know, you get so confused, a lot is happening. You can waste your whole day looking at postings...

Oh I don't bother, I just look for what I am interested in. Otherwise you spend a lot of time doing a lot but not really doing much.

Exactly.

So basically I think you would be good to work on housing projects that are active. I am still trying to put that thing together but right now because there isn't a project that I can say 'Maria, get on this project, Jeffrye, get on this project', the structure is still quite theoretical but it will be feasible once people are being ... cause now let's say I have a database of the team but the whole initiative will be more lively when things are happening, and I think the reason why things are happening it's like a cycle: I need money, I need people, I need projects, and they all support each other. But I need a project to know what money I need.

Absolutely.

And I need a project to know that I can have this number of people that can work on the project. So it's like a three way thing. It's a vicious cycle. But to start engaging with people like Elsie, yourself, etc. I think it becomes more of a reality because I didn't even know that Elsie had this project in Ghana so I started talking about TAP obviously and well she believes in it and she is supportive so I am going to follow up. I don't want

to announce it because it's not a feasible project yet I need to think about it and then we can propose say ok Elsie you mentioned this yesterday, where do we go from here? But she did just tell me if I can get my guys, as in people from TAP not followers but the team, that's an internal team who would volunteer their time to take part in the design of a pavilion for the festival. Wouldn't that be amazing?

That would be fantastic. Have you ever been to Venice Architecture Biennale?

No.

So every country that participates in the biennale is allocated a pavilion, they present their work in a pavilion. But sometimes the pavilion itself becomes the spectacle which is a good idea actually.

Exactly. And I even wonder that might mean getting in touch with the organisers of the street art festival and checking out what their theme is or working with them to develop the theme for the structures because obviously they put up structures.

So there is a different theme every year...

Yeah. Last year I know a group of people put up some architectural structure which was more like a playground type structure.

Are these structures still there?

Oh yeah. That was for the community so I am not sure if we could put up something like that. I guess as far as Elsie is concerned I can just say to her that I already have guys to commit. Because we have people who are able to work on it, it's just a matter of what it is and how much it is.

I think it's worth doing some research on the organisers and the theme which is very important of course because then only can we understand what we would do.

So for TAP projects like that if you were to be in Ghana say if this was happening next year and you had moved to Ghana it is something that you can be actively involved in.

Yes you are right. But what if I have not moved to Ghana?

I think you would be more of a coordination person and maintain the online presence etc., research. But at least it's something that is live you are not just theoretically analysing things you actually get involved in it. And the chapters I see it as something that will happen after everything has kind of started moving. So once we have projects that we have on the website people can check their progress out, then it's there and we have an address, everything... then we start having the satellite chapters. I think for the chapters it can even start now with the TAP Exchanges. I initially wanted it be like if there is a TAP member who is at say South Bank they can already start holding TAP Exchange events. There is nothing anyone in the group to take it and come up with their own idea of ok have a TAP Exchange of anything related to maybe what you are studying or what you are interested in.

So when you say a TAP Exchange event what type of event is that?

It can be a workshop, it can be a seminar, an exhibition, it can be an architectural tour like a visit to a new piece of architecture or something that you can organise but there is a theme.

Would community participation be part of it?

Yeah, engaging people and the theme somehow needs to relate to development in terms of not necessarily economic or social development but something that's more like empowerment. We had TAP International, TAP Commercial but then it was difficult talking to everyone on all these different groups so earlier this year I just joined everyone in one group. But I think for the international group to grow bigger we need to start having the chapters in order to start an event. A chapter leader will have to come up with the theme for the chapter so it can be contextual. So you can say TAP exchange is about this, this and this in Ghana. TAP exchange is about this, this and this for Manchester or London. TAP exchange relates to this, this, this because this is the context.

Yes exactly. I was thinking even about Greece as I am from Greece. I am going back to see my family but also to make some connections as well. Connections with other NGOs and organisations I thought maybe in the future there could be a chapter in Greece. There is already an ASF Greece/Athens and last year they had, from what I saw online, quite a lot of activity because of the economic crisis. So for example they take over a small street in the centre of Athens that has been affected by the crisis and through community participation they renovated it. That involves empowerment of the local community. That's a great idea actually especially because we have to deal with very real problems that affect the built environment because the built environment is the first industry that gets affected by either an economic crisis, or a natural disaster crisis as it is vulnerable.

I like this idea of having TAP exchange in Greece because it's like you are here like I was here and I felt like connecting to my home country and so I had to start it. So to have chapters that the leader of the chapter relates back to where they feel they belong or relate to, actually not belong but relate to most you know.

Yes and also I knew that in Athens for example we have a very big Ghanaian community. Some Ghanaian people moved over to Greece many years ago and of course their children now are Greek citizens. Obviously they speak Greek and they go to the university. The crisis has caused a lot of problems and some people feel a bit too cut off so there have been a lot of efforts to bring people together as a community, to acknowledge them as part of the Greek community in general you know. And I was thinking why not, I mean there are some really amazing Greek-Ghanaians and they live there and they want to live there. I thought maybe I could connect with some of them, and also there are professional people as well, and see how we can work together through TAP.

I feel that the way you are you can independently handle something within TAP, obviously we work together but I would like for you to, you have ideas and you have that kind of ability to get things done a lot more than people who are in the team. I think that the economic pressure doesn't really allow people to dream, I don't just think I know actually that it's very difficult to be innovative because every day you are thinking I need to make money and pay for this thing and this and this...

Listen me too, trust me (laughing)...sometimes my head is full but I need to think about other things too.

It's good to have the idea to also be able to carry it out, but what if we say I think we can start something that relates to what you feel you can relate to the most. You make it your own still within TAP but you make it happen, why it should happen and what is happening. We can develop it together and it's within TAP but it's more relating to what problems you are facing now so maybe if you go to Athens and you find this community maybe discover a Ghanaian community and you identify which issues you can address using the TAP identity.

Ok yeah I need to spend some time there. I will be there for a month initially and I will make some connections. When I went to the BRRI in Fumesua, do you know this institute?

No I don't.

Well it's part of the KNUST in Kumasi, it's the research centre of KNUST, all the research that is done there has to do with the built environment. They are the ones who manufacture pozzolana.

Oh ok I know of their research. I haven't been there but I have heard about their work.

It's a good place with a really fantastic library. A fantastic library. I went to the library two-three times and unfortunately you can only access what they publish there, you have to go there in person. Of course I was taking pictures with my phone. I would like to collaborate with a couple of people who work there...anyway when I went to the library I met a lady, the librarian, called Florence who told me that the rest of her family lives in Athens. So you see a lot of people from Ghana living in Athens. I will do some research on Ghanaian communities in Athens when I am there.

After the research maybe then we can decide what the TAP Exchange event would need to focus on in the context of Athens and also if we can make it into a project that we can seek some funding for. So that we get it executed, maybe it's an one-year, two-year or three-year project. So we can set up your blog, your website, everything out of the

general TAP but it's still TAP Exchange something, it's like a project. And the context is...you know.

The more political the more chances we have to get funds.

It has to be addressing a political issue in that context. So if we start the TAP Exchange Greece, that's where it is and that's a project. We can then decide if it's a six-month, one-year, or two-year or whatever and try and apply for...if it's a research project, we will try to apply for research funds. Because it can be a research project, a design project but we are addressing it through workshops to engage with consultation sessions with the community and those are going to be the TAP Exchanges. I don't know if that will give you enough food to feed on. I am giving you something that you can make your own and it becomes your project that you are leading in Athens.

I will definitely look around and speak to some people and I will look into funds as well.

Yeah cause we can probably make the project useful.

Yeah it's usually like this cause you need funds to pay for it, it's impossible to pay from your pocket especially now anyway.

If we can start off like this it will be good to then start other projects, you know the housing project that we were talking about, which will be handled within TAP, but to have other activities going on around TAP. It kind of gives it a presence and it makes it legitimate.

Ok fantastic, that's a good idea.

I like the idea as well.

Oh I am connected to the Greek ambassador in Ghana. There is a Greek community in Ghana. Well a few years ago he was the ambassador of Greece in Egypt. He is into the oil business so if we are getting the oil of another country we must give something back, right? This is what I think (laughing). But I thought to make a connection and maybe

there may be some funding from the embassy as well...i don't know...i mean you never know...you just have to ask, you don't lose anything. That's my idea...

Yeah say if you are British and you are going to another country to do a project because usually your country will have various funds that you can apply for, it will be great to look into that. That's another thing, cause you have experience in applying for funds and it will be great to look into what types are there for what season in the year so that with the competition that we will launch we can know the right places to look up. But we should try and narrow your participation in TAP down to something that you want to be doing. For me it's important that whoever who wants to be part of TAP is getting more out of it than what they have to give. That's why i don't want to be like here you have a list of things can you do them... i am waiting for people to understand what they can do in TAP. The time to just give people tasks to do is not happening yet in TAP but people who already know what they are doing and how they can still contribute to TAP, it gives them something for what they are already doing. So it's not an additional job, it's something that you are already doing. It just so happens that you are focusing on something a bit more specific you know...killing two birds with one stone.

There is Nestle Foundation, they have a research foundation that funds research, either a small pilot project, or an one-year project or two to three-year projects.

See I need this kind of knowledge in TAP like knowing about funding bodies.

That's because I was looking for funds. But this has to have a perspective of health. So to earn the funds you need to talk about health. So for example if we decide to build a pavilion in the street art festival in Accra and we need funds for people to get paid as well and also pay for the pavilion itself, we need to think about the impact this thing has on the health of the community. It's not difficult to think about that but you have to satisfy the criteria. Every funding body has different criteria. A lot of them are doing health because it's politically correct you know. I will do some research on the funding bodies as well which i will pass on to you.

Then we can try and devise something, it will be good to at least start to apply for funds from this year onwards so we can shape up ideas for lots of projects. So if we can get

companies or organisations or foundations to back us up. Do you feel that we have addressed your curiosity in terms of what you can do within the TAP?

Definitely.

You know we did a symposium with the ARC, the Architecture Research Council, that's the one Julia was meant to be part of. Well i am trying to get them to...well TAP didn't pay for anything, we had the time and skills to organise it and they paid for the expenses. That was the collaboration. So if we can get the same sponsors it might be possible to have another symposium but it's on the use of local building materials. I guess in some way it will be on empowerment again, either projects that Nka is doing, they empower the communities by providing jobs...

A.3 Interview in Edinburgh, 6 August 2014.

What are you involved with?

Delivery and technical capacity at scale. It made perfect sense as it has worked very well for them to be the technical consultants to IOM which were initially 7,000 houses. We upgraded to 17,500 houses and so on which was the 2011 response. Cause there has been a 2011 response, a 2012 response and so on. 2010 was the big one but we were just getting our feet on the ground and having a look at what standard recovery is about, it's important to use that as a comparator what does standard recovery look like and that's huge amount of CO2 emissions, huge amount of cement, brick, steel and this and this, and not very nice buildings, no thermo mass and so on. So we did a bit of that and quickly said we can do this better. I met Yasmeen (Lari, Heritage Foundation) just after the 2011 floods which were pretty big and we realised that we both understood environmental building.

And you were with DFID still back then?

Yes and so I said great I am going to talk to IOM and I will talk to IOM to make you (the HF) the consultant etc, and they all met, we all met together, it all worked out. We payed IOM, the IOM payed the Heritage Foundation to do basically the design of buildings and the training of local NGO's to deliver this with communities who train local NGOs and train the community on, alright, this is how you dig the hole, this is how big the foundation has to be, and they would pay the money to the community on each phase of build, three phases once the foundation was done, first time, once the total of walls was reached, second time...

So they would pay the money to a local NGO?

To the local community, to a focal point in the community, a person. This is a really nice program, a nice approach to solidarity and trust within the community. They would elect, the community would elect who is the most trustworthy person or who had a bank account or could speak English to get to the bank or whatever, and IOM would send

them 50 houses times, lets say, 100 dollars, which was going to be the first charge, so that's 5,000 dollars, a lot of money. They would send it to him. There is a lot of risk around that but yet there was never any report about some guy running off with the money.

So the community trusted completely the person?

They invested in that one person. So the social interactions happening and the social process happening around all this is a, fascinating and b, absolutely critical and vital. You can't just imagine that you go to a place and housing starts happening. No, there are all sorts of relationships, you need suppliers, inside the community who is the important guy, who's a matriarch of such and such family, and communities know all this but no one from outside can tell them how it is, so mobilising communities based organisations or whatever you call them are absolutely vital to the process. And IOM have an interesting way of doing it, and HANDS PAKISTAN have a very interesting and I think a better way of doing it. They are both very different, IOM use local NGOs, they use 21 local NGOs, so they are bringing more people in to understand the process, more organisations, which is nice... IOM just make sure they have the right technical support, the money flows in the right way, the due diligent to the organisation's administrative capacity etc.

So do they train local NGOs?

Yes they are bringing in Yasmeen's crew from Heritage Foundation to train the local NGOs in a workshop, they then get this staff at a didactic level, they forget it all immediately cause they don't know or they don't remember, nobody does. They they go to do some practical staff in her test village where they learn a little bit more. Then they go to the village and start working. The IOM trainers who have been through her staff for a while going on and point out...then some building starts going up and they provide some monitoring. The IOM or sometimes the Heritage provide some monitoring, so they go ok so you obviously didn't remember this bit of the training, you have got to put a proper overhang on that roof. That's not good enough, take that off and do it again. Inspection and monitoring is really challenging to do beyond a few hundred houses, you know try to it to 20,000 houses across a few hundred villages is very difficult. So IOM are very organised in having many many cars, many many people, managers, and sub-

team field managers, and that's about a good team. That all sounds great and IOM did an amazing job run by a Portuguese engineer from Lisbon called Manuel and under his almost fascistic management, we would call him Salazar, but you know he really got the job done.

On the other hand HANDS PAKISTAN is a completely local NGO from Karachi since the 1970s.

So HANDS PAKISTAN work with whom?

We (Magnus and DFID) work with them. I decided that they are open to new ideas, they are able to reach their work in every district of Sindh since forever and will be for the next forever, and have much better long term relationships with the communities. So I said ok let's give them a try. And it worked much cheaper so at the moment we are looking at £214 per house all costs included via HANDS and something like £320 via IOM. There is £100 difference per household. You get a third more houses if you go through them.

So that £100 extra goes where?

The IOM houses are slightly more expensive, they have got a lot more layers of staffing, they have to pay the Heritage Foundation, and so on. And they have got some expat costs and 7per cent indirect cost goes to Geneva. So HANDS were not very good technically, they didn't have the background of the Heritage Foundation, they didn't want to listen to the Heritage Foundation. The Heritage Foundation were not smart in the way they dealt with HANDS or any other organisations. Personalities. It happens in every sector in the world, no? Personalities, big egos or whatever you call it, big pride, people don't want to seem to be stepping down or stepping up to them, oh for God sake. It's just the way it is in human society, there is not much you can do about that.

Yes of course.

So I realised that these people really don't have a clue on what they are doing with lime either. So I got in touch with some common professor friends called Bee Rowan and Stafford Holmes. These are the two leading lime experts probably in the UK. Stafford is the president of the UK Lime Forum for many years and has written probably some of

the most important books on the subject but also does a lot of the work for restoration and Bee Rowan does a lot of the work on actual delivering and training for straw bale and natural build housing here. So this combination of academic and practical experience over decades not just a few years. I don't know about you Blanche, but I see them as among the world leading experts in this staff. They know it so well.

Blanche: They are phenomenal. They are genuinely passionately interested in it in every single detail and also about communicating it to other people. That's why Bee is so excellent, I mean my God you can know everything about something but can you tell someone else in a way that they will remember it? You have to transmit it with love and that's why she is a phenomenal teacher.

And so I suggested to HANDS that they get involved with them. We agreed two summers ago in 2012, and agreed to also get an artist who can draw the staff out as well so that communities who don't read or write can see the step by step by step by step which I think I have shown you in some of my pictures. How they do it you know, how they slake, how they protect their eyes, what some of the mixes might look like as the mixes totally depend on the soil. And so we got a friend of Bee's called Julia who agreed to do that and low cost and much better than I had seen in any other artist guide. Even when we look in this country for a guide on building with lime, you don't find many books there. Very few actually have drawings and step by step explanations. None of them will tell you these are the mixes to use because that depends on your soil type although if you are using just a simple mortar mix I suppose it's not that hard but it usually is hard, you need to do all these tests. Anyway Bee has been coming over a year and a half or so now and the quality of their work is way beyond that of the Heritage Foundation in that let's determine quality. And that 'is this vernacular or is this not vernacular' and so on cause it comes back to your original platform. This isn't really vernacular actually, they haven't done this before, they never built with lime really. They did build with lime many centuries ago in the Mughal empire and obviously way before that in the Indus civilization of thousands of years ago but these are different peoples. Listen if you take Sindh alone with a population of 50 million people, 50 years ago it was 5 million people, so there has been an enormous population explosion, almost no education has gone out there so most of these people are sort of new people as it were. They have just been generated by 50 years of massive overpopulation and children proliferation, seven, eight, ten kids a family.

So what did their houses look like before the floods?

Heritage Foundation did a study of housing in one area and it's a very good simple study, I can send that to you. It shows the 5 different types of housing before the floods.

So that was the vernacular back then.

Yes exactly, it's important to see that some of them stand up quite well to floods considering that flood is the principal climate challenge they have. Not typhoon, not earthquake, it will be floods. Sindh is an enormous flat plane about half the size of Italy, imagine the size of land that big when almost a tiny gradient going down, its virtually flat for hundreds of miles. 50 million people living on it, 30 millions of them are living in scattered villages. Nothing to protect when you have 2 metres of water it doesn't stop, it goes everywhere so houses have to stand up to this. The vernacular way they used to have for dealing with this, you have to look back to the Indus civilization which is 2,500 BC. They built these huge raised bands, they built these small mountains where they built their cities and that's pretty much the way of coping. On that band they baked bricks literally since 5,000 years with local clay and they were using mud, rammed earth and so on.

And that was the local vernacular until later?

Yes that was one of them. A lot of them was what you may call Wattle and daub sticks and mud, so basic sticks in the ground and weave other sticks through the ones standing up and once the walls are done you have a more or less strong enough structure to put on the roof pieces. Its as basic as you can go and then mud mud mud and then something like a small door, a small window, what you might call a very basic Delta fisherman's hut. And further north in Sindh, in other parts of the country, you have got these thick walls made out of mud cob essentially.

And those were the poor people who lived there?

Yes they are poor people, they are masses. They worked ok, but they didn't raise them up on plinths as they couldn't afford all the time to make the raiseup. And essentially as

you know, you put a pure clay mud wall leave it in water for a long time, it will melt layer by layer. As the clay particles go flat they level with too much water, then the next layer starts to go then the next layer, slowly slowly. So the super thick ones didn't actually melt out much, more of them fell down when the roof fell down cause they had no overhanging eaves, very badly designed roof and so on. So vernacular is not necessarily better at all, it didn't really work with the wattle thing. But here we are using two main design changes, one is an overhanging roof, whatever you use for the roof is not such a big deal. I wish I had my files here, cause I have made a bunch of calculations in April, May and June that I am happy to share with you, about the carbon emissions and embodied energy in the steel versus bamboo roofing so really getting into the issues around the roof materials cause its quite an important one. Again, the Heritage Foundation and Yasmeen absolutely completely rigidly stuck to the idea of using 5 compound bamboo joints and no main ridge beam, so these are flat roofs covered in a kind of mud not really lime stabilised on a small incline with good overhangs but the bamboo is susceptible to insects and decay and will decay over time so you have to replace the roof after 5 or 15 years. The HANDS one which I kind of prefer is one single steel beam going from there to there giving you at least a foot and a half of overhang on each side and then bamboo rafters going down which can be painted and changed easily. Both have good overhangs let's say you presume. So what's the impact of that in terms of carbon emissions or whatever? So I said a 50kg beam and calculated it all up and it's actually very small. I used the University of Bath table of embodied energy for building materials which is one of the most respected sites.

Is steel expensive?

No it's pretty cheap. It's not too bad but not using it won't save you much money. As I said the HANDS houses are cheaper so it doesn't make them more expensive. That was number one. Number two at the heart of this was to find a means to make the walls be able to stand in water for hundreds of days, so that's got to be an important criterion. What Bee and Stafford did was to show them how to take clay and lime together, if you can buy them in the right weight, they can be utterly water resistant. So they do this training and there are photographs of them going to villages with a bucket, and there's a block in the bucket and there are five buckets each one with a different block of different mixes and you can take the block out and touch it and feel it, and some of them had disintegrated completely. They don't resist water there's too much clay. And you

take this block out and say this is really hard, it's gone hard under water and you imagine that in your wall under water, lots of them and foundations built with this stuff. It's not going to fall apart, it will get hard, it's hydraulic you have mobilised it, the physical phenomenon of clay and lime binding together to make hydraulic lime. It seems really appropriate. So the walls can be thinner, not very thin like a brick wall, and there's so much less work because you know it's resilient. Whereas the Heritage ones have a lime plaster maybe this much on the outside many of this has cracked as it has not been dried properly or cured so it's susceptible to cracking, the water gets in and the wall will start to soften up but it's so thick so it will take so many months for it to actually go through so we don't know. And there are all raised up on a high platform so both buildings are good.

How did you introduce the idea of lime and clay in building? Was it there before?

No. I don't think it was. I think it used to be as I said if you go back to the Mughal empire period which is 1,600 to 1,850 or something not that long ago, two or three hundred years, and some of the ancient buildings they did, if you remind me I will send you pictures of some of their work, beautiful but mostly you see it in shrines and the big buildings for the rich people, churches and so on. You have these amazing round domed roofs, I climbed on to one of these roofs once when there was a very old guy doing some restoration there and he explained to me exactly what they put on it which was gypsum, which is like polyfiller, and they can shape that, followed by a 2:1 lime mix so slake lime with sand with a bunch of fibre. It wasn't straw, it was hessian or whatever, anyway some fibre. He left it in the sun, no worries no shade and then on top of that took powdered soap stone which is an amazing stuff, it makes it go like eggshell and its completely waterproof, it makes it go very smooth very white and protects the lime and the lime protects the gypsum and all of that creates a really thick mass. Absolutely lovely work and I think that's the vernacular. Those are all locally accessible materials, they have this ancient way of burning the lime and the gypsum in these incredible kilns using renewable bushes. They cut a bush and 10,000 bushes for one kiln to burn and then they regrow again otherwise their industry would last for six months. And we found out more recently where all the lime kilns are, one in Sindh, two in Punjab so they are around, some of them are using coal or gas, some of them are using these bushes. But eventually we had to introduce it into the industry as it were the recovery, aid, donor assisted development stuff because nobody was going to do that. Nobody

does that sort of thing in the aid world which is what we were kind of aware of when we started RESET. And that hasn't really changed to be honest.

But how did they take it?

Who's they?

To whom did you introduce it? To the funders or...?

I introduced it to the donor but they liked it cause it was going to be cheaper per unit. I was the shelter advisor so I had to convince myself and that's easy enough. And then we had to talk to the community, the most important thing is that the house owner, or well they don't own their houses, well the family who is going to live there, they are happy with anything that will increase their resilience to these floods. They don't want to have every two years to rebuild their houses, spend whatever little money they have got. They haven't been trained for a minute on building practices. They know they have to pay an outside builder to do some building work for them. So it costs them a lot of money. So they are very happy to learn some new skills much more so than be given say \$200 in free cash and say ok now you can rebuild. Say even if that did happen which the government tried to do, you get given money but if you don't know how to build properly, you don't know about roof overhangs, you pay a builder to build the same old box which will leave you highly vulnerable and so without technical advice or whatever you call it at village level, robust disasters in buildings are not going to happen in a low-educated environment where they don't have access to information, internet, etc. It's just not going to happen. So they will remain vulnerable and anytime the climate crisis comes, it will wipe them time and time again. That may mean there will be a larger humanitarian crisis year and year and year which is over time more expensive. We are dealing with humanitarian emergencies every year, every second year, and the recovery or post-disaster so it makes more sense to vest the money now in that training. So this touches on a whole theory of school of argument, or debate or philosophical shift that's happening in the aid industry which is pushing towards just doing cash and letting people figure out for themselves how to get it going, maybe sending some information by radio or coms in some way so they can know how to build but I know from experience that you don't learn anything, you don't learn enough just by attending the class or by listening to the radio. You need hands-on training.

Yes exactly.

And in the community where you are actually doing stuff with your hands. I know that from going to the CAT. It was great and very interesting. You have 10 lectures in a week and you can't possibly remember all that stuff and it's all theoretical. I think over the whole course there was one Materials week where you play with some straw, lime and clay. In that week I happened to be not even there.... hang on I was with Blanche and we were doing the first RESET talks. And Blanche said oh don't worry about it, you will pick up, you will get a chance to learn about materials later. Which was you know... And the Economics lectures were completely a waste of time. But you know these things happen. The point is I had to be doing it and doing it and doing it and making all the mistakes myself on my house to really learn. But after that period I was able to go to the field, that's why I recognise that just sending people a leaflet or any information, or even a 10-year course isn't enough.

What if you send a trainer?

Yes if we send a trainer, yes. And then you monitor the trainer. And you have to have a monitor for the monitor almost. Yes you have to have all sorts of inspectors and monitors and you know. Because in most places in the world there is an awful lot of corruption so people will take away to enrich themselves and lie and cheat. It's just the way again it seems the world is. And in some countries more than others but generally in Pakistan you are going to realise you just have to assume guilty. Assume everybody is corrupt, they are going to steal the money. So then when you go in say what methods are you doing to reduce the risk of that theft? Because we know it's happening, we know it's going to happen. Not you necessarily but your colleagues in the field are probably going to do it, cause everybody else does it. The government officials, the police, the department of managers, the teachers, the farm owners, everybody except private business cause obviously they will lose their business. And maybe a good portion of those people are not doing it but you have to assume the worst and then deal with these things which makes delivery really challenging. In theory it's great. The Shelter program is going to do this and this and this and it's going to look lovely, etc. Ok well that's fine until you step out your front door and into the community you get all these challenges there. You are stopped at the first checkpoint to hand over your staff or

there is a threat to you because you are challenging the local building industry guy, or God's sake there are so many issues and risks and threats. Your community is sort of really the way of dealing with all that, if they want you there and if the land owner or the powerful person in the environment isn't against you, you can probably do something about it. And they weren't against it. The people don't own the land, the land owners own the land. A bit like Scotland really.

So the land owners own the land that people build on? But do the people own their houses?

No. Generally not. But they have no paperwork to show they own anything. They have almost no legal status but they do have to be legally recognised in the country, like in most countries you have a civil ID card or registration that gives you a point in place and in time and a father and a mother. You know an ID card. And that says you come from more or less this district, more or less that village area, it won't give you a street address or anything unless you live in the city, so the land owners allow these people to live in the villages cause they are their workforce. They don't want people from their workforce to get sick. Or to lose too much time rebuilding their houses.

When you say workforce, what do they do?

They are their manual labourers in the fields. All the agricultural work is done manually except the ploughing. So all the harvesting of wheat, rice, all the spraying of it with a million chemicals, all the weeding of the fields. It's all manual. You have got an army of hundreds of thousands of people literally a million people, two, three, four, five million people a day go out and scrape a bit of ground, cut a bit of this, do a bit of that, and then you have got a few hundred thousand tractors going out and plough out large bits but it couldn't be more different than farming in Europe. So that keeps millions of people employed to some degree. They earn only about 45 and 60 dollars a month.

And in return they get a piece of land to build in?

Yeah. And the state gives them no services more or less.

It gives them no services?!!!

No, the state has a contract to provide education to every child in Pakistan. Most kids in Pakistan don't get that and when they do the quality of the teaching is so low they would be better to be at home learning to do something useful.

Wow...

Yes it's so bad and utterly corrupted they would give 120 dollars per quarter for the school materials and furniture and so on and that is almost always shared by the school authorities and the head of the school and the head of the village who will share that money to have a party. The teacher told me all about it. And you never see furniture in the school, you never see toilets in the schools, there's no maintenance. It couldn't be worse off. The British Government's big thing in Pakistan is education so they are spending hundreds of millions on that and we realised that to do anything for education you go for low-cost private schools. Cause the cost per child per year is much less than to prop up that awful state system which is just not functioning. It's awful and at that scale it's just scary.

So every child gets a chance to go to school then?

No they don't. Only in the places where DFID does work, some urban town reaching some small percentages of the population. And in some other places, they don't focus on Sindh anyway for their project for education. They are doing work in other parts of the country. Maybe they are doing some experimental stuff in Sindh but very very small. And it's funny because where we do this housing stuff at the humanitarian unit we don't really connect with the work that the education guys are doing. Or the health team. They never go to the communities it seems. Most of their work happens behind a desk and they never go outside to visit what they do. They have local research organisations, they go out and monitor their work, they go out and visit the communities and they write reports. And then the DFID people sit behind the desk and read those reports. And occasionally once a year they go and visit a school or whatever. And there's a big funfair and all the 'right' people come out and see them and you know... they take photographs of kids looking studious and it's all a big farse really. Cause they have... The drivers of our cars are very interesting because they drive people around the country where it's accessible. Half the country is in too much you can't go there. But

where you can go, they say look guys you are the only team we go to actual communities with. All the other guys we take to Punjab, Lahore, Karachi they go to a meeting in a hotel, go to a meeting in a Ministry, go to a meeting to one village maybe and then go back. And that's it. But with you guys we go for five, six days, it's like a long camping trip and we go from village to village to village and stay in the middle of nowhere somewhere. Village, village, village, and it's exhausting you start at 6am and come back at 8pm and it's very very cool, very gruelling in a way, you get completely exhausted. But the drivers love it because they get to see their country.

Of course.

Most Pakistanis haven't been down to where we are going 'cause it's kind of really far away. But anyway I rumble on, tell me your next question.

So I just want to ask you about bamboo. How did you come up with this idea of bamboo, using bamboo to build?

Bamboo is used a lot there not quite as much as in.... you have probably seen some of the bamboo architecture in the Southeast Asia, you know Indonesia, Phillipines, China where they do really interesting work. Much better jointing, they know the product really well. I think in India and Pakistan, I don't know about Bangladesh, they don't really know it that well. They haven't developed such advanced architecture with it. They only use it really for roof joints, mostly roof rafters, generally not the main structural pieces. I know from Paolo and others that people are doing more and more advanced work with bamboo even structurally. But here (Pakistan) there is quite an industry for it but tiny compared to the industry in India and Bangladesh. And mostly it's used for little bits of shuttering and scaffolding work around building sites. Nobody uses it in the cities for any building work, it's only used in the countryside, as I said, for rafters coming off the main beam on a flat roof. If you have two steel beams and some bamboo rafters, if you have the money you will get steel rafters instead. But not many people have that money.

But what about the Heritage Foundation? They use bamboo quite a bit and even structurally.

Yes, as the main structural beam. So they (drawing) start off with this compound six piece joint maybe four or five metres long and very thick walled bamboo and they would bolt it here and put a bolt through there, so quite not difficult but a bit more technical work trying to get the bolts through having a drill. You can't do without having a drill, you crack the bamboo you know, then you need bolts and you need rounded washers that go on the side of the bamboo. And it starts becoming beyond the means of the local people to do it in their own village where they don't have electricity and all this. So it got interesting. So in the end the IOM said it is not feasible, nobody has got these bloody machines and staff. So let's just do a four-piece bamboo joint and wrap it around with wire so it's wrapped. And of course by the time it goes into the roof you will have some kind of slippage, ok it's still four pieces but they are not really joined together via any physical means except being tied together by a piece of wire. I think that's slightly dodgy. Now this is not a vernacular thing either. So in the end the house ends up looking like this (drawing) with the overhang, something like that, and then... Ok so they started using these, the IOM ended up using these, the bamboo wall is quite thick so most of it is 'meat' material you know rather than being very thin, you know how some bamboo is mostly hole and not much 'meat.' But if that's going to be sticking out of the wall and this is a hole then all sorts of bugs can go in there you know. So this has to be filled with some lime or some mortar to stop there. And then inside you need to protect it with some insecticide cause that is bugs galore no? They live inside the thing, they have to be killed and dried at certain temperature to get the bugs out. Then you have to paint something on it to keep other bugs out, so it needs a lot of maintenance.

But is it a local material?

No not from Sindh cause it doesn't grow there. They get it from a neighbouring province, Punjab. So they bring it from a few hundred miles away. It depends cause if you live close to the plantation or something then ok. You can grow it pretty much all over Pakistan but they don't.

They don't? Why not?

Good question. Cause the land owners know that they can make money from wheat and rice and wheat and rice, and cotton and sugar cane and sunflowers. That's a no end market, they are not familiar with it, they are not happy to go into unfamiliar territory.

So bamboo is unfamiliar then?

For most plantation people. It's all about money, land use is all about money. And people comes next and then ecology comes a very third deep last, nobody gives a shit about ecology, the amount of damage that's gone into the ground and the ground water. Nobody... ecology is right at the bottom of people's agenda. The same goes on in the building industry if it's a harmful material (sighing), whatever...it's cheap, it works you know that's the important thing. So we were by making lime cheap, a people like it because of that, not because it's old or it's ecologically better than brick, they couldn't give a damn and neither could the donors or anybody else. None of the NGOs really care about that stuff. Blanche nothing has really changed. We've just finished a multi-year business case which means we anticipate, we are encouraged to anticipate future disaster rather than reacting every time even though you probably know it's going to happen. So we say ok great we will do a four-year response program, it will cost a hundred million pounds, over twenty five million a year, but we are spending much more than that, it's a conservative estimate which includes some recovery doing housing. That's much reduced in what we are doing now. Currently our housing project this year is eighteen million pounds. So in the future we will have much less than that even if it's a bigger flood. But whatever. I tried to put in to this business case an indicator of reducing carbon emissions through our work and almost exclusively across the office from the head of the office right down to my colleagues are like, 'oh why would you do that?' And I say cause it's a key performance indicator of the government of Britain to have you know all of our low frames, low frames are part of the environmental tool, this key performance indicator. Carbon dioxides reductions, emissions reduced and measured. So we can measure. I just fucking measured it already. And they say, 'no, no, no this not a humanitarian indicator, this is a climate indicator.' I said yeah but your education, your humanitarian, your health, whatever, can have possibly some emissions reductions work through I don't know, procurement or whatever. No they are not really interested.

Blanche: but it's the key indicator across the board and within the British government as well.

I know.

Blanche: so it doesn't matter what you are doing, whether it's humanitarian or teaching people how to knit.

Or anything, painting...

Blanche: painting, why not, you've still got to include it. It has to be embedded in everything. It's not a matter of 'I have to justify it to you,' you will have to justify to the British government why we are not doing it.

Exactly, and when I brought that up to people my colleagues, civil servants, all, they said yeah but that's not our job here.

Blanche: well someone is not doing their job above them properly.

Definitely.

Blanche: not you...but it's obviously not embedded yet.

So it takes time.

Blanche: Yeah.

Maria: so you will have to justify to the British government why you are not doing it?

That's what Blanche is saying they should be doing but it's not their time. I was giving them away as the only person in the office, it's the biggest DFID operation in the world in Pakistan now. So you've got quite a big office and I am the only one in that office who understands staff that we learnt at CAT, how do we measure carbon dioxide emissions and dioxide reduction and what are the standard sets of you know embodied energy, tables and blah blah blah, its not very difficult. It's just something you would

normally do if we were environmental building consultant or if you do any work in the UK actually you have to show how your emissions in use would be lower than what was normally and how you are going to reduce emissions in build. I think it's standard practice now, no? So anyway, I keep reporting on it, I keep doing the calculations, I will send them to you both. I will put it all on a slide show which is easier than a bunch of text but I've got the text as well. And you'll see, I'll send you the excell which I've used to put in the numbers. I have made a couple of assumptions which are a bit radical, you might say well that's not good you know how do you assume... I've taken the lime figure formations and taken 70 percent off that because I believe that it's just a figure, because if you are using wood to burn the lime kiln and that wood is a renewable wood like ecopis (?) then the large bulk of your emissions from that aren't actually emissions, what you are getting is CO₂, you are getting some heat generated in the kiln and CO₂ is being emitted by the lime when you burn but that CO₂ is reabsorbed by the lime so you can neutralise that out. Usually in lime, what I understand from lime is that it emits CO₂ when you burn this stuff in the beginning and most countries use coal and gas to do that, but if you are using a renewable heat source to do that your emissions are greatly reduced. Now somebody will have to go and assess independently how many of these lime kilns are using renewable heat source. So I am not entirely sure yet. And how much of our lime comes from those and how much of our lime comes from other ones that use fossil fuels. Whatever. So the table is there to be challenged but surely and hopefully you can use it at any point and you know I am happy to put my name behind it all. But what I could do is put all these in a blog or an article or something so it's published and then you can then use. It may be easier. One of the reasons I am stopping work full-time there is so that I can actually write more because I haven't had any time to write any of these up while I was in Pakistan because it was just all too much all the time.

But if low-carbon materials don't cost more, in fact they probably cost less, why don't they just want to promote them?

Well the, where I did the table, using the Bath (University) table of embodied energy I found we had four main elements: fire bricks, cement, steel, and some earth, so these are the main, this is the conventional ... and here we are using earth lime blocks instead of the fire bricks, and lime instead of the cement and we are using still some steel but its reduced by 50 per cent, because you can use one beam in that axis if you are doing a

house like this. You can use one steel beam here rather than what they would normally do is put two steel beams like this, so in that plane so we don't have two, and then have a flat roof and then the rafters would go on top of that. So your house has a flat roof. We found if you did it like this you can make a frame out of timber or bamboo and then bring down your rafters like this (drawing still) so 50 per cent less, we said one instead of two but extend it a bit more, make it a longer beam. Ehhh steel and earth. And we found this was by far the biggest, fire bricks cement was you know a little bit, steel was even smaller. The biggest consumption came from here. Because the global study finds that to produce a fire brick, per kg or per brick, you need to use a lot of energy and you emit a lot of emissions. Oh shoot I need to go and change my car parking...

So we were talking about bamboo, what I didn't understand, ever, was how do they work with bamboo. I mean how do they grow it, I mean now you have made it much clearer that it grows naturally but they have to manage it obviously.

Yeah, no it doesn't grow naturally in that area, it's not like other parts of the region, let's say Southeast Asia, you have to plant it. And much of the water is saline, slightly saline brackish, I think that bamboo really doesn't like that so it would have to be, you know, you'd have to know the best areas for planting in each province. It needs a lot of water no? So most of it comes from bamboo fields in Punjab and there are some in Sindh, and maybe some in KP... I haven't been to the plantation farms, I haven't been there. It's a very interesting area, like how much can you expand...

Exactly.

By the end of the 2011 reconstruction project we were reaching max supply capacity of bamboo and the price was starting to increase. So it's a problem.

So its not very cheap then for them?

It is quite cheap but when there is more demand than there is supply the price goes up which happens with every material. It's not so easy to import it from India and Bangladesh, I think you cannot import from those countries. So that's that. So we've often been talking about the idea that we need to have bamboo production started in

every village so that in a few years they have their own bamboo. We have very limited funds to give per village, we don't have funds to research into bamboo...ahhh start the plantation in every village, water we don't have for many months of the year. There's no water, so you probably connect it with the sewage or grey water outlets, that could work, but most people don't have any toilets or any plumbing or any drained water so you would have to either persuade the people to pay for that or build it yourself with your money. It's a huge complication on top of all, I mean it would be nice for it to be integrated but at this point in time it's not integrated.

Yes but is it worth all this effort do you think or?

I think you start to touch on a second area of activity which is water and sanitation. It is worth there being toilets, it is worth there being hand washing facilities to reduce disease, diarrhoea and child mortality, big child mortality, probably the biggest as a result of diarrhoea in the country. If you think 93,000 people a year die from water borne infections and diarrhoea which is faecal matter badly disposed off faeces, toilet waste you know. So toilet waste treated properly would be perfect for bamboo, and you don't eat the bamboo so...no problem. But that becomes a whole other project area. We as intelligent human beings can think about those things at the same time as building, we could also think what makes a good school or what makes good social services. We're not just builders you know. But project funding kind of comes in single sector areas. We'll probably have money only for agriculture or water, sanitation or housing. It's very difficult. We can now internally persuade our government to support integrated projects but that does mean that you reach less people overall. Cause in one village you are doing more things.

These new houses that you are building, do they have toilets?

God no. No. No no they are just the building, and we are trying to encourage the partners to build, to persuade, to talk to the community about this open defecation problem. The emphasis should be on the people building their own toilets. So we are trying to explain to them, look while you are building these houses why don't you just build, also use the same materials to build these toilet blocks?

Maria: yeah exactly.

And then how will you treat the sewerage? Right? Ok well we can talk about that as well. There's lined systems that use lime to stop the sewerage going into the ground water, put in some broken bricks or whatever to let the plants suck it up, make a constructed wetland. You don't have to learn the techniques of a constructed wetland, you just have to learn the techniques of lime. So we need to do that and then you could say if you are doing shelter and sustainable sanitation, why don't you do sustainable energy? Why don't you teach them how to capture solar energy to make useful services like biogas? Or why don't you teach biogas? You know they have enough material to make biogas, why don't you teach them biogas and so on, and so on. So what are you doing here? And that's why it's very difficult cause your thesis, my objective was you have your question, vernacular building in developing countries. My question was how can I get local buildings more resilient to floods? The Heritage Foundation is a foundation around buildings and now going into women's social welfare. So we need to be more like a Renaissance man. Poet, warrior, cook, lover, dancer, monk, or whatever, integrated, holistic thinking.

Exactly.

But that's a great challenge to do. Maybe it'd be difficult for you to get your PhD funded, supported by saying I want to look at holistic everything, every department, say it's not my department, it's not this, it's not that. You know it's not our university, it's some mixed up thing. So and I find the same when I am trying to get properly supported.

But I guess the richer people in Pakistan have toilets, and somehow they have probably resolved a way of, I don't know what way, but a way of sewerage and sanitation. They must have toilets in their own houses the richer layer of the society. So what happens there? How do they treat that? Why can't they imitate the way richer people live?

Mmmm because a lot of the poor people don't go to where the rich people lives, they never go to a place where there is a toilet, they have never seen a toilet. Many people will never go to school. So where do they see a toilet? Where have they ever seen a toilet? Ok so some of them may have been to a village and in the village they saw one toilet but it was probably a very stinky disgusting mess, and they say Jesus our open

defecation is much better than this. A dirty toilet is a horrible place and then in the cities, so there's very little connection between the richer people in the cities and the people in the village. They never see each other. Really. And they don't have TV to see what's happening in Brazil or India or whatever, maybe there's one or two TVs in the country but it's exposure, awareness,

It is yes.

And then, so half of my work has been on water and sanitation, working with UNICEF and other local NGOs trying to promote people to build toilets and understand hygiene, sanitation, toilets, etc. And it's really really interesting to see how much training people have had or bringing them up to speed on this important thing, public health thing they can do, and how many people just still don't build their own toilets. Women prefer it because they can go to the toilet or have a shower without being watched by boys and men. At the moment they have to go out into the bush in the dark so they won't be seen by these guys. And then the risk of being raped. But I don't think rape is so much a problem in a small village 'cause everybody knows everybody. But if you are displaced or if you're in a refugee setting the risk is enormous. So it's a life and death thing. If you consider a violated life as a life lost whether you're dead or not then it's a life and death matter, it really is. A girl who is 14 who's raped by two guys, her life is you know not the same, ever. Her relationship with men is forever compromised. And her trauma will be with her forever, she'll have no therapy... This is a huge problem, we can't even talk about housing or agriculture or education without facing the facts of violence against women and girls. If we don't do anything about it, we know about it, we are accepting this torture or this terrible reality without trying to do anything about it. And yet you have a shelter program, you don't have a girls' protection program. But can you integrate something into your shelter program to protect the girls? Maybe if it's a solar light then great, maybe you'll give her a little bit more safety at night. Or is it some counselling, or.... Positioning the toilets to a place that's more safe to the house. These design things, as we are designers and builders, involved, but also this problem of voice, of social justice and ... how much do you want to get involved in that? But that's why at the beginning I explained that the role of the community-based organisations is absolutely critical. Because they are the ones who need to think about and articulate their priorities. And if the women's side of that say, look we are sick of this fear, we are sick of this violence, we're sick of abuse, then they are raising it as a priority. You can't

raise it as a priority from, even from the cities let alone from foreigners. It has to be women themselves, or men's communities themselves saying damn this is important, we're sick of being poor, we're sick of being abused, or whatever. Or we're sick of losing our house every two years. So in a way it goes back to the hierarchy of needs, Maslow's hierarchy of needs. He is a famous American psychologist from the 50s. Maslow's hierarchy of needs, look for that. Google that and you will see this triangle where he says in all of human society there are basic survival needs that you have, you know, shelter, food, water, and security from wild animals or from bandits or whatever, and until you have all of these four things covered you can't progress to the next levels which are being able to think and philosophise in discussions and all, here you have self actualisation or some kind of higher level of spiritual and mental realisation. If all these things are covered you don't have these problems any more. You are stable, you have self respect, or respect for the other parts of the community, respect for your work and whatever is here, self respect and then you reach this pinnacle. So here you are dealing with people who are still struggling with the very basics of shelter, food, water and security. And in that context you know it's difficult to start talking about these other philosophical things. So in that context our work on shelter, water and basics is very important. And once they have that covered they will seek more things like social justice and rights and improvement, self improvement, more education, and so on.

So you are doing all this fantastic work, do you know or are you aware of any other people like yourself who are doing very similar work to yours?

In different parts of the world?

Yeah in different parts of the world or in Pakistan or anywhere.

Yeah, good point. Yes there's the amazing people in Tamara, in Portugal. This is a great centre of experimentation and research in a community of German people and others in the South of Portugal. They are not doing it for communities, they are doing it for their own ecological community or whatever, very sort of different way of living. It doesn't matter, what's interesting is what they are doing with water and turning the desert into green, that's one. Another is in Pakistan, you know you have lots of local agencies like HANDS and Heritage, they have a vision and are trying to do individual bits of this, WWF you know they are doing some interesting work with wetlands and biogas and

staff. SNV the Dutch donor agency supporting a local group called RSPN to do biogas development, but it's very much just biogas, they go to a village and they try to promote sale of this biogas idea. They don't take on shelter, energy, water, sanitation, violence against women and girls, justice, they don't. Their project is about biogas only, it's a classic model where you're doing just one thing. In India you have Vandana Shiva who is doing a lot on rights on soil, another critical issue, seeds, fight against the corporation and all that stuff. And again it's a different thing, and then in India as well you have that earth building centre hmmm...

Aruville or something?

Aruvadi or something like this. Yeah so I have never visited but one of our colleagues did a thesis on this, rammed earth and earth in buildings and on compressed earth blocks. So we did a lot of studies on their machines for compressed stabilised earth blocks CSEB. Pressed manually, stabilised with cement or lime and left in water for years and years so great. But the machine costs some money but it's very good. In Colombia Gaviotas is a fantastic centre of learning and experimentation started by some Colombians in the 70s or 80s and I think it to be one of the most exciting and forward thinking communities who are experimenting in all the spheres of human life. Building, energy, food, and recuperating landscape and now peace, peace settlement with the Guerrillas and all this.

Oh fantastic.

So Gaviotas would be a great place to go. I would wish to be doing what you are doing in research to be able to go to these different ones. This guy in Kenya starting this biogas, super low-cost biogas systems and services, and so they are all little bits of the pipe but usually they are disaggregated in different places doing different parts of it. In Bangladesh the Grameen Bank giving access to poor people for credit and then started Grameen Shakti which is like rural energy to give women training to promote and sell solar systems on credit and then teach them to install it and they come back and maintain it, and the women's promotion thing for solar systems is incredible. It's got to be one of the best projects in the world for promoting that. So yeah there's hundreds.

Oh yeah there are hundreds but do you work with them? Do you collaborate with them?

Noooo.

Not at all?

Well just the occasional emails and staff. We are not part of an active forum where we collaborate and share things partially cause everybody's too busy until you take time off like you are doing to actually just study and write and capture all these stories maybe participate in a forum. You're too busy in your day-to-day.

Of course yeah.

You have 15 things to finish from last week, 100 new things arrived on your desk this week. By 4 o'clock you need to have finished that 'cause you're having a meeting with some other colleagues. Tomorrow morning you have a meeting with 2 or 3 NGOs, at lunchtime you have a meeting with so and so, 20 new things appear in your inbox to do this, this and this, you know pressures of a normal job. And that makes it very hard for finding time to collaborate with other, with other organisations. The only people who are doing this staff are our implementing partners, so HANDS, IOM, ACTED, the Heritage Foundation, Bee Rowan and those consultants from the UK. And all the local NGOs that are engaged as part of that. So they are all involved in this to deliver this vision but in terms of taking it to other places like Bangladesh... I remember you and Blanche contacting us all about the Bangladesh connection.

Yes.

And the fact lime has not been, you know, really incorporated there.

And neither bamboo. Although it grows locally.

And neither bamboo?!!! Noooo...

Yeah yeah, because I think the plantations are not managed, so people go in and harvest very very young bamboo to make mats usually to sell them to make money you know.

And they don't really let it grow for structural use, they don't know how to use it structurally.

Yeah exactly.

They really don't know. And they have it in abundance.

My God...

I mean some people are experimenting with it but they are still experimenting.

And small small small scale. Usually that's been a big radical difference with this project, it's that we've gone to scale, we've got now the biggest housing project in the world I think. A hundred and seven thousand houses. Over a hundred thousand since 2011 and 2012 combined. The 2011 ones are completed so half, half-way we have passed. We're now into between fifty and a hundred thousand houses. On the cheapest project ever I think and the largest scale ever from DFID anyway but look at the numbers, from post-tsunami, post-earthquake in Haiti, post-earthquake in Pakistan, although they did three hundred and fifty thousand then, but over four five years and a very different approach but it was a very large scale as well, but this is one donor. To take things to scale is usually the challenge.

Maria: Yeah.

Yeah. Like I explained that ticking out so many villages and monitoring the monitors and blah... so my colleague from Bangladesh seems to be interested in trying to learn a little bit about lime, they don't have a project in flood resistance so they don't have funding for that right now. So no I don't know... There's Joseph Ashmore who's worth contacting. He works for IOM now but was a shelter consultant and he every year would produce his book called 'The Shelter Book' which describes housing projects across the world, yeah post-disaster, so I can send you the PDF.

Oh yeah. Yes please, that's fantastic yes.

Please just send me the email.

Yeah, I will remind you.

You have to remind me.

Yeah yeah.

And in a week or so once I've settled in Bali.

Yes I will. Fantastic yes.

Cause we have to arrive, we leave on Friday and everything takes time to get set up.

Of course yes. Do you know, all this is great, it's just I mean I studied architecture and I know many people who have studied architecture around the world. At school we don't learn this,

No???

No we are really not even encouraged to design a basic shelter. Cause honestly if you don't learn how to design a basic shelter how can you know how to design something at big scale? Unless you're lucky enough to have joined a studio that is run by a very old professor. Nowadays we are not taught these kind of things at architecture schools you know.

What are you taught instead?

We are not taught, we are asked to design, we are kind of self taught in England at least as I studied here so I don't know what happens in Greece for example, but here you're encouraged to do everything by yourself, you're given a brief. Most of the time they ask you to design mmm... either to do master planning. I don't know, you suddenly have to do a master plan of a town or a master plan of a complex.

Wow...

Very strange. Or you are asked to design a big scale building without first going through this. I was taught to do this because of my own experience in Greece before coming to university here 'cause I was in a school of drawing, it was a very traditional school. And then you come here or you go to university anywhere in Europe and you're not encouraged to do this. So when architects leave school no-one is encouraged to do this kind of thing. Nowadays many architects go into this, designing shelters, because of the crisis, cause there are no jobs in architecture. And they think ok we can volunteer with NGOs, but how do you volunteer if you have never even touched the materials before. You know we would go into a workshop, ok we are asked sometimes to build an one to one scale of a section of a building and usually a high tech section, I mean I am not talking about the basic structure so that you learn how it works and we are never, at least at school, we are never in contact with materials. It's very problematic if you've never been in touch with materials. Really sometimes you have never touched a membrane,

My God...

It's very strange. And then you go to work, well it happened to me and it happened to some of my friends, you go to work you start practising architecture whatever that is and you go on site to supervise. Supervise whom?!!! I mean the builders know more, the builders knew ten times more than I did. They were building, how can I supervise them? Supervise what, how they would lay the membrane? I mean I had never seen a membrane in real life! So that is very problematic. And then you suddenly find yourself in, I don't know, in Pakistan trying to do this kind of thing but how can you know what you're doing? It's quite dangerous and it's not your fault. It's really not your fault. Many time I and other people asked why don't we do something simpler at least to understand how the building goes together...

Mmmmm....

But it never happened.

It's interesting, and if you look at the type of people that humanitarian organisations employ to run, if they have a shelter or let's say technical, and anyway they call it the technical department or the post-disaster recovery. Look, the most houses come down,

let's take a scenario, Haiti, tsunami, floods, right? Hundreds of hundreds of houses gggghhrrhhh. People die or they escape, it doesn't matter, there is a challenge for housing. Usually when they return it's the principle challenge, where are we going to live? They need work, they need money, they need to lie somewhere and have water and so on. And that's where people like us will come in and be asked to, ok so Save The Children, DFID, Government of Pakistan or Government of Haiti or the UN or whoever, will say 'we need people'. Ah who does building? Architects and engineers no? Ok let's recruit. The person must have architect degree, ok they must have scientific background, engineer. It's water, what is water? It's engineering. Ok engineering. We need architects and engineers. So they're getting in people who are coming just like you say with that... and engineers and I have seen the work that they do, it's completely, they've never learnt, cause engineering for water and sanitation is very basic engineering, it's not really engineering, it's environmental management, environmental engineering maybe. To avoid water going to the earth (blurred) there is some public health and a lot of practice and it's probably cycle social work than it's engineering. The architecture of it is very simple, you build a wall with some mud blocks or some sticks and you shit in the hole. And the water will pass through, this is staff you do in primary grade school. If there is water in a U band the smell will not come back. Ok you see it, you smell it, you put it in place, you get it. You don't need to be an architect, an engineer or...

No you don't, you just need to practice though.

You just need to practice it. And to see, oh yeah yeah and the fall must be just so so that the drain will take it away. Oh yeah we all have an innate understanding of water levels, we know when we see water standing like this there is no fall. Oh we'll take the pipe lower, ok small fall, great. You don't need to know the calculation of 6,2 divided by π , well you just drop 6 inches lower there than over 4 metres. 6 inches will probably do, something like this. So and that's the problem, when I arrived in the scene in Pakistan there was the biggest housing challenge or there are three big ones, tsunami, Haiti and floods 2010. It was one of the world's biggest housing challenges and nobody was doing this staff. Can you imagine? Only the Heritage Foundation, small one or two hundred houses. Nobody listened to them, nobody knowing about them. All donors after 2010, the Japanese put 50 million dollars into UN-Habitat and 50 million dollars UNHCR. Not one bucket of lime was used. And a bunch of bad houses went up built

with bricks and cement and no overhang on the roof. Can you imagine? A hundred million dollars and not one overhang, and you have I don't know how many architects from Italy, Pakistan, Japan, everywhere. These are architects and engineers working for these agencies. What the hell, why don't they understand the need for an eave? It's unbelievable.

They haven't really, they haven't thought about it.

I don't know. They asked the local engineers, they come and say this is Pakistan we need to ask a local, so they go to local engineers. Local engineers have learnt in these terrible schools and staff mostly, the architecture schools in Pakistan are pretty good but the engineering ones are very old fashioned and they say you use cement and steel and put a box and you don't need an overhang, and you know they don't know about lime, it's not part of these schools. So it's quite alarming.

It's very alarming yes.

Yeah and that's the majority of the world so (sighing) so very few people doing it there.

So perhaps you could be, you would be fantastic to teach as well. Architecture.

Really?

Yes I think so. I think there is need for this so I think you would be definitely very sought after.

No!!! Really?!!!

I think so. Of course.

I never thought of that. I'd be very happy to. I think we need to teach this staff, I'd love to teach in a way I love finding out about young people, kids, students or young adults. The courses that we give, they are not courses but the lectures that we gave before were really fun and if you can combine it with practical work in the field. There's no point

just giving a lecture in a room and then not going to the field and building something fun and making it fun, building first a toilet and understanding that the first thing you need to do in a building site is to build a toilet. You are a woman, you are a man, kid or an old person, within two or three hours you're going to need to go somewhere. That's what happens and then explain, look you're an architect or an electrician maybe, you think you don't know anything about plumbing and gas and biogas, well you need to know about that because you are a human being. You know what I mean? So let's go and build a toilet first, and think about where the water will come from, how is your rainwater collection system going to work, then everybody has an idea. So great let them do it but let them build it, design it, cause we didn't recruit ... cause if you have twenty students for sure you'll know somebody who will say 'well I don't want to tell them what the toilet systems will be like.' But everybody has an idea. If they don't have an idea, ok you give them the design, fine. And then you have your hand washing from your rainwater collection, then you say right where is the shit going to go? It's shit, you have it, it makes a problem and it will make a problem in the community so in a way you start with the basics, a bit like this. Water, sanitation, my son told me when we were building our house, ah most of the houses are about keeping water away from the house. I see it is about water management this building thing. Very true, it is, underground, the sides, the DPC, the gravel at the bottom, the roof, so much is about water.

Yeah so much is.

And then inside you have water moving through for heating systems, plumbing, for taps, for toilets and so on and so on, in a modern house. In a village house you have different relationship with water for sure but you need water to keep away from it. And so, I'd love to do that actually and, we thought actually to move to Edinburgh to be teaching but we couldn't find any schools that were willing to...

Any schools?

Any universities. I don't know, I applied to one which does international health and then I was going to speak to Edinburgh University who have an MA in South Asian Studies so it's more like Development Studies but we realised it would not be enough to have one, two, three small part-time lecturing you know...so I want to remain with one foot in the real world, the practical world of doing and building and so on. So yes I'd be

very happy to come on occasional study missions or take students from here or Europe or whatever to places like Indonesia which is very accessible, you can get land to build, an experimental building site easy, much easier than here, or to Pakistan also but it's dangerous, or Portugal or there are various sites that we could develop for having places. Probably in Scotland as well, or England, but I think it does need an actual physical place, a field, an empty site, a brown field site, anything. Which is going to be dedicated to you, the school, whether it's in New Zealand, Bali, Scotland, Portugal, whatever, or several of them, they are communicating with each other and there is a constant learning going on. That place Tamara in Portugal is one of these that have an energy experimentation site and land and some building staff.

So this place is called Tamara?

Tamara. They have this staff and it's very interesting. There's biogas going on and there's reflection of light to cooking, really advanced physics at basic level. One of the guys working there is doing a PhD from Edinburgh University engineering in Physics so this is one of the most advanced degrees in the world, he has a specialization in light so very very high level people. And probably the same in Gaviotas in Colombia and so on. So maybe, and I'd be very very interested in doing this, working with someone like you and Blanche and others that know how to reach out to the schools, and say in the UK, in Greece, in Portugal and in Pakistan and in Gaza and in... you have students of architecture and engineering learning staff that is not particularly practical and useful, and it's not integrated in various different angles of life. We should do something about that. So what are we going to do? I think we could run a series of courses over the year, not all year, 3 weeks in March, another 3 weeks in July, 3 weeks in October or something like this, so that is 9 weeks over the year, it's paid you have to pay to go on it, people are paid a good wage to teach there, and so on, and they come and build on site so they can see the work before. It will be easy, yeah it will be possible to do that. And I'd be happy to help with that. And you're bringing students from, if it's in Indonesia you're bringing students from Indonesia, and some from outside if you want to pay the ticket or whatever.

What if there is a space at university? For example at the university that I am based at, there is space behind the Architecture building, there is a piece of land, well my supervisor is building something there. He is building a very small building for a couple

of years now to monitor it, he is doing an experiment. So I think there is space to build, well he's in a way told me that there is space to build actually. So would you be interested in coming over and delivering a course here? In England, in Kent for example.

Sure. If it's planned in advance and would fit around all the other work with a fee or whatever to make it so I am not losing the money, but in principle absolutely.

Ok. So it could be part of a course instead of being something separate cause people are already paying fees to study in England, people have started paying, it wasn't like this before. When I came here to study the European Union was paying for me, for my fees. Now if you want to go and study architecture for example you have to pay 9 thousand pounds per year. So what you're talking about is an extra cost.

I know. How could they do that? But then inside the faculty as well it says right well it's 9 thousand a year, I need to pay this tutor, that tutor, these materials, these fees for the room so I don't have any spare money. So the universities as well may not have any money so people like me and Bee Rowan, we cannot come for free to these things.

No not for free.

Because we are losing possibly time, we have to travel from wherever, Ireland or Indonesia or wherever people come from. And you and Blanche must have found this when you were doing RESET, you know people don't really have money for these courses so in principle although it is a nice idea but how do you pay for it?

Yeah how do you pay for it?

Unless you have a grant from some European Union Sustainability promotion thing in which case the priority could be on just developing a project proposal for sustainable building training.

I think it could work really well if these, for example if you are studying architecture you have a module, a whole module for the whole year, you have to study technology. And it's quite tough and it's a very important module cause without technology you

can't design anything. So instead of having that kind of theoretical module, you can have what you are proposing. Instead of that. So you will be paid instead of the technology teacher...

I see, right right right...

To actually do hands-on teaching which is more important than learning...

No, there are a set of modules in the classroom looking at electrical, gas, water, sewerage, services. All the services of which a lot of technology is involved they would still have to learn at some point in their career or as students about modern services. They'd still need to learn that stuff because it would be part of the degree. We had two architects come to visit our place in Portugal, they were from New Zealand and they had just finished, just graduated and they said, like you, we have no idea how to build anything so we'll go and run the world to build stuff with people. So they stayed with us for a month and helped us build a straw bale element and a bit of, they did some nice design work, we built what they designed. And they made a few mistakes cause they were not familiar with the tools and making holes and so on, but they got there. They were practical very nice people, so that's another way for people to do it, and are interested to get practical experience during or after their graduation. They go travel and go these projects in different parts of the world. But they also know I presume these students, if they just don't do that they can finish graduation and then go straight to some office, architectural office, work on CAD, they can work for 20 years without ever moving soil. Because most of the work is done in an office, no?

Most of the work is done in an office, yes.

So I am not sure how big the demand would be. I would say in my field of humanitarian response or in development in poor countries, the majority of the world, there is a huge need, people working for the UN or the development sector, to have these courses as well. So let's push for it, talk to your supervisor, see if he is interested, let's see who else might do it, the Eden Project maybe, where Mike Thompson went from, and they have land they have experimental things going on and a dome, it's an interesting site there. Look at things inside the UK before going outside maybe, I can do the same in Indonesia where we are moving now, speak to people there, look at creating a zone in

Bali for people to come from all over Indonesia and I want to send teams from there to Pakistan.

From Indonesia to Pakistan?

Yeah. Because they have much better experience in sustainable waste water management staff than anybody in Pakistan has. And wetlands treatment and staff. So that will be really cool so we could have various centres of it in different parts of the world. And there are people I know I can mobilise in the UK that could go to deliver, different elements of the courses in the UK if they are available. But you plan this staff 6 months or a year in advance. So say here is an outline of the course, we have 20 architecture students studying in Kent or whatever, this is more or less what we are thinking about and we could send this to these different people like Bee Rowan, expert in lime or whatever.

I think Bee is giving a workshop at the end of the month at CAT on lime and clay or something like that. But again it costs a lot of money so if you are from another university and want to join that, as a student you have to pay almost £500.

Wow...

It's a lot of money if you are already paying somewhere else to study.

Yeah, it's impossible.

So it's better if it's integrated within the main structure of the course. Otherwise people can't do it even if they want to.

I completely hear you. Are there any major other questions, we talked about bamboo, the organisations, I was really hoping you get the sense that there are other groups in Pakistan, the Heritage Foundation is one but not all, they are very good at communicating though, their material is good, they just submitted to the world Habitat awards. I also submitted as part of all the organisations and they wrote back and said oh the Heritage Foundation has also submitted, can you do a combined submission? I said ok, and then the Heritage Foundation did their own one and sent it in without anything

about HANDS or any other organisations. So very much only us us us us. But they had the time, I didn't have any spare people to help me with my submissions, I wanted to represent more than just a name of an organisation, or a person, I wanted to represent the theories, the ideas so they will hopefully accept at least the one of the Heritage Foundation. And I will tell them that this is not from DFID, it's only from the Heritage Foundation. What to do...I just didn't have time...when we were travelling it was very busy. And so much staff with family, so...

I guess after you relocate we could perhaps be in touch at some point by skype.

Totally. Actually I have an idea ...

A.4 Interview in Greenwich, London (10th September, 2014)

Let's talk about your work and what you believe in. What you were talking about before was very interesting, education for example that you have brought up.

But that's the thing, this comes from an understanding, more or less from the outside I suppose that I have worked in architecture, that the institutions set the curriculum and it has taken the RIBA a long time even to acknowledge climate change as an issue that their students should have anything to do with. This actually goes wider to the construction industry as a whole and the political relationship to the construction industry and if there isn't political will in general towards climate change so there are lots of things that have happened over the last twenty years. It's taken very long time. The thing about architectural education is that the curriculum is set by the institutions so when there's an engineer, a planner, an ecologist, an architect, it's the institutions that set the curriculum and decide what should be taught. So if you have an institute that doesn't believe in climate change then your curriculum will reflect that and the students will not be taught about that, even that the news every day is all about it, the cities that they are coming from to learn in the UK may be attacked by climate change, they are still not learning about it. And then you just keep on repeating the same problems. So it has taken a long time for all the institutions to adopt, say over the last five, six, seven, eight years maybe, so really recent, but crawlingly so. And then everybody has published, all these institutions have published their documents about climate change and why it's important. The Building Services Chartered Institute has done some really good work on building service stuff and on insulation, internal air quality, ventilation, natural day lighting, all those sorts of things but the RIBA really hasn't grasped the nettle to say how.... It's in the curriculum but in such a minor form that it isn't the core of what we are doing. So how important is this subject? Maybe it doesn't matter, Maria, maybe it doesn't matter. Perhaps the human race hasn't got the capacity to adapt ok? I don't think that is actually true but I think the institutions and the politicians are always the last, all those structures that represent vested interests. And I don't just mean financial vested interests but you know to do with status, the status of the architect, you know we are really important. The whole idea of adaptation is collaborative, we have to work together to solve problems. On the surface that's what people say about

architecture but actually architects are taught that they are really important, they are creators, they are like God, so how important are they? Super important. The whole idea of working together, and in fact engineers are also taught that they are more important than the architect because the architect is an idiot and the engineer has to make everything work. So they think they are really important, and then the planners, well nothing can get done without us you know.... And then the ecologists nobody cares about. All they care about is newts, moving newts from the development sites, or they do a bat survey, that's what they are there for. Nobody understands nature. And the problem is our issue is about ecology, it's not about energy, it's about the whole system, the whole universe, the whole planet, how it all works, how it's a system that has maintained itself that we have interrupted, and that's to do with the ecosystems and how we manage them. And if we don't understand how that works, how can we improve the situation, how can you improve something you don't understand?

Are you talking about the urban environment?

Every environment. Because an urban environment draws from materials from all over the world. It draws from food from all over the world, the energy isn't coming from an oil well in Suffolk, so everything is global, a lot of our food is global, our people are global, everything is related to the whole planet. But cities are, I think, one of the best places for, this is something that Dusty and I have talked about a lot and Dusty first said it specifically like this to me that, they are the best place to talk about nature. Because everybody always thinks of nature as out there and city is over here where I am, but if cities which many cities are doing treat nature as essential to the operation of the city then that is an instant educational process for people to understand their intimate relationship with nature. Not that we are separate from nature because we are human beings, so we are part of nature, human nature and everything but you know we see the natural world as somewhere else. And therefore people are obviously interested in saving the rhino, the polar bear and the koala or whatever but they are not so interested in urban sparrow populations or local biodiversity. And even when I say that of course, what does that have to do with architecture? Isn't that a separate thing, if you are interested in birds, that's a separate thing from architecture, isn't it? So what's the relationship? But what people are gradually understanding is that working with nature is beneficial to everything, cooling a building, improving air quality, managing storm water, providing delight and education, the connection with the natural world is

essential for the human being of all ages, it's essential when you are very young to learn about yourself and your relationships in your family, you look at nature and it teaches you so much. If you are an artist, a musician, a mathematician, a bus driver, anything. Nature has so much to give us. And when we are old to wander around and watch nature and reflect whatever, I mean I am generalising but there's no age at which you don't need some connection with nature.

But I think that what a lot of people do not realise is that to be able to save the koala for example or the polar bear in the Arctic, they don't understand that there is a connection between how we live our lives here to the Arctic. We think that if we support a charity we are saving the polar bear but it doesn't work like that.

So the thing that's missing is the cultural understanding that we rely on nature and nature is a good thing for us. It's so obvious isn't it, but nature is really good for us and it does a lot of things for us. That it doesn't only have to do with aesthetics, 'cause when a lot of people talk about nature in the cities, they talk about the aesthetics of nature, it's pretty, it's beautiful, and perhaps they may mention shade or god walking. Very often that's as far as it goes for people. And if they think a bit more, they may say it's good for pond dipping and kids like it. But there's no understanding how nature affects climate and particularly we are talking about soil, water, vegetation. There's very little understanding also in the architectural curriculum of the issues that cities face and why climate change is such an urgent issue. There's some understanding of the urban heat island and that the cities are a bit hotter and there's understanding of overheating as a result of climate change, but things like managing storm water runoff, all these things that are completely standard in many European countries that we have not adopted yet or we are only just beginning to. The Landscape Institute only produced their first document last year 2013 maybe end of 2012 on green infrastructure. And I know there's a lot more to adaptation and to design than just green infrastructure but to me that is, you know we talk about a fabric first approach and then you can sort out your other problems. When you work with nature and you bring nature into cities and onto buildings it solves so many of your problems that the other things are much easier to approach. And it's like you know knocking out six of your nine pins on a bowling thing and you have only three to deal with so it does a lot of benefit for cities. There isn't an area that isn't positively affected by it.

The way that architecture is taught for example, I remember myself being taught architecture and green infrastructure was something extra that you would do after you had dealt with your building, and that wouldn't be researching into nature and what had been previously on the site you were dealing with. It would be just an overlapping of new things, like a little bit of grass and planting a few trees that you liked not what was native there before. It's about control of nature really.

Yes very superficial utterly utterly superficial. You know, Hellman the fantastic architectural cartoonist, particularly 70's and 80's, one of his cartoons from years or decades ago but basically it's been going on for so long, students drawing a picture of a tree that their tutor is showing them and they are all dutifully copying this picture and of course out of the window is a tree but he is showing them this picture of a tree and they are copying the picture. What I am talking about is the detachment from reality, you spend most of your architectural education in a studio, you might go onsite, you might go on a fieldtrip and if you are really lucky you might build something for a couple of weeks. But how detached are you from reality? Modelling of course is really valuable but it's still with cardboard and plastic and it's not the real thing. And then that's just building materials stuff. You wouldn't even understand what straw bale was even if it bit you, you know, or rammed earth walls or whatever unless you are lucky enough to have a tutor who might teach you about it. But as you say it's an additional thing afterwards, landscape, they see it as landscape... oh are you interested in nature? Why are you doing architecture almost, what's a building about? Not about that stuff. But this is because you know, it's back to education. And the people you are being taught by are old-fashioned, out of date, status orientated... they were taught in the 60's, 70's, 80's like me in the 90's, I was taught in the 90's. I had one tutor maybe two who were interested in ecological design, and the understanding of our relationship to where everything comes from. How ignorant are we? Where does cement come from, even if you want to use cement, where does it come from? How much energy does it produce to make it? As opposed to what? My favourite question, when people used to say that well surely straw bales are really bad as well because they do this, that and the other, but as opposed to what? What kind of scale have you got here? So yes straw bales might need a little bit of education to people to train them how to use them but they are super insulating and they are massive load bearing, they have great load bearing capacity. They are really easy to build with when you know how to build with them. And that's

just straw bales. I am not hooked on straw bale construction but it's incredibly useful, super insulated envelope, cheap to build, quick to build, great for self builders to build. Social housing issue at the moment in the country, the education system is not based on need, it's based on greed. If I am really blunt, if you have to make a choice between what it is really about, it's just about supporting an industry that is based on a status, a false idea of status. And that the architect should be producing these out of date signature buildings that everyone else should worship. That is a very poor ambition for an intelligent, ambitious and interested architecture student. To give them that is an obligation of responsibility. When really there's a mission and a need and community suffering. You know we live in a very rich part of the world but a lot of students are coming from all over the world to study and what kind of message are we giving them, just to go back and do the same shit that we do, or maybe do it a bit better. Oh lead platinum well done, so it's saving a lot of energy. That building is still going to heat up the neighbourhood, it's doing nothing for biodiversity, it's doing nothing for the surrounding area in terms of urban heat island, air pollution, you just have to keep coming back to the basic checklist, how does your building respond to it. So the checklist is overheating cities problems are too hot, too dry, too little biodiversity, poor air quality, poor water management, and that's all over the world. So you just keep that as your checklist and the lack of biodiversity, working with nature will sort out a lot of those issues. They may not sort out 100 per cent of all those issues and some may do better than others depending on the site or the project, but you can address all of them in some way when you work with nature. You also look at building materials as well of course, you look at embodied energy of the building if that's of interest as well, and where your materials come from.

So working with nature. What does this mean for materials for example?

Well obviously there are things that are there already as restrictions now like non use of tropical hardwoods from unsustainable sources. What does unsustainable mean? There are issues about whether we should use timber but as opposed to what? If you have a choice between a high embodied energy material that causes local destruction then what are your other choices? So the most common material, cement, concrete, is responsible for 10% of global CO₂ emissions, a large part of that is transport and freight but also the burning of the material in the first place and that is fossil fuel based almost entirely. So it has a high CO₂ emission but also it is mined so there's local ecological destruction

there too. And then you also can look at the quality of life that people in the industries that are supplying these materials, so looking at copper, you know people often want a copper roof. If you are sourcing that as virgin copper, that comes from a copper mine in the Congo or somewhere else. And you have to ask yourself, you know, we know about blood diamonds now but what has the construction industry done to raise awareness for the quality of life for the people who supply our construction greed. So there are those issues. Then we have things like, you know, if its timber where does that come from, how far is it coming from and so on, and should you change the design of your building to be able to use a different material? So for example there is sustainable oak industry in the SE of England in Kent but the length of our oak is much shorter than French oak, so if you were doing some kind of oak-framed structure you would look at how you would alter the design. And then laminated timbers, of course lamination usually uses formaldehyde as a bonding material and the World Health Organisation (WHO) banned it as a carcinogen. In fact it was banned as used in dog kennels before it was banned as a material for food production and things like that for human beings, 'cause just somebody had done tests on dogs basically. But there are things you want to limit the use of, PVC for example, cities in Sweden have banned use of PVC because of its impact on water systems. PVC in its production produces phthalates that are hormone disruptors, but PVC is a massive part of many buildings in terms of cabling, electricity, insulation, and all sorts of things, ground sheets, waterproofing membranes and things like that. I have worked on buildings at the information centre at CAT, and one of the criteria was no cement, no Portland cement, so use of lime instead, so as opposed to what. Lime has half the CO₂ emissions and draws back CO₂ during its life span. You would have all the other issues of local ecological impact, and they still have the same transport emission cost but anyway.

In the UK where do you get lime from?

Well you can source it from places like Timar in Wales or you know there are suppliers, even Blue Circle have started supplying lime as well now. But a lot of it comes from France. Maybe it's horses for courses at the moment, on the other hand it might be a choice, it's much more expensive. And it takes longer to go off, it's a material that takes training to deal with, but it's much better material in almost every situation because it doesn't act like brittle glue, like cement, it acts as a mortar that is still alive and still flexible to the buildings' little movements and so on. Anyway so how do we teach people about this? There's a lot to learn. So the curriculum makes a choice, we prioritise

this over that, what are we going to teach? We are going to teach spatial delight and form, and we are going to teach how to be a status architect, and we are going to teach how to make a dramatic impact, or place-making ...ok these are all interesting things, some of them even quite important things, but that is a very old-fashioned approach. I think it also affects things like how confident students are when they qualify because what are you actually offering? What are you offering? I can do good planning, I know how to plan really well, maybe I know how to make a decent facade that will fit in with the street scene, perhaps I can even design a little bit of a park or something but I don't really know, I still don't really understand the issues of a city and how my building is responding to that. Not in any other than a superficial, a bit of social context. And I think that's a huge shame because I think if you inspire students, I feel this with my own teaching, certainly from response from students, if you can motivate students to be, not that they are not interested, they are already interested, it's everywhere ... it's everything... massive floods, huge forest fires, vast droughts, the whole of China, the whole of California, flooding, billions of pounds written off the stock market because of loss of natural assets, disruption of business, massive flooding even here. And then climate disruption affecting agriculture, affecting fisheries, the acidification of the oceans, the loss of the arctic ice. So students are highly aware of the issues and they live in cities that are baking hot in the summer, the air-conditioning is not working or goes off or its too expensive or the air quality is appalling. London is going to be fined this year for poor air quality by the EU, we cannot meet minimum standard air quality levels. This is appalling. This is what we've done, architects, this is what we've built, this is what we've made. It's not just can I improve it a little bit, it's how are you going to solve the problem? It's not good enough to produce a building that's slightly better than the ones we've produced in the past. We've got problems to solve.

And how do you think the curriculum could be influenced? How can we influence the people who are actually writing the curriculum?

It needs a change of thinking, and unfortunately for them to write it they would have to change their thinking. The people who are writing it need to change their thinking, but what needs to change is to look at working with nature approach first. Because of all the reasons I have given, it is a much better approach than the one that we've got, if anybody has ever defined the approach we've got which I think hasn't really happened. It's been added to piecemeal over the years, but it might say something like the

curriculum exists to train architects to be of service and of use, and to design architecture that should delight and be useful. That's basically what the constitution sets out. The constitution that I have always had in my head says the role of the architect should be to improve lives. But really it should say something like, and I think it does in some respects, it certainly does in civil engineers constitution, the equivalent of the doctors' charter, their oath that says first *do no harm*. And that's what architects' *do no harm*, do NO harm in which case you'd better try to do something really positive because there are still going to be some impacts. How are going to make up for that? The fact that we're using new resources, new materials to build stuff, and then of course the question that Cedric Price, you know the great architectural philosopher, said *is your building really necessary?* That's from the World War II slogan: is your journey really necessary? You were supposed not to go out at night for your own danger, well we face a huge danger from climate change and we should be on a war footing not at war with climate change which I think is such a negative slogan. The war on climate change, you know, nooooo! Stop it, the war on terror you know... Have a war on bankers if you like but don't have a war on climate change. But it is a battle, but the battle is not with the climate systems, they'll just do whatever they do. The battle is with ourselves and with the authorities that refuse to change or will change so slowly, who can't see it as an urgent, urgent issue that they should be prioritising over anything else because it's affecting terrorism, it's affecting the money markets, it's affecting food production, it affects poverty, it affects everything of course... It affects health, it affects mental health, physical health. It also creates huge instability in other parts of the world that affect us and you know whatever we say about, I know this isn't the subject, but everything is connected. Everything is connected and you can't really talk about architecture and the built environment in a sort of stale context, there's all sorts of things happening, and if we want even on a basic level, if we want to avoid being overrun with people who are migrants from climate change, refugees from climate change, which is happening already and has been happening for quite a while now and is the reason that India built a big wall with Bangladesh, and is the reason that a lot of countries are very frightened about neighbouring populations. The whole of Sub Saharan Africa is at risk, you know temperatures are going to go up now. That's it. So if we want to do something, what we have to do is to make cities liveable where people are and to make livelihoods from that and of course you can see the economic benefits by doing that as well, job creation, local sustainable resources. What it questions is, it doesn't mean there's no profit there for companies or companies that aren't required to

exist but it's the amount of profit, the amount of greed that exists in the system at the moment that keeps people poor and that creates huge inequality. And is that possible? Is it actually, it's not equitable anyway, but is it even sustainable to keep that as a system in a situation where people will have to look at their local resources to survive locally and maintain local existence. It's not feasible for everybody to leave somewhere, so how can you make it self-sustaining?

But is there a need for an architect to adapt?

It's a good question, it's a very good question, is there a need? Certainly there isn't a need for a bad architect. There's no need for that, just like there's no need for a bad doctor, I mean who wants that? Nobody.

Like there's no need for a bad building.

There's no need for a bad anything. And these are people who are being taught to be bad architects, in my view bad architects. Actually educated to be bad architects. That's what I find so shocking really. But is there a need for an architect at all? I'll just tell you a little story but I am not sure if it's the answer to the question, but when I was in India, Northern India, the Barefoot School I went to visit, they had this outdoor amphitheatre sort of teaching space/gathering social space/community space, they also did community teaching there, and it had been designed by a local builder and he built it all. It's beautiful with a rainwater collecting roof, big sweeping roof around it, in the shade, it was very cool under there, very nice, and big tanks underneath to collect rainwater. It was a very well designed structure and building but they had to get an architect to sign this off to get permission to build it and when the Aga Khan Awards were announced, they gave it an award and the architect claimed the award and the prize money. The builder and the Barefoot school said to the Aga Khan Foundation said 'sorry we are going to have to reject the prize, the architect wants to claim that they designed it but they didn't, they basically signed the drawings and our local builder built it with a local team of people.' Ok you see the answer to the question, do you need an architect? No, not always, so what is the purpose of an architect? I think they're just like any other human being there's nothing sacred or holy about being an architect. So the first thing what kind of person are you? And I am going to tell you another thing what should architects know? They should know how to communicate well, they should know how

to listen and they should understand other people's issues and other people's problems, and environmental problems and ecological problems, and understand that what they are going to do is make it better not make it worse. And if you have an architect like that then they can be useful in all sorts of ways because architectural training can teach people in terms of systems thinking which is what this is about, i.e. juggling lots of things together, seeing the interconnectedness of all those things and that's a useful training but is it more useful than having been trained as a juggler? Would you rather have a juggler? You know what I mean? If you can listen really well to people and understand the technical thing about putting up a building ok, what does an architect do that the builder doesn't do? It's just too vast a generalisation, some builders are brilliant and some architects are shit, so you can't say what does an architect do that a builder doesn't. You can say what an architect ought to be able to do is to understand structure, context and impact and how they can make it the most positive and beneficial and abundant building, and not require any energy except maybe for some lighting in the evenings or something like that. It could be an energy net producing building, it could be something that's abundant in nature, lots and lots and lots of different things all at the same time these checklists all the time, and how is it going to support nature, all the time, including human nature. i.e. its occupants, and if there's a client or whatever and the neighbourhood, and the city. So that's where you need an architect but then a builder also has to juggle a lot of things. When I was working in Germany people have got a very clear understanding that everybody is part of the team and without one of those people you can't do it. So there's respect for every skill involved and every discipline and people are more used to talking to each other across disciplines whereas we've been... obviously there's been a lot of talk about how to get outside the box and talk to each other, out of the silos (a system, process, department, etc. that operates in isolation from others) ... silo mentality, you know, I'm just the engineer you just give me the details and I'll tell you how to build it or whatever, or I'm just the quantity surveyor I'll just add it up and suggest some changes, but unless we can understand each other's professions...

Yes, well Magnus was talking about something very similar in the humanitarian world and development being very sectoral, and people from different departments don't talk to each other and that's the problem really.

Yes, it's a huge problem. So there's lack of humility and at the same time insecurity so there's a lot of insecurity amongst the architecture profession at the moment, what is architecture for? You have rising project managers whose job is to manage a project between all these people and may have some design input, you might have a design consultant but they are not ... whatever, but then the architect is losing control at the moment and I say good, how many architects do we need? What we need are good architects and that means changing the whole way that we do it. Do we need any architects at all is a good question. Is your building really necessary? Is your architect really necessary? To people who are commissioning buildings, make sure you know what you want, and then see if they are going to deliver it. Basically the whole thing is about the performance rather than the product and this is something that we talk about a lot with Dusty (Gedge) and other people, particularly Dusty. The construction industry is set up to sell products. That's what its whole role is. And the issues that we are facing require systems thinking to look at how is this going to improve the situation, how is it going to perform, what kind of green roof is going to improve storm water management, not some crappy sedum blanket that you've been sold in a brochure. Architects say they are designers but often they are specifiers actually, unfortunately, so they have designed a green roof but they haven't, they have specified one from a brochure, from a catalogue. So if you want to design a green roof, great you can and it's a great job and it's a really interesting thing to do because you can look at what that area needs to support in terms of its local biodiversity. Councils have Local Biodiversity Action Plans which architects should be educated about and should respond to. It's part of the local council policy.

Is it optional?

Noooo. It's guidance and planners aren't always even educated that they should be looking forward from architects and landscape architects and other designers. But an architect should be responding to it, it's a local issue. The stuff that is in a planners list of things that need to be done, that's in order to improve the neighbourhood for people. And architects putting up buildings and developers doing developments should be required to respond to those needs. So it's how we are responding to need and how what kind of performance criteria we set for that...

But that would affect the building industry, you know the materials...

Yes sure, it would affect it but it can improve it because what's happened with the green roof industry over the last ten years since Dusty set up livingroofs.org for example, that's created a whole market and now there's a market for green roofs which there wasn't before. The whole point about adaptation is that it could create a twenty, thirty, forty-year markets for adapting cities to climate change, so it's not negative, it's really positive, there's this win win win, it makes buildings that are much much cheaper to run, it makes cities that are liveable that might not be liveable in the future and it supports biodiversity because that's what we rely on for life itself, for oxygen and climate regulation and everything else. And it can be a good investment and it can be financially rewarding to people as well. You are not going to get rid off the market overnight, the market will still be there in 30 or 40 years time and buildings will still be being built, and we need to adapt those. Refurbishment should be a major issue being taught to architecture students, it's barely touched on. And where are the big jobs going to be? How many students are really going to come out and design big signature buildings?

Most architects do refurbishment really.

Yes. A lot of architects, and even if you don't, yeah I would say most. There are cities all over the world that are being built from scratch right now, hundreds of them, so there is work out there for new building but if you are talking about the existing old world, America, Western Europe and so on, then it's basically a refurbishment situation at the moment. Largely, not entirely but largely. It's not sexy, how much sexier is it to create a whole new baby than to improve people's lives or to make things a bit better, you know it's not going to grab any headlines and this is where the architecture establishment is really at fault. All those other things are as bad but this magazine mentality of fashion, it's like who's going to be the next Versace, and what's the most important thing, the awards you know ... and what building do they give awards to? Flashy, big flashy ones that are sort of sculpture and very often, largely engineering to be honest. What is architectural about them? Ok space, form and light, but what are the issues of our age? Are they space, form and light? Noooo. Noooo. That's not the problem. Nobody wants ugly buildings for sure but what are our issues? What we were talking about before, Yasmeen Lari's great quote 'if architecture is going to align itself with the reality of our age we have a lot of work to do' (in Rebel Architecture series). And basically this is the

whole tone of this particular discussion anyway, it's that we are a long way from where we ought to be at the moment. And that means changing the way that everybody thinks about everything but that's happening across the boardroom as I said, I have huge hope in young people because they are (a) more interesting, less fixed, and more interested and curious, they've also got lots of energy and also they have a much much understanding of issues and problems. The thing about architecture students going to architecture school, it's expensive and it's a long course and you will therefore rule out 90% of the population's background. So you will get quite a small section of society going to architecture school. And architecture to me has a role of service to the planet, to each other, to cities, and in this stage of consumerism and capitalism, you know greed over need, we haven't for a long time lived in a culture that has been more for the social good, not for a long time. So we've got a lot of people who have been brought up under this, but there are movements of course with an understanding behind them of the need to work together to support the planet and natural resources that we rely on to survive for the next 50 years. So the Millennium Ecosystems Assessment that was published in 2005, five years of research and hundreds of scientists all over the world assessing the state of the ecosystems of the planet that run the planet's systems, said that we are in a state of near collapse. Every single one of the nine major planetary boundaries which are things like climate change, biodiversity, ocean acidification and so on, four of them are critical and the other five are at dangerous levels. And of course we've overrun climate change and we have overrun biodiversity, and it says that basically we can save as much energy as we like, we can create carbon markets till the cows come home and we will still not make it. Because we weren't to protect the natural world that supplies us with oxygen and clean water and all the fuel and fiber that we use for all these buildings, and the minerals and so on. So if we can't restore our ecosystems, the cities are a great way to do that and I think we were talking about that before we started this discussion, cities are a great place to start informing people of how connected we are to nature. Because nature is now their polar bears etc, and ok that is tragic but it's out there and people are living in cities, so how are going to make a difference to where we live? Where people are, to stop them from becoming climate refugees but also to make them liveable and how are we going to do it in such a way that also supports long term continuation of the human civilisation, cause human species will continue but our systems are near collapse, our fossil fuels are reaching final stages but there's been a lot of focus on energy. If people start realising that ecosystems are reaching their final stages, it's a huge issue... It's 'the' issue, in fact we can go on

burning fossil fuels for a while considering. Cause really the deforestation and the loss of natural resources is going to make runaway (uncontrolled) climate change much more likely.

We are still faced with housing shortage.

Well yes, terrible.

Yes but if we were to provide housing for all these people who are in need of housing and if we don't want to use conventional materials what else can we do?

So we have a large unused housing stock in this country and then we have a lot of waste materials that we can use also. Straw bales are a case in point (example that illustrates what is being discussed). We produce enough waste straw in this country to provide 400,000 homes a year, I think our housing shortage is, it's certainly in the millions but I can't remember how many people are homeless or how many people are on the housing register and so on, but let's say we needed 4M home, I have no idea, there are 21M households I think in the UK, so that's a ten-year building program and you can do them all out of straw bale. Whether that's realistic or not, you haven't looked any further than the UK waste resource process for a third of each of those buildings, i.e. the wall structure, which is what the straw bales will do. The thing is climate change adaptation is a design issue we need to think about how to design a better way of doing things. You can design systems but it doesn't mean designing a building, but it's like design systems so systems thinking, good systems thinking is about taking all the pieces apart and putting them together in a different way maybe. And that's what we've got to do with our approach to design as architects and engineers or so on. It's to think about it back to scratch and design the best response. It's like I was saying earlier to students when I say to them 'what sort of architect do you want to be', and they say one might think that do I want to be a green architect, or do I want to be an architect that does hospitals, you know. Do you want to be a crap architect or do you want to be a good architect? If you want to be a really good architect you have to think from first principles, 'is this building necessary?', 'how am I going to design it?', 'what can I use?' and inform yourself because you are also going to have to justify to or face people who will shout you down, or tell you that you are mad, or just ridicule you, or say that they don't want you as their architect, or whatever. You have to give them the arguments and show them how it benefits them financially, physically, their CSR (?), or whatever else. And you

have to know your subject but that's not different from being a lawyer or an accountant or anything else, you have to know your subject inside out and all the detail of it. But I think in terms of resources there is a huge amount of waste in the system and it is designed to encourage resource consumption because that's where the profit is. The market is designed to encourage people to use resources. It's taken legislation for this, it wasn't something that happened naturally. It took legislation to force waste reduction, so if waste reduction wasn't built into the system why would we need laws to reduce it? So it's built into the system on purpose to encourage extra resource use. So there's a lot we can do already and very easily.

But then you would need retrain or train architects in a different way, to adapt the profession.

Yes exactly. You do need to retrain. And the thing is CPD architects have to do, a certain number of hours of CPD every year, 40 hours or 28 I can't remember, in order to maintain their professional qualification. So what you would have to do is set this year's qualifications required... you see this is why it always comes back to the RIBA, because they set those requirements. They offer a range of course but they could easily say if they wanted to, they could, there might be an outcry, but they could yes that's what the architects of our era need to do. You know Victorian architects responded to the need for clean water and sanitation and engineers also and they worked hand in hand. That was a major transformation, producing civic architecture, all these things because of the industrial revolution, the wealth, ok built on the backs of slaves, but that's where the money was. And that's also what cities needed was improvement in water and sanitation and hospitals and schools and decent housing and so on. And that's something that we look back on with pride that we were able to respond in such a way. Where's the response at the moment? It's deafening silence. And so it's not just a choice of 20 to be a green architect, all architects should be green architects, and they shouldn't be called 'green architects', they should be called 'architects.' So it's understood that every architect is educated.

Absolutely, yes. And what about self-build?

Yes brilliant, absolutely, in fact 10% of housing in this country is built by self-builders. 10% and you would think it's all the big developers and certainly the land banking is by

the big developers, you know land banking. A lot of that 10% is managed self-build, management not self construction but it doesn't matter. There two types of self-build, one which you actually build yourself, and the other which you manage the project yourself. There's a huge resource, and this is something that is very close to your heart and mine and Magnus' is 'that people are the answer.' All sorts of people, maybe including architects, maybe not. But people are the answer to the problems. And there's a huge desire by people for housing and there's a huge desire by people to make also their housing. Access to land is the issue, everything else I think isn't the issue, but it's the cost of the land. So things need to happen to change the way we allocate land for self-build. In Germany, for example, new housing in villages and on the edge of cities and so on, they will put services in and offer them to self-builders first, and if no one comes forward to do self-build then they will offer it to other people to build houses. In Germany you have a huge tradition of self-build but so have we. It's just a lot of in recent years, a lot of it not all of it by any means, has been 'grand design' style, quite expensive, one-off bespoke housing. But we also have a huge community and cohousing history and we have the cohousing movement which is really taking off, all sorts of developments, LILAC, Lancaster cohousing and so on. And we've got a history of low-impact development as well, with Tinkers Bubble and all sorts of other super low impact, which people call hobbit houses type of thing, and there's everything in between. It should be a human right to build your own house and to make your own shelter but we live in a very developed country, over developed, over industrialised so access to land is very small as well, it's a small country. So we need to do it through laws and make sure that access to land is available to people. There are also useful tools now, things like Community Land Trusts, people working with the forestry commission. At the beginning of the 2000s to look at the opportunity for cohousing projects on forestry land because it could be classified as brown field, so on the edges of villages and towns where forestry commissioning land and that is going forward as well. So there are lots of different kinds of approaches and community Land Trusts can apply to buy land from the state or the council, they can apply to a council for local land that's disused or unused or underused, and apply so that it can be given to a community Land Trust to look after it and then you can use that and lease housing on it. So that everyone will be lease holders and the land stays in community ownership.

That is if you were to build your new build house but because there is a lot of refurbishment at least in London, you could do it yourself and you could do 'green'

refurbishment if you wanted to. Not if you wanted to but you should be encouraged to do that. So then you wouldn't necessarily need an architect for that. You would need a trainer but an architect?

Well this is what Russell Smith with Parity Projects. What he was doing with Parity, you know the whole idea of training for refurbishment and the idea that when people call in a plumber or an electrician that plumber and electrician should be able and trained to also offer to do other things at the same time, like insulate the roof or insulate the walls or fit under floor heating or put in solar panels. So that they would already be having a conversation, you would probably be in a situation where a new kitchen was being fitted for example or the heating system changed or something, so something disruptive already that might go hand in hand with some other alterations that would improve energy efficiency and so on. Parity means equivalent. Yes very interesting and he was a civil engineer and bought himself a house in South London and totally refurbished to 80% reduction so down to 20% of energy use, it's only energy and water but nonetheless it's good, really really good, very useful and very important. This relates to poverty of course and bills, cold poverty as much as heat poverty. He taught himself and he did it all and he did it so that he can monitor it afterwards and he's kept records of it and he is now training, does training on that as well. He works with Skills Councils and the government and so on. He's developed training programs and etc etc. The problem is from a political point of view there's no will for refurbishment program. The closest they got was the Green Deal, 21M. You are joking! This is scratching the surface of the level of investment required but as we talked about earlier that's a job creation situation. The potential to create jobs and invest in job creation, and at the same time refurbish your country's housing stock, that is a massive benefit. You're putting money into the system which generates future benefit for 20, 30, 40 years for the occupiers but also gives people training. And then they started their apprenticeship programs but there's too little money in it to make it viable. You know Cross Rail costs 16 billion pounds, and we are allocating 21 million to what is supposed to be a major refurbishment of the whole country?! And that money was only applicable to big companies, you know they set it up in such a way so that you can only be a supplier if you are registered over a certain size, so Russell decided to set up a company that I don't know where it's got to, it'd be interesting to ask him, but it's kind of interesting this stuff, it's not my favourite thing. But if we are talking about refurbishment which I am really very supportive of and interested in then it's important that he set up a

company that was to be an umbrella for all the small suppliers so they can at least apply for the funding and have it managed and compete with Tesco and Wimpy, cause Tesco also then sets up as a Green Deal supplier because they are of that size they can do it you know. Of course it's Tesco but this is bonkers because it meant that all the people who do all the small scale renovations, the daily plumbers and electricians and builders could never access any of that money anyway however small it was. And there's a calculation that, maybe it's a couple of years old now, but to refurbish all the housing stock of London would 21 billion. That's a lot of money but if you look at Cross Rail 16 billion, how much more is it really than that? I know that Cross Rail is the biggest building project in Europe, it's a huge project but it's of an ilk (type or kind, the same), it's not that much different in scale. Ok it's a bit disruptive, it's been going on for years, it will be finished one day and when it's done, we will all be very glad. It'll improve transport communications East West. If we were to refurbish the whole of London's housing stock for 21 billion, disruption ok, job creation ok, cool/cold? poverty dealt with, brilliant, and people's standard of living, stress levels, the inequality factor, people's quality of life, the stress of the cost of living, future resilience as the fuel prices are going up, think of what you can do. So this stupid, stupid, stupid political thinking and I don't know whether that decision about the Green Deal was just because of vested interests with energy companies, because who wants to reduce their market by 80%? But then why aren't the energy companies being told to go over to renewable or bugger off? What's wrong with our political system that isn't already transferring as fast as possible divesting (rid oneself of a business interest or investment) from fossil fuels and moving into renewables because soon we won't be able to invest in it anymore because the cost of making the machine ?, it will be too late, it will be too late. But if you don't believe in climate change and our political masters do not believe in climate change, the Tory party they do not believe in climate change, Owen Paterson who was until very recently the Environment Minister, didn't believe in climate change, you know and you've got other people who don't believe in climate change... I mean they do know the climate is changing but they don't believe it's human made and it doesn't matter and we'll find a way, it's not a big deal, it doesn't matter! Short-termism, greed and other things are more important... how do I look this morning, what time is my press conference, do I care about the meeting I've got with JP Morgan next week... What are people's priorities? Keeping the city happy and the energy companies are such an enormous lobby so there's the issue with refurbishment. We cannot wait for government support, we're going to have to do it some way unless we change the government or

unless eventually the political world changes or something. Definitely this comes back to self-build and empowerment of people, training in spite of or not because of the government, in spite of or not because or with the support of the RIBA, how shocking, how appalling, but then maybe it was always like that. And we've got other countries around us who are more intelligent, but they're not all that much intelligent, they still have issues and Germany has always hailed as an amazing which it really is, it's done a lot of amazing things. There are other tools, for example in Germany you are taxed on your property as we are here but you are taxed also on the percentage of non-permeable surfaces, so if you have 5% permeability cause you have a bit of green space in the garden but it's every single surface of your property so it counts the whole surface area, your external walls, your roof and the land around your property as your taxable surface area, and if any of it is permeable be it a green wall, a green roof or it's a garden, you'll get a tax rebate.

How fantastic.

So you can imagine the council tax benefit equivalent of putting on a green roof, you're going to reduce your council tax. So that's a useful tool, it doesn't really cost the council very much and it's also reducing the burden on the sewers which is why they know it's worth doing. Ok we've got to give people a reduction every year, it's a tiny amount of money but it's going to reduce our costs because our sewers can't cope. And in the UK that's as true as anywhere else, are out of date sewers, there's the ridiculous Thames tunnel coming 8 billion really, it was supposed to be 5 billion now it's going to be whatever it is and...

What is that 8 billion?

The cost of the super sewer, the Thames super sewer which is supposed to manage the increase in population in London basically, the increase on the sewers now, they are muddling two things. The problem is storm water runoff, it's not the sewers system, it's because we have a combined sewer and storm water management system so those pipes get full when there's a summer storm and overflow into the Thames. They have to let it overflow cause the system can't cope so it's polluting the Thames. Instead of looking at a large scale green infrastructure approach like Portland did, Seattle and other places, they go for a big pipe solution which is going to be extremely expensive and Thames

Water customers will be made to pay for or are already made to pay for even if it hasn't arrived yet and will be charged more once it's in place. And that's a private water company that also receive billions of pounds from the EU to do it. And that's a private water company, there's not a social benefit to it. This is a private company making money out of the issues from climate change and so on without providing public good because it has been shown that it probably won't be able to deal with the increase in summer storms. It's already admitted itself that it can't deal with more than 2mm storm event and there will still be overflow into the Thames at certain times from sewer discharge. So what's the point? Why are we doing this? Why have we agreed that as an approach rather than across London looking at green infrastructure, green roofs, raingardens and so on.

And perhaps imitating what's happening in Portland?

You could imitate any way you like, it would still be better than that tunnel. The examples as you say are already there. They are already there but it does not support this particular approach that says, first of all it's a private company, secondly that's supposed to improve accountability and efficiency but I am not going to go into a debate on private and public companies or ownership of assets. But forgetting that, it's just not the right solution, it's not a sensible solution. It still won't answer the problem. The problem is storm water runoff and a lot of that will be flash summer storms, extreme storm events. The examples are already there, the job creation will be there and also you will all the other multi-faceted benefits of the green infrastructure that you don't get with a pipe. Improved air quality, urban heat island cooling, biodiversity, delight for people from nature, connection with nature, and storm water management and a whole industry to provide it as well and training creation. Training programs to support it and community involvement cause communities can build rain gardens and do all over the world. In fact in Portland they give you a rebate if you turn the piece of land in front of your property into a rain garden to receive storm water from the roads. So you know it's the thinking. Nature first, not pipes, not carbon markets, not even just CO2 reduction. Nature first, let's think of our relationship to natural systems, how do nature systems work at the moment, how can we support them at a time when they are in critical state of collapse, and how we can stop doing the things that we do at the moment, and do things differently and that is a whole system thinking change. Totally different.

Yes but we don't only have to refurbish our cities, we need to think about the parks as well. Cause the parks are not exactly natural, they don't look natural at all.

Exactly cause people talk about parks as green infrastructure but the only aspects of ecosystems services that they provide are things like walking space, connection with a bit of nature and so on. But they are often not designed to receive rain/storm water or to enhance biodiversity. Some councils have got better Biodiversity Action Plans than others, some have got very good parks and gardens management, plants and so on. Obviously Gary's involvement with the Olympic Park designing the wetlands and so on, that was a huge move and also of course Dusty's work on green roofs across London has improved biodiversity but lots of parks are totally, they are not monocultural but they are very minimal in biodiversity. They are dog walking spaces. How do we improve the biodiversity, the nature of these places? There are some very nice projects though, they end up being called nature parks or ecology parks but they are just parks at least they are not just grass parks. And Greenwich peninsula has got a small ecology park, very small, why couldn't have they made the whole peninsula a delight for nature as well? Cause they've got issues there of exposure to West and Northeast winds in the winter and the Southwest and the rain and so on. London is very lucky with lots of parks and also the central squares, there is the issue of plain trees that they don't support biodiversity but they provide other benefits like shade etc. Oak trees provide for over 300 species. It takes an understanding of nature, it takes an understanding of ecology, so there is the connection after that hour of talking, we can see the connection between nature and architecture but it's a different mission from the one that the current UK construction industry is on. But I tell you that it's very close to the mission that most other countries and most other people in the world are on. 80% of the people do not live like us and are extremely close to nature and the processes and the systems that they rely on for life, it's just that we keep bugging them up with terminator seeds and things like that. People are going off to architecture school and coming back with crap training, that tells them you should use cement and corrugated tin and all that kind of crap. When we need to look at local materials and use what people have and what's affordable and what's durable and resilient, and provides really good occupants' benefits. There's another responsibility there also for all those students who come from all over the world to the UK to learn about architecture thinking that because of the great reputation that our architecture schools have made for themselves,

i.e. have created for themselves, big business, but they generated that, we are great, aren't we great. It's like coming to a pile of poisonous food and then getting back to your ant colony and infecting all the others with the same problems. So we have a responsibility to the other people as well as to British students as well. And in order to be able to do that we need to be able to learn from other people. It's back to this thing of communication and understanding and listening so if you really want to know how to solve problems, first of all do we want to solve problems but if we decide we do, as we talked about, there are lots of examples around the world. Are we interested in learning about those approaches and applying them ourselves, rather than thinking that we have all the answers, or if we don't have the answers yet, we will create the answers.

And the thing is it goes against again architectural education, if we are talking about architects, because we are taught to a very basic thing in the beginning of a project, a precedent study, so without a precedent study we can't do a project.

I think that's right but I think it's usually very superficial, the precedent study. Most of it is quite quick compared with the length of time you will then spend designing your own building. I am sure it varies from school to school, and I am sure the weight that's laid upon it varies from school to school. Very often precedents are superficial aesthetic and don't look at systems thinking in those buildings, they don't look at sourcing of the materials, they may not look at performance of those buildings, I am sure almost 90% of them will look at how to respond to local biodiversity needs or what people thought of them afterwards once they were built. So precedent studies are of limited value if they are done superficially. But you are right that is the way we should look at things, we should learn from other people. But that's why we also need to understand how to build cause all of what we've been talking about is an abstract thing but at some point that building is going to be built or refurbishment is going to be done by somebody else. So communication is essential but also understanding of the builder, how s/he is going to build that building and valuing their knowledge. How can you do that if you haven't actually built anything yourself? And understand how hard it is to do it well. And an appreciation of people, there are cultural approaches which go against the grain of our recent consumerist past. The last 50 years it has not been about appreciating other people, it's been about individualism and consumerism, and celebrity and cooking. If an alien wanted to learn what our cultural priorities were and turned on the TV that's what they would see. Mind you you wouldn't go to the TV if you wanted to know how to

change the world. The thing about change is you have to be different, and the thing about making changes means you need confidence to not worry about being different. And you cannot be the same, you know it's that famous Frank Zappa quote you know 1:16:04. I know there's an Einstein quote that says 'the mind that created the problem can't solve it' but Frank Zappa said something much better, I can't remember the quote but it was basically 'nobody who ever made a change was part of the mainstream' basically if you're not considered crazy, you're never going to make any change and you can't look to be accepted. You have to be out at the front leading change, that's the nature of change. But there are lots of people who will very quickly come with you, or you follow somebody else. You know you don't always have to start something new, join in, join in and be collaborative and supportive of other people's processes 'cause the ego is a very strong thing but useful but individualism is not useful. Doing something, setting up a new thing because you want to be important ... and the other thing well I should get it out my chest while I am on it is that we should teach other people their business and you know this is something I feel really super strongly about and I think it relates to all parts of life at the moment, look at what's happening all around the world but the idea of going to learn from other communities is very valuable. But I think there's a lot of architectural disaster tourism which is 'oh we must go out to the slums of Delhi or the slums of Mumbai and we will be able to solve other people's problems with our great design skills' ...ok... as students ... untrained ... raw like an uncooked cake... and you know they are not allowed to practise in this country, and ok maybe some great ideas will come out of it and I am sure it's a lot of fun but what legacy do you leave behind? And do you keep up with that project for the next five or ten years? And whose job have you taken by doing that, and how much did it cost you to go? And if it costs you 2,000 pounds which you had to raise yourself, how could that money have been spent? Would it have been better? Who knows? I am not saying it's all wrong but there's a lot of disaster tourism. And it can be extremely damaging and I think poverty, apparent poverty anyway, certainly financial poverty can make communities look to others to help them, not always, certainly not always but you know then you get in this cultural dependency discussion but when the response is poor to that, looking to someone else for support, and it takes over and provides something which isn't helpful and then it ends up being replicated as well. Even just the idea that 'we can't help ourselves we need you to tell us what to do' is colonialism. Unfortunately it's just a modern form of colonialism. We're too stupid to work it out for ourselves. No there's loads of skills in every community, there are designers there are

builders, there are makers in every community so that's going to be so interesting when you go to Ghana because you are going to see a lot of that. It'll be really interesting what you're learning and what exchange there will be. I am looking forward to hearing about it, 'cause I know you are going with a very interesting approach and it will be interesting to see what happens. But a lot of projects are not intelligently designed or should even exist and it's easy to have a very negative impact on people and to spend money badly and create problems, long, long, long-lasting problems.

Should people or nature be the priority? If you had to choose between the two in designing...

You don't choose, if you're talking about someone from another country or another culture or whatever, you don't choose. People locally choose. It's not a matter of me choosing whether the community or nature is more important, that community decides what its priorities are. Ok?

Ok. I am asking because sometimes communities and especially when we are talking about very poor communities, for example in India, who are homeless and you go in and you give some money and you build houses, sometimes they don't care whether you use mud or bamboo or concrete as long as they have a house...

Definitely and it's always a responsibility. And of course people that aren't always aware of, you know it's not to say that just because you come from a rural community or a community in the so-called developing world that you'll know everything about lime and construction with earth or whatever. And obviously we see this all the time you know there are things that the Heritage Foundation of Pakistan is doing and so on, the HANDS project in Pakistan, that's educating people how to build better with bamboo, make better structures and use lime which they hadn't used in that part of Pakistan but was available, so yes of course there's always training. It doesn't mean that everybody knows everything and just need some money. Most people say 'forget about the money, just train us'. So the thing is with the training and education you have a responsibility to have good knowledge of what the options are but you always, everybody needs to think about nature and the natural systems and how to maintain them or even enhance them. And hopefully to enhance them to be abundant and productive. And not just productive for us, I don't mean just food production or fibre

and fuel production for us. It has to be productive for local nature and natural habitat cause otherwise you might view a bit of desert and think oh it's just a bit of desert and we could grow something there if we knew to make it more abundant and productive for us. But deserts are also ecosystems. You get these competing priorities, human priorities but yes training is always what people are asking for. If that training would already exist, if that that knowledge would already exist, they would be sorting out their own situation. The fact that it's possible to sort out, but obviously sometimes that requires changes and supply chains. You know if you are growing bamboo for longer periods you know there's the knowledge that there will be a market eventually to sell it in the local market, there might be a need for that. Because if you are selling it as soon as you can to get the money for thinner bamboo because you need the money then what would encourage you to invest more time? And things like micro-finance programs and so on can be very useful for that as well. But I think a lot of people are very ignorant about the culture of the community that they are going to visit, and very ignorant about themselves actually and don't have a huge self-awareness, don't have an awareness that they might be about to do something much worse than not doing anything at all, and motivated by a desire to tell your friends about your interesting holiday. And that's not good enough. That's poor, that's selfish but you know then there's another stage and another stage and another stage. This book that I always quote *The Road to Hell* about disaster relief, this guy was involved in disaster relief for many years and *The Road to Hell* is paved with good intentions goes the quote so you can mean all the best things in the world and still create terrible, terrible situations for people. So good intentions aren't enough you need knowledge and you need experience and you also need humility and communication skills and so on. In fact communication is probably the most important skill to have. First thing is first. and how many many know the language of the place they are going to? So we are already requiring a whole community to speak either through an interpreter or in English or whatever your native language is. And I know English isn't your first language either, but that doesn't matter.

You are very right, you are very right yes.

But it's interesting, it's not just about building a building, you know all of this Maria as much as anybody does but it's very commonly not the case, even a question of how much time is given, not just whether these questions are being considered but how much time have they been given for this consideration, how much reflection has there been on

the impacts that it's going to bring and the issues that are going to be faced and whether they should be there in the first place, and/or whether they should just send some money over. What is it? Training? Does it need a building? Actually buildings are very often the last thing that places need. Is that the priority or is that just something picked because people are interested in architecture and design? Did they actually need a sanitation system, rain water collection or what? Or different agricultural approaches or a permaculture training course or whatever it is? What do they actually need most? Perhaps it's access to medical services but you know something is better than nothing so you've received as a community because 'yeah sure, well we weren't going to get it, at least it's something.' But it's not a relationship with a community so I think there's a false, it's based on a false thing very often, I am not saying all the time but very often it can be a false thing that you are all having a relationship with that community but you're not, you've picked something cause you want to do architecture. I am sorry I keep saying 'you' I totally don't mean you. But because organisations are charged with, I mean God schools have to find somewhere for their students to go to twice a year, you know, so they are all looking for victim communities, and God knows they want to go somewhere hot and sunny. Ok I am being unfair maybe but...

It happens a lot, what you're saying happens a lot. There are so many people graduating from architecture schools nowadays here and everywhere in Europe at least, everywhere so may. What do you do? And then you are untrained to what the global South, for example, needs, but you still go in happily, very happily. Because you think you are going to help and you are going to get some experience so you put it down in your CV and you come back to look for a job.

Yeah it's all for you, it's all for you... you'll get a job out of it and that community pulls down that badly built school shack cause they keep propping it up for the next ten years and it still overheats in the heat and still doesn't collect rain water or doesn't do other things, whatever, whatever. What about turning that on its head? What about every year you pay for a group of students to come from the global South to your school and you taught them things that you knew about? It's cause you know that they know more than you and you are going to learn more there. Whether it's hot and sunny or not, that may be another thing, that's an adventure for you because you're rich and can afford it. But if you were to turn it around and say well if I am supposedly benefitting that community, ok bring two of their architects and two of their masons and two of

their builders over and work with them. See if there are students there you want to support. Maybe there's a program or a way to get them on an architecture training program they've always wanted to do or something. What kind of support, who sets the brief, who sets that agenda?

Yes you are right actually. Maybe I shouldn't go to Ghana, maybe well I was thinking about it, maybe we should get someone or a couple of people from the local university in Kumasi which is the nearest city to where we are going to be building, over to the UCA, and perhaps I can work with him or her on campus.

Yes well I think this is something to think about, it doesn't mean you are not going to go, you are going to go to Ghana and it'll be really interesting, and you'll go with your eyes open and see, and you'll be able to reflect on it afterwards and tell people what you think.

Yeah yeah. But I already feel very inferior because my intention was to go to Pakistan, no seriously, and now Ghana ... I have never been to Africa so I can't pretend I know something about it, and it's quite ridiculous if you know what I mean. So I go there knowing nothing...

Well there's a question, what is your PhD about? I don't mean what it is about, but what is it about?

Exactly. I was thinking we could perhaps bring somebody from there over here you know.

Well it's interesting you know with the project in Bangladesh, Risal (Ahmed), he was so helpful on site, he's got a place on a Masters course at UCL starting this October.

Wow, I didn't know this. So he is coming to England?

So he's coming to England.

Ohhh that's fantastic.

I know it's fantastic, really fantastic. I was a referee for him and so on, that's all. It's fantastic but often after we met people in Bangladesh quite a number of engineers were saying 'oh well can you help me get on a masters course?' because that's what they needed or saw it as their need. I am not saying it is needed I am just saying that what you perceive to be a community's needs and what they really have as needs may be very different. But I think Ghana will be really interesting, of course it will, but I think you, your approach, the way that you are going to be looking at it will be through this lens of questioning so I think you are no fool Maria, you are really spot on and you have a conscience and you have an interest in the whole process.

Yes I have a very big interest in the whole process but let's not pretend that I am going to training anyone.

Well you might not pretend that but there may be people who are going with that and that will be really, really interesting to look for. But your PhD is about approaches to resilience and adaptation.

Yes exactly, approaches to resilience through materials, so looking at how local materials can build resilience within the community not only physical resilience but also empower communities in other ways. So that's what I am looking at.

In the global South?

Yes the global South because I wrote my proposal just after the Bangladesh project and after getting to collaborate with the Heritage Foundation, but I will be looking at projects here as well. There is a project of Rod Hackney in Macclesfield from the 60s and 70s, he was the first community architect in England so I will be looking at projects here as well. He was working in Macclesfield on the so called Black Road project and those Victorian terraces were considered as the slums. So he started working with the community there to upgrade them and avoid having them be demolished by the local council. So I am looking at projects like this as well so I am not sure whether I should actually have the global South bit in the title. But then I will be questioned, at least I think I will,

Where is your focus? For sure, for sure.

So I was thinking my focus is the materials instead of a geographical area perhaps. Anyway I will have to think about it.

Yes ok, and also materials meaning what? In terms of the green infrastructure, that includes things to do with everything that's there to design to support, green roofs, living walls, rain gardens and so on. I mean are you talking about physical materials? Yes presumably that's what you're talking about, the structure and so on and what you make the buildings out of, that kind of thing, ok.

Or even if a building is necessary at all. Sometimes it's not necessary, sometimes shelters are not necessary. You know sometimes you go to Africa and start building shelters for people who may not need them as some may be nomadic.

I know or doing crazy things like putting flash toilets, indoor kitchens, you know crazy design, crazy materials, crazy disaster tourists...

But one of the things that Magnus brought up obviously very clearly, maybe you heard as well when he was saying it, that ecology is not in the agenda of any NGOs, actually in no one's agenda. No one ever has it as a priority in the field, money is the priority.

I think World Vision did some, it is actually in terms of environmental impact assessments and World Vision did a thing in 2006 or 2007 or 2008 that was looking at the problems that environmental impacts didn't really look at, ecosystems. Environmental impacts are supposed to look at the nature of the existing environment, water courses, and to some extent biodiversity and so on. But as Magnus says there's no department that is specifically for that. But what that means is that it should be everybody's, what's happened is that it's nobody's. As he was saying you can't even get renewable onto everybody's agenda let alone stuff to do with local native habitat. Because people don't understand that is a long-term process that will affect water courses and so on. And the potential for real beneficial intervention, cause it is going to be an intervention if you don't just leave people alone to their own problems you are intervening so you need to do an assessment to look at, with local ecologists, with local people who understand native systems and habitats there, then look at what can be done to make all of it beneficial for everyone and for nature as well.

And you have to think about everything at the same time, you can't switch off a layer.

Well exactly. And that's what we do in the West, and very few communities in the global South do. Very few, they all think about everything at the same time. Disaster does the individualism stuff, 'I am just an architect, I am definitely not an engineer', 'I am an ecologist I am definitely not an artist'. People there are looking and facing these issues, education, health, water, food, shelter, everything at the same time. And they are used to thinking holistically, they have to think holistically. It's a luxury, it's a stupidity, you're going to make bad decisions if you don't think holistically. You have to think about everything at the same time. You might have a focus though. This might be the thing with the PhD, it may be very holistic but you might need a bit of focus at some point. But you are starting holistically and that's amazing. How do you make sure you cover a lot of different things before you can find the thing that you're going to look at? I think that's very common for PhDs unless you find something initially that. The professional doctorate stuff comes from people who are already in a field that they want to have the time to research in more detail. You've got a question presumably for your PhD rather than just a general area, it's probably something like 'how can the use of materials improve resilience?' or something like that?

Yes something like that.

It's fascinating, I hope I haven't talked too long.

Oh no, that was fantastic. Thank you very much, yes fantastic.

There might be other stuff but I think if you end up looking at UK materials and long-term resilience I would take it from the point of view of resilience, meaning taking the fossil fuels out of processes what does that leave us with? Not taking energy out of processes, it doesn't mean that everything has to be hand-chopped timber. But if we were to divest, looking at a scenario thirty years from now where we have divested completely from fossil fuels, what does our construction industry look like and what materials are we using? And how does that close the circle so that it's a long-term sustainable construction industry? So then you would be looking at things like straw bale construction, sure timber and you might still be importing stuff and you might still be using some cement but you know but they might be there for looking at renewable energy powered kilns and so on.

So thank you very much.

You are welcome. Good luck to you as well. Looking forward to hearing about Ghana.

Oh thank you for the fantastic interview.

A.5 Interview in Kingsland Road London, 11th September 2014.

What are you working on now?

I run a project called 'the women into construction project' which started on the Olympic Park and it was seen as part of the Legacy for London and the idea was that by encouraging supporting women to work in construction, such a large and public construction site, that there will be a trickle-down effect and that it would change the way construction operates generally, so I don't know if you know but in the construction industry in this country in the office areas there is about 10% women and actually working on site 1-2% women. It's very low.

Yes it's very low.

So we have more than doubled the numbers on the Olympics and we have managed to continue to get funding to work across London, but now I have just won a lottery bid actually to expand the project to Birmingham and Wales and hopefully nationally...

Oh how fantastic. What projects are you involved with?

So we work with large construction projects all over London at the moment so have been involved obviously with the Olympics and the post-Olympics developments and so with the conversion of the athletes' village to residential properties, yeah the Shard, large housing projects, large hotel buildings in central London and the idea is that the local authorities set the targets for contractors about employing local people, training and gender balance, that kind of thing. I can then go and say 'we can help you with your targets we can help you with all of those targets'. So that's what I am working on at the moment.

So do you train women on site?

Yes. We run short training courses but really we focus on women who are already training so they might have trained to be an engineer or construction management or

architecture and are having trouble getting into work and we give them a little bit of extra training so that makes them more current in the construction industry and then we have built up relationships with construction companies and we will then try to help them into work. So it's a great project.

Well I am an architect and I was working in a practice for a few years. How do you find architects coming in to work in construction?

Well the architects are very much involved in the design side so you know we look at getting architects into architectural practices but also some architects want to have a wider experience and get some construction management experience in particular. You know the whole thing of delivery, the delivery of the project and checking against the architects' drawings and specifications so ...

Oh fantastic. If I had known about the program I would have joined.

Yes.

Because at the school of architecture we don't learn how to build you know. We focus on design as you know but building is a different story but then you are supposed to go on site and supervise the builders.

Exactly. And how do you do that? How do you manage? I am a carpenter by trade and that's how I got into it really and I was teaching carpentry and this job came up and I thought oh yes it's about time. So I got some money supporting women get into the industry cause I have been working in it for a long time and not really seeing any changes. So it's a very satisfying job. It's lovely.

Of course I can imagine it is.

And I see women coming to me well we had an engineer who had been working as a waitress for five years not being able to get into the industry. We got her in and she is flying now and the company love her.

Is she a builder now?

Yes that's right.

That's fantastic.

Yes it is. So we focus very much on the actual build and much less on the design so we have helped a few architects get design jobs but generally it's been the construction industry.

And so the projects you are working on, are they in terms of materials... because you mentioned in the email that you are involved in some ecological projects as well but then the majority of the projects?

The majority is standard construction however I believe that legislation is really helpful so the government legislating let's just say ok all new built from now on has to be proper sustainable homes 'x' or whatever you know so it's a level playing field and all the companies need to comply and I think that's better than saying oh you know say this is something we would like to achieve because the companies feel that that's not a level playing field because that then it is going to cost more. I work with lots of different construction companies and some are better on the sustainability agenda than others. At the moment we have a project hosted by Land Lease and they pride themselves on the sustainability agenda. However having said that when you are in the nitty-gritty of the bills you know I have seen some waste of practices, also they want to build to look good so I have seen something goes in and it's perfectly fine but it's not quite as you have specified and it's all ripped out again and it's replaced with something that's practically the same you know that kind of thing. I think this displays an attitude of it doesn't actually matter about waste, it doesn't really matter how much it costs we have to fulfil this ideal.

And the ecological projects that you have mentioned?

Right, now one of the reasons that Blanche put you on to me is because of the Swaziland project that I did last year. So I report back to our funders every quarter, I was reporting back one time and they said 'oh we have been approached by a charity

and local women HIV positive women in Swaziland have asked for carpentry skills, they want to be able to build things that they can sell and particularly coffins ...

Coffins? That's very interesting. I read that in your report, that's very interesting.

Yes because people are dying all the time they have a very practical view of it all, I mean you can't but in a way so they asked me to then bring a group of young female carpenters as a carpenter myself out to Swaziland and set up a project to teach the women how to make things that they can sell and that's I suppose the resilience side of it all ...so these are communities. When I went over there you could see a community that if it wasn't for HIV would work very very well. You know rural communities, people grow their own food, really quite self-sufficient, they build their own houses, beautiful gorgeous round houses made of mud and with earth, mud floor and spotlessly clean inside and cool which is what you want in Swaziland, you know really really nice design. But what had happened was that a whole generation had been lost through HIV so there were children and there were the old people and in the middle there was hardly anyone, there were certainly no men. So the men had either died of HIV or had gone to South Africa for work. So you are left with women trying to look after the old people, and look after the children and things being really quite desperate ... you know communities are starving and you know very difficult situation. So these women have formed themselves into a support group, the other thing was that even though 26% of the population in Swaziland is HIV positive, which is the highest in the world, there was real stigma about having HIV. I mean there were some communities where there was 70% but even still if people know you are HIV positive they don't really want you in their community so it makes things very difficult.

But do they have to know?

Well so these women said this is ridiculous we are all HIV positive actually, lets form a support group and it was this support group that asked for the carpentry skills because they could see that this was... well for a start coffins are really expensive, the community can't afford them and people can't afford them and people can't bury their dead respectfully and they find that very unsettling and they saw that potentially as a way of supporting both their community and their own families. So we went out there and also women in Swaziland are treated very much as minors, they have the same

rights as children really, they don't have rights to property. It's all done through the husband, it's a very difficult situation so anything they do has to have approval from the men in the community which is difficult as well. What that meant was that what we were doing there was also encouraging the women to take a big step for standing up for themselves and saying actually we can do this and it will be helpful for everyone and everyone will benefit. So it was really important for our project to have approval from the men within the community but also for the women to feel ok about doing it themselves. There are very different ways of doing things than we have here, you know here we'd say oh yeah why not there is a certain project and off we go, we don't care what the men think they will get used to it, they will be alright in the end. But over there it was really important to have that approval first so we got it actually, we met the Chief of the village who was very good with thinking and said this is going to be really good for our community, he could recognise that ... it's a very patriarchal society you have got the Chief and the elders and they make all the decisions and they live in their own kind of crow which is a set of huts and they meet and discuss various issues. So he was very supportive which then allows the women to move ahead with it. So it's not actual building but it's using local materials to create a sustainable community but they actually did want to build, they wanted to learn more carpentry they wanted to be able to, we didn't have the time for this but in the next project which will be probably next year ... first of all they wanted to be able to make benches, simple benches for the schools because the kids were just sitting on the floor.

What you are bringing up is very important.

Yes. That's right. So benches for the kids and also churches were asking for these benches as well so actually they could sell as many benches they can make which is really great and then they wanted to be able to make the coffins. But as we were leaving they were saying 'oh we also want to make tables' and I tried to put in a table as well but we just couldn't quite manage it. So they wanted to make furniture, they wanted to build ... because they have these round houses they wanted to be able to separate them they wanted to build curtain rails to separate them internally and then they were talking about wardrobes and you know how you make furniture that fits in a roundhouse, that kind of thing ...

So did you use mainly timber?

Yes we did.

Is that local?

Yes. So Swaziland has its own forests and grows timber and exports to mainly South Africa but they use it as well in their own construction.

And then do you have to buy it to make whatever you have to make?

Yes they do. So the process with timber is that you can't use straight off the tree. I am sure you are aware of that. You have to season it and dry it, it needs everything.

And is it expensive for them?

Well the problems that we found were, you know here you are used to going to a timber merchant and the timber is already seasoned and it's cut to size and you just order what you want. And I went along with a list of timber that I need for making different projects. All that goes out of the window there because they don't have that process. So the timber is already sawn and it's seasoned but there is no transport so you have to arrange your own transport. You see the other thing is here you can have your timber delivered.

And it's already seasoned here...

Yes so it's cut and it's seasoned, you don't have to go and collect it, you don't have to plane it and make it usable...yes and actually the quality wasn't very good. It was fast-grown timber and I was talking to someone in the timber merchant and he was saying oh you know it used to take 14 years to grow softwood, to grow pine, but now we use all kinds of chemicals and we can do it in 7. But the quality was really quite poor. So that was really our biggest stumbling block because we had to buy this timber, it's twisted, it's split so we then had to saw it into smaller pieces and laminate it, we had to glue it together to make it strong and that's quite a big process. Because the timber wasn't very good quality we had to put another process in before they could actually build whatever they were building.

And that took you some time right?

Yes it takes time and it adds to the expense of it.

And who paid for all this when you went there?

So when we were there the charity paid. So the idea was that we would set these women up to be able to run their own companies. So there were two groups of women from two different ends of Swaziland and they set up two cooperatives to work together so we brought over tools and paid for the materials as well as for the actual project. Then the idea was to give them a microloan enough for them to be able to buy the timber and you know to continue.

Of course cause they had to continue.

Yes and I was actually talking to someone yesterday from the project. We were talking about our learning from it and they felt that the carpentry was great but what the women needed were more business skills in kind of how to sell the product. Actually I thought they were really good at going round to the local school or the local church and saying *oh you know what do you think of this bench? We can make more of them, this is how much they cost and ...* so they got plenty of orders. But it's all that book keeping, working out exactly how much everything costs, how much does the timber cost, how much does it cost to repair it and deliver it and you know all the different things that you have to think of.

And where you get the timber from, I guess it's a plantation, is it close to the village where these women were living?

It wasn't that close so you did need transport. You needed a track really to be able to pick it up and where they lived you know when there's the monsoon you can't even drive there, it's all water logged and it's quite hard to actually get to where they live so that was a bit of an issue.

Yes and I guess after you left, was there a plan for them to continue?

Yes. The idea was that we would arrange for the timber to go to a workshop we built up a good relationship with a training centre who have the machines to plane the timber and laminate it and that kind of thing and they said they would do that for the women. It would be a smaller vehicle that could then take the prepared timber to the women.

And the equipment that you said you brought over for them to use, did you leave it back there?

Yes we did. and they had no electricity so it was all hand tools but we had worked out the design that would make that easy so for instance the benches could be built in a day with the hand tools so this is where design comes in because design is key. I had asked various people to help me with design cause I am not very good at it beforehand and people came back with very nice designs but a bit labour intensive and that didn't really work with the timber that we had and the tools we had, so we had to hone it down and actually the most important thing was to be able to make something that was sturdy that could be made easily with hand tools.

And the people who helped you with the design were from here or local?

I had some people from here but at that point we didn't know what kind of timber was available and then local people helped as well helped so yeah a mixture.

That's great. So you said you prepared, you did a lot of preparation here but then you went over and kind of found out that a lot of that was useless.

Yes a lot of that was useless. I had a folder of drawings and instructions on how to do things and basically we had to start all over again.

And how long did you spend finding out where the things were locally, what you needed in terms of materials, etc.?

Well the charity had already done a lot of investigation and had set up the training centre well basically we did the training in a little community centre 20:57 and the

charity had organised that and organised the women so then when we arrived we had to very quickly sort out the timber which took a few days before we could actually start.

I imagine there may be some similarities between our group for Ghana and what you are describing. I mean we are not trained as builders, we are not builders, we are not carpenters, but we are a group of some architects, technologists who may understand materials better than architects, but the point I am trying to make is that we initially tried to sit down and think about what we would need in our design in terms of materials, after many days of discussions we thought that maybe it's better to leave it until we get there cause and see what is available cause there is no point, you can't push anything anyway cause if something is not available it's not available. So it's better to just leave it and just think we are going to use mud for most of the building but then we will look in the nearest towns and find out what is available for us.

Yes have you got people on the ground in Ghana?

Yes we've got many people.

Ok so they will know where the builders merchants are.

Yes because they are builders, masons, teachers, also the head teacher of the village who actually speaks English, the rest of them only speak a few words in English. So we communicate with the rest through the head teacher. When we get there I am sure we will pick up some of the local language. I guess when it comes to language it's a bit difficult...how did you find it in Swaziland? Well they had arranged a translator for us but also we tried to learn some words and it was quite funny because we would say 'hello' in the local language and they would look at you and burst out laughing. But in a way I think it's nice to try for the people to feel that their culture is being recognised and that you are not just expecting them to speak English.

Of course. And where did you stay?

We stayed in a hostel. We were going to stay in a village but we went with a film crew, a student film crew, I had been speaking to a friend actually who teaches film-making at Portsmouth University and she said you know it's not just carpentry that women

struggle to get into, in the film-making world the guys do all the actual physical film-making and the girls tend to stand back and do the editing and stuff. So she said do you mind if I come along and we will make a film of it and bring some of our students? So they fundraised completely separately, it was like a separate project so now they still haven't finished the film and we are a year later. That's the thing about students you know but I think it will be finished quite soon. But because of that we needed electricity and there's no electricity out in the village so we stayed in a hostel in the nearest town that had electricity so that they could charge their cameras.

But I guess you were with the local community, the group of women...

Yes all day so we would leave the hostel at 7am and would come back at about 7pm. So we were all day in the community.

And did you eat with them?

Well some people did but we were advised not to.

By whom?

By the woman from the charity and she said just because of getting ill really, that was it. Yeah but some of our young women, I mean I have a really delicate stomach and I know that I can get ill really easily and I didn't get ill. So I suppose it's just a decision that you make really.

So I am just asking a practical question, how did you eat? Did you cook yourself?

Yes that's right just bought food. So there was a shop in the town and we would make sandwiches or something and then in the evenings we all just cooked, we rotated it with our group and took it in turns to cook.

Because the charity that I will be joining I believe they are trying to help the local community as much as possible financially as well so they thought why not instead of giving money to doing shopping, why not give it to some local women who could make

food for us. But I am like you I have quite a delicate stomach but lets see I will try and take it from there...

I think if it's very well cooked that's the main thing really, just make sure that it's all very well cooked and to avoid salads and this..

Ok that's very interesting.

Yes because you know I would have preferred to have eaten with them really but the woman from the charity was funny, she just said oh just tell them that Westerners are fussy, just fussy.

So is it a local charity?

Well it's a charity that works in Swaziland but it's based in Wales actually. It's called Positive Women, it works with HIV positive women in Swaziland.

Specifically in Swaziland?

Yes so they have done quite a lot of work. It was the first time they had done a carpentry project like that but they work generally with orphan children cause there are a lot of children whose parents have died and ...child-headed households you know where you have got children struggling to bring up their younger siblings. So they fundraised for school fees you know for those children not to be marginalised by society. So that's what they do mostly but then they were asked to do this project as well.

Oh that's fantastic. And do you keep in touch with any of the women?

Oh yes I do keep in touch with some of the women, it's great actually, everybody has got a mobile phone although there's no electricity, how they charge them I don't know. They just have those little Nokia type so I call them up from time to time, I can skype them from here.

Do they have internet there?

No, no internet so I just call them and speak to them and see how they are getting on. I went back in February, so we did the project last August and I went back in February to see how they were getting on and do a bit of a refresher and help them with their businesses.

And they were doing ok with their businesses?

Yes that's right. They have got two workshops, one of them was an old garage belonging to a friend that has had chickens in it. It was quite funny cause the chickens were like why have we been evicted? They kept running in you know and running out again.

It was their home.

It was their home yes that's it. But also when I went back, I mean when we went the first time there were 10 of us you know we were a big group so it was probably a bit intimidating, lots of young people some of who were acting out a bit you know, and when I went back it was just me. So it's very much seeing things on their terms and I felt that I could really see how it would work. I was working with them in the daytime, one of them had a baby strapped on her back, you know they would stop, the kids would come back at lunchtime and they would stop and feed the kids and then the kids would go back to school and then they would go back to work. I could see it fitting into their lives...and that's part of the resilience.

But before you went over to train them did they work?

Well no, they tried to grow food...now I was just concentrating on the carpentry but the film crew interviewed them all about their lives and how things were for them and things were pretty tough. One of them was talking about...they live in very big extended families but there is one who looks after 30 children basically, and also it's polygamous society you know her husband has several wives some of whom are not around anymore and she looks after all the children. So she was talking about how she worries about the fact that she can't send them to school because she can't afford it and they end up you know there's nothing for them to do in their communities and when

you ask what will they spend their money on, it's food, it's seed cause they all have a little small holding and they are trying to grow their own food. It's food, seed and school fees. Cause they all want something better for their children.

Is it an agricultural community?

Yes it is. And you know speaking to one of them who said her husband went to work in South Africa but then he became ill, got HIV and had to come back and they had no food so they were boiling leaves from the trees to try to make it seem as if they were giving the children something and just how difficult that was. And how close to the edge everything is.

But then the skills that you taught them must have been very helpful.

Yes that's it. So even selling one bench in a month immediately gives them a lot more choices in their lives, so not to have that worry of where we are going to find the food...

What about them transferring the skills to others?

Yes that would be the next stage so when we go back the plan is for us to teach the women that we worked with and also some new women, but the women themselves had already talked about showing others, not just women but some of their children you know passing on those skills and now they have got the tools as well, we left the tools with them. And show them how to look after them, how to sharpen them and that kind of thing.

Oh that's great. So there is a plan to go back.

Yes that's right, and develop the project. And then the next stage will be hopefully in a few years time will be to bring some of the women from Swaziland to Malawi to teach the Malawian women to build up a similar project.

Is Malawi near Swaziland?

Malawi is another very poor African country, it's not directly next to it but in African terms it's not very far away.

I guess it's very useful that the children learn the skills as well. Do you think that you can perhaps exchange the skills with the fees? And then they can say ok I will make something for the school and have my fees paid off. You can do a lot of things to survive.

Yes yes exactly. That's right yes. It doesn't have to be a financial exchange.

Exactly. It's very interesting. It's fantastic.

Yes so it's a great project but I feel the thing with the timber was the biggest difficulty really. The whole thing of getting the timber to the communities and having it prepared when the roads are full of potholes, they are just earth roads and you can't always pass so I thought that was the most tricky thing really, the whole thing with the materials.

But you have established a connection you said.

Yes that's right.

Were there any other challenges besides the transfer of the timber etc?

I think that's the main challenge.

And did you ask them for example...I mean I have been speaking to Magnus, Blanche's friend, who works with very very poor communities in Pakistan who are homeless because of the floods but even before the floods they were very poor so he was telling me that they didn't ask for money. They would ask for...sometimes you know the government would give some money out to people in order to rebuild their lives. But Magnus was telling me that this is not the case because they don't want the money they want training instead. Cause even if they receive some money they don't know how to build. So how important do you think training is?

Well I think it's really important, both training and awareness of what you are building so we were just building things for the women to sell so that the community could be

more resilient but actually an understanding of...well I suppose an appreciation of actually the methods of building that have thrown up over centuries that are very effective and you know people tend to think oh new is best and we saw a lots of communities where you would have these little round huts, mud huts with a thatched roof that were just really great in lots of ways but then people would want to build with breeze blocks because they see it as the Western way and it's going to be better and they are so ugly and they don't last and they don't keep the huts cool in the same way. But it's this feeling I suppose, maybe it's...part of the training is that people need to be made aware of how good their existing methods are and maybe how that can be built on cause by the side of the road, cause everything is sold by the side of the road, the stall selling these Greek columns, just the columns, so people would buy these to have at their hut and then kind of build out, you know they saw that as the height of ...you know.

That's very interesting. I wonder where they saw this from. Where did they get this image that this is how it should be? This is very interesting.

So I suppose people want to better themselves, that's just the way it is and they think having a nice house, well they have a couple of these columns then that's great. So rather than understanding just how good their methods of building are.

And I suppose that gender is focal in your work.

Yes that's right.

You are training women here in the UK and you are training women in Swaziland as well. So gender is important in your work then.

Yes it is. I mean I suppose I came to that by accident in a way just because of coming into construction and I was quite shocked to find how male dominated particularly on building sites.

How did you come into construction?

Well I was working in catering and I went off and did some travelling and I came back and I worked my way up through working in a restaurant you know starting off...I was never very good at waiting at tables actually but in the back kitchen and you know I built myself up, I was able to cook, to bake and everything and I came back and tried to get a job somewhere else and immediately the money was right back. I had worked myself up before I was only 16-17 and at that point you could leave school at 15, so I thought I needed to get some training and thought well I have done catering I will do something different so I found carpentry and I thought oh yeah that looks fun and I thought it was all furniture making you know tables and chairs. So I applied for the course and actually the guy who interviewed me said oh are you sure you want to do this, you are a girl and you are very small. And I thought if you are going to say that then I am just going to say yes. I went on the course and found out that actually it had nothing to do with furniture, it was doors and windows and roofs and structure and I just loved it, preferred it much much more, I just found it much more satisfying. And then when I went out and worked it was quite hard to get a job, I was ringing up agencies and they were saying oh are you ringing for your boyfriend? I was like no I am ringing for myself and I remember them saying oh no we don't take women or we don't take girls so it was all quite blatant at that time. But then I met a woman, I actually did an Italian course and, well I started working for myself and then I met a woman whose husband ran a building firm and she said oh he will take you on and he did.

Oh fantastic.

Yeah so I started from there. And I do think it's a great industry and actually when we were in Swaziland there was the managing director of a college you know teaching those skills turned around and said to me 'what are you doing trying to teach these rural Swazi women, they are too old and too stupid, they'll never be able to do it, and you shouldn't be teaching women' this is what he was saying. So then I spoke to one of the instructors in the college and I built up a good relationship with him he helped me source the word and everything and I said 'your director says he doesn't think these women can really do it, he doesn't think we should be training them' and he said 'why is that? African women are strong' and I thought they are actually, he saw them really get stuck in and it was brilliant. Yes I thought it was really nice to see. So I suppose I find construction really interesting I always have and you probably do too as an architect.

It is very exciting, it's a shame that when you study architecture you don't really go on site, a real site. I think it should be part of the curriculum that they should take you to site and have a look around and perhaps and have a workshop also, a real workshop. I think it should be part of the curriculum but it's not. Architecture is a fantastic course it's just that some things are missing, quite important things too you know. You don't really get in touch with reality until very late in your education. You need to go out to practise to understand and even then you really have to figure it out by yourself. And even then you go on site and you don't spend too much time on site either, it's limited, they don't allow you to be there the whole day, it's a completely different story. I am talking about how it works here in London, I have never worked anywhere else so....yes it would be nice if you could spend a semester building. I think that's what is missing. And learn more about materials in the physical sense, how they behave together so you understand them better. We do make models, a lot of them, at least when I studied many years ago. There was an emphasis on making models it's just that you were encouraged to use cardboard. Cardboard is not a real building material. I understand this if you have to make something very small, but if you want to make it big why not use the real materials as well, that's another thing that's missing. And also, like I was talking with Blanche yesterday, there's no emphasis at all on climate change. Can you believe it?

Climate change is so important especially at the design stage, you have to get it right then.

Yes and right now architecture schools ignore it.

Really?

Yes that's what Blanche is teaching now. I studied architecture many years ago but I understand that even now the emphasis is still on form rather than energy or biodiversity. These are two things that I think should be part of the course and they are not.

Yes really by now they should be part of the course.

Absolutely. You hear about climate change everywhere.

But it's something we can address as well. You know if we design our buildings properly.

Exactly it's an attitude I suppose to have towards life in general. You have to know where your water comes from, these things are important.

Yes they are. And expect it not to have as much as you could possibly want.

Yes exactly. So what about water in Swaziland in the village that you worked?

So water is really important so one of the villages that we were working with didn't have running water so they would go to the river for drinking water and lots of the children were sick. So while we were there the charity arranged to have a tap put in but it's also sanitation and put in some toilets as well, just some earth toilets. And that immediately made a big difference to the children's health and probably everyone's health.

Yes sanitation is very important. It sounds very interesting, it sounds amazing.

Yeah...

And the houses there? You said there are round houses...

Yes mainly although nowadays people are building new ones, they are trying to use breeze blocks and build little square houses like the round houses but square. But I think as well as they deteriorate the mud ones will just go back into the earth or can be repaired with new mud. With the breeze blocks ones it's not like that, you just get this filthy pile of breeze blocks.

But it's amazing that people know how to build themselves.

Yes well maybe it's just something that they do just like everyone does farming. You know it's what you do within your village.

And the projects that you are involved with here are there any ecological projects?

Well not particularly really. I was thinking that when we worked on the Olympic Park actually lots of them have different ecological aspects but again form is really important and has been important in the design. So we worked on the Velodrome in the Olympic Park which has got that roof which is supposedly light touch roof, actually the Velodrome and the Aquatic Centre both use rainwater for the toilets and everything so you know there are ecological aspects to it. We were pushing for straw bale construction on the Park but we didn't get that. But there is a really lovely timber café there now which had been designed on ecological principles.

So you worked on the Velodrome?

Yes.

Oh that's fantastic. Incredible.

Oh yes, interesting structure.

So that's a great job. You have got an amazing job.

It is yes. I get to go to all these sites.

Thank you very much, I don't know what else to ask...well if you want to mention anything...

Well I suppose one thing I thought being in Africa generally so then I met a friend and went to Tanzania and we were staying there and we were talking about ecological buildings. We were talking with some women who were living there and they were saying there's nothing ecological in Africa, you know people don't think in these terms, they think about survival. But the thing is it would be really great to change the mindset and for people to realise that it's the same if you can do it in an ecological way, just because the Westerners build with breeze blocks and have flush toilets and all that doesn't necessarily mean that it's the best way or it's the best way for your country. Cause you will see it Africa ends up being... just looking a bit...you know well I think

the round wooden huts are beautiful and those constructions but then those kind of tumbledown breeze block buildings are just sad looking really. It's impossible to maintain them properly they don't really work in the heat.

And probably they are more expensive than...

Well they are but people see them as better and I think that people need to be educated to realise they are not better. It's such a marginal thing ecobuilding isn't it? It's such a shame.

Yes it is. Something equivalent is happening here as well, people don't realise that perhaps local materials like straw bale, cause straw bale is local in many parts of the UK, are much better for a lot of different reasons, for health as well.

Yes exactly.

It's much cheaper as well I guess, you just have to know how to build with it.

Yes and it's about changing people's mindset and I was talking about something completely different well about women in construction to someone I was working with and we were talking about homeostasis which means that people revert to what they know so ok right we'll try straw bale here but actually ...so people tend to...we were talking about how actually a lot of the lessons of the Olympics weren't learnt that people reverted to their traditional methods of building but you have to push very hard to get beyond that homeostasis to create a new homeostasis but it doesn't happen by just doing one successful project you have to do two, three, four so that people really take it on board.

And I guess it has to come from a lot of different perspectives, it has to come from education as well so when you educate designers, engineers, architects, builders, you have to educate them towards ecological design rather than what is commercial right now, yes it has to come from a lot of different perspectives...public awareness as well aesthetics, what do we think is beautiful...aesthetics change and fashion as well.

But it's also acceptable, I just find this outrageous that the building that's still a glass building has a life span of 25 years, that's acceptable!

Exactly, how can you accept something like that?

Yes to me that's a temporary construction and it would need to be renewed after 25v years. That's so much money. But also what a waste of materials and resource generally.

And what does it do to the urban environment as well in terms of energy? These are very important things to consider. Thank you very much. Great to talk about your amazing work.

I have to say I love it and I feel really quite delighted to be doing it, to be in a position to be able to do it.

A.6 Interview at London South Bank, 21st May 2015.

Please tell me about yourself and how you started with the ASF-UK and about your involvement with TAP, your aspirations, and things like that.

The pathway of being in this sort of industry?

Yes exactly. And the work that you did in Ghana and elsewhere in Africa.

Ok I shall give you a really brief overview of where I started when I came. So I studied my undergrad at Brighton and did my dissertation on the architecture empowerment and how architects can influence development and equally whether we have a responsibility to deliver a better and more equitable environment. So that took me briefly to an internship in Johannesburg with an interesting practice 26'10 South Architects and they are great and they were a small practice but quite well known doing projects in Johannesburg looking at lots of urban renewal and they run a studio at the university on Informal Settlement Upgrading. And so that was a sort of month with them and I really started to expand my ideas and then going back to London I did a year with a firm doing lots of Housing Association work and saved up some money and then went to Ghana and work with Joe Osae-Addo cause they were advertising for people back then. So I did 6-7 months with Joe and I wanted to do something more hands-on and community-based so I actually met a young guy who ran an NGO, Hayford Siaw a local Ghanaian guy who was in the beginnings of him doing some work and some projects so I worked with him on a sanitation project in Amasaman which is a township in the West in the greater Accra region.

And what is the name of the NGO?

The sort of blanket NGO is Volunteer Partnerships for West Africa. So I was working with him on that for a few years and he ended up being our local partner when we (ASF-UK) did our workshop in 2011. But that experience, that was the Architecture for Humanity's 'The classroom of the future' competition and Hayford had some volunteers who were working in a local school so a colleague of mine came out and we

did a couple of months with this school and we took over their design curriculum and did this project where they designed their ideal classroom. We got lots of bits and pieces like we got a solar kit and taught them about solar energy and about sustainable construction methods. And I guess that working at Joe's practice was very focused on native approach to construction which looked at these natural materials that are abundant in Ghana but how do you make them more valuable, and his house, I don't know if you have seen pictures of it, but it's a very contemporary house in a suburban neighbourhood in Accra, just past airport residential. If you google *Joe Addo house* you will see it, and you know lots of bamboo and earth and quite a beautiful interesting space. So that sort of opened my eye to that type of thing and equally it sort of just before I went and worked with him, I had done an ASF summer school workshop which was the first involvement I had had with them.

Was that your first involvement with the ASF?

Yes I had been to a lecture and then at the summer school in 2008 and then I was trying to decide whether to go to Oxford Brookes and do the DEP Masters which is Development Emergency Practice or London Met because I knew Morris Mitchell who runs the Architecture of Rapid Change and Scarce Resource and he was actually on that ASF workshop as a tutor which is quite interesting. I chose Oxford Brookes because I felt it was a more rounded developmental course and it wasn't architecture specific so I think there were about 5 architects and 60 people from development and humanitarian background and the only component that the architects had to do was a design element, which the others didn't have to do, to meet the RIBA criteria so the first year of RIBA Part 2 was architecture at Oxford Brookes and the second year you could do the special route where you chose to embed yourself in one of the Masters courses. The DEP was quite different from the others cause we had urban planning and sustainability and advanced architecture, so quite different paths that you could take and then they have changed it now so it's flipped, you don't get Masters which I don't think is as good but that's another story.

So you did your Part 2?

Yes and then I could take the DEP if I wrote a dissertation then I could turn that into a Masters. So I got my Part 2 and then a Masters separately in development emergency

practice which I think is the most valuable thing I have done in understanding the complexities of development and not from an architectural perspective but from a sort of development theory perspective. Because I think that's a real challenge to the architectural organisations working in the field of development, they don't understand sometimes those theories and processes and they are construction focused and sometimes that's the easiest part in the process. After finishing Part 2 I went to do my dissertation research in Ghana and also we wanted to run an ASF workshop and so we did that. It was an opportunity as well for me to try and draw in lots of different organisations working in that field in Ghana and get them to have the Symposium with UN Habitat and get everyone to chat and network. I think that was one of the most positive things from that workshop, it captured what was happening at that time in a blog which is dated now but it's still one of the only things out there that has a wider view of some of the projects that happen. So I stayed on and did my Masters thesis which was completely nothing to do with architecture. It was looking at the influx of mobile technology into West Africa and its impact on development processes. That was quite different but it has actually led me to be very involved in this idea of digital divide and digital inclusion in Ghana. So that was that. And then thinking about doing Part 3, I started looking for work and I had actually met one of the directors at David Adjey Architects, a Ghanaian lady, she said you know we have got a lot of work in Africa come and see us when you finish. I joined Adjey in early 2012 and they did a cabin office in Accra and in September that year they decided that they wanted to have a satellite office in Accra so I went with my director Alice, the director of African projects, to set up this satellite office with one other guy architect from the New York office, Glen. So we had our little hub in Accra and actually they have just the Ghana office temporarily I think just because of the situation there it's dire in terms of economics and the power situation and lots of other things. They have sold quite a lot of the major projects happening in West Africa so we will see, I think especially the Principal David is really keen to push our Africa agenda. The day job is very different to what I do with ASF, you know big civic buildings, top down architecture compared to ASF which is really bottom up. So it was an interesting experience working up there and as well spending all my spare time actually engaging in ASF projects. So when I was there I sort of re-engaged with Hayford and volunteered for Volunteer Partnerships for West Africa and they had just set out a program for this mobile library and they had been doing it for a year with a van with a load of books. So they decided that they wanted to try and build these street library kiosks. And you know the kiosk culture in

Ghana, everything is in these small little shops and the idea is have these kiosk libraries in areas where they had already done this mobile library service.

Are these in urban areas or in rural areas as well?

At the moment we are focusing urban but the first one was in a fairly rural area somewhere in the Eastern region which is about an hour and a half from central Accra. But they are based in Pokuase which now they have finished the road is about an hour and a half from the circle area in Accra. So that's something which is ongoing and we have built the first street library and I am really trying to push this agenda of sustainable construction but it's extremely difficult to do that if you are not there all the time and so I have to be very aware about that. And equally, I am sure you have come across it, thinking about pushing the sustainable agenda and where it's coming from, and is it coming just from me because that's my Western influence and as much as we like mud, you know people say *piss off I don't want a mud house*. And that's why things like the OS House, I don't know if you have come across it, so Open Source House was a big competition and they came to present in 2011 in our symposium. It was an international competition to design an earth house for Ghana for a middle income family. They did it with rammed earth and they built it really badly and the architects were from Portugal or something, they had never actually been to Ghana and it was a really dislocated project. It didn't have an understanding of the middle income vision of Ghanaians at that moment. It was really challenged at this symposium by people from UN Habitat, by people from Housing the Masses. You know you have spent so much money to build this rammed earth building which you actually built badly because you didn't have the expertise. You know you really have to know what you are doing with rammed earth and if you don't then that's an absolute disaster. So that was quite interesting. I always question my agenda with sustainability and using local materials and staff because you do come across communities that really don't want it. And because my involvement is with a local NGO who are very embedded, people say we don't want the earth, and we are like we will build a test building and they are like we actually really like these earth blocks but they don't use the building. So you start questioning what sustainable development really is because it could be you know if you are building these things and people aren't using them. I have had successes and failures in the projects that I have done. I think you have to be open about failures as well because it's the only way you learn. Tried quite a lot of different things, did different projects with different groups

and the other thing that I am really excited about is the collaboration with the Global Mamas, they are a textile cooperative. About 20 years ago a couple of American ladies and five Ghanaian seamstresses set up this textile cooperative in Cape Coast and they had this model where the women needed more access to markets. So these American ladies set up this link with North America and fair trade organisations so it's a fair trade textiles cooperative. They make batik materials, they sew, they make beads out of recycled glass in Probo near Akosombo. They are sort of all over and they have one production hub in Ashaiman which is in Tema and it's in a very informal and quite dangerous community which is getting a bit better over the years but it's in a big house, it's not fit for purpose, they are batiking in quite cramped conditions and so their vision is to have this ethical production site, completely self-sustainable, they are looking into integrating all these processes and then we came in and did a series of participatory workshops with all the women seamstresses and batikers and tried to capture what they saw as the fair trade zone. That was interesting. And so that's ongoing and subject to funding cause it's very difficult to get funds unless you have one person who is really behind it, like a large grant, you know a patron, and really it's quite a lot it's about 500,000 dollars to at least buy the land and start and do phase 1 but it's going to be a centre for training, like a business enterprise that type of thing. Global Mamas are very successful in what they do. They just can't even meet their orders.

Do they trade nationally?

Yes so they have a shop in Accra and a lot of their stuff is exported to shops all over America, the UK as well. It's mainly the fair trade and ethical sort of fashion shops and ... so that's sort of where we are and I would like to go back and do a workshop in Ghana at some point with ASF. We are trying to talk about that a little bit now. A more targeted workshop on urban resilience and possibly the housing crisis and stuff like that because we touched upon these things in the workshop before but I must admit I was just out of my Masters, I wasn't very experienced. I think it was a valuable learning experience for everyone but again there's this whole thing about impact.

Yes and how do you assess impact as well, eh?

That's what we are trying to get to now with ASF is we have consolidated a lot of our programs into two streams so we have got *Change by Design* and *Resilience by Design*.

They both follow this methodology where you are looking at different scales so for example Change by Design they were in Cape Town recently looking at the impact of gentrification in neighbourhoods and ‘the Right to the City’ agenda and staff like that so it’s a more participatory urban planning, and *Resilience by Design* is a more bringing in Disaster Risk Reduction and Ecology into that participatory framework trying to work with communities to first of all assess how resilient they are. They are not saying *oh you are resilient* or *you are not resilient*, but to then come up with ideas around action plans and whether they need upgrading or access to land and really finding out what the key issues are because every time you go to a community you think you always have a bit of an agenda but then you start asking people and you just flip on its head. I am hoping to be back in September and I would like to go and visit Nka because there has been a lot achieved in terms of physical structures and that’s really important and I know that I want to take a few friends there who do work in the sustainable construction sector and they have sort of heard things but they haven’t really gone or seen. It would be nice to connect some people up and equally to have a look and start to maybe as well suggest ways forward. Because they keep running these workshops and you know people put proposals together and they are coming in for two weeks and then evacuating and ...

Exactly and then what happens? But even when they come for three months but then what happens? They leave and some of them never come back so ...

And Ghana is even though there’s fairly good access in terms of technology, with mobiles and staff like that, the power situation is very difficult unless you have very strong local partners. I mean Hayford is great.

Sorry who is Hayford?

Hayford is the founder of VPWA, the Volunteers Partnership West Africa, and he has gone from being a really local guy living in a tiny little place running his organisation from his home to being a UN ambassador in six years.

Oh my God! Is he from Ghana?

Yes. He is a local Ghanaian and the street library has gone from being books in the back of his car going to different communities to being sponsored by TIGO and only two weeks ago TIGO surprised him with a van that’s kitted out for a digital e-library.

I think I saw it in facebook.

Yes so we are partnering with Microsoft as well to do an oral history library that can be embedded in the street library structure so trying to be, although the street library is a very small project, really really strategic in terms of getting the biggest impact out of these small little hubs. And even with the kiosk being able to recycle the books between communities because I guess my big thing is, in my experience I have gone through a lot of projects that aren't really very well populated. Construction projects as well, it's one thing to build something but you need to build into your budget the running costs of at least the first five years for it to become sustainable.

Absolutely. So if you haven't spent much time in that place and you just go there to spend three months only on a construction project and you really don't understand the culture and how things work locally at least in the rural areas, for example the library that was built recently in the Nka site. It's a fantastic building and really well made as well, they knew exactly what they were doing with rammed earth.

I was really impressed by what they achieved in quite a short time with rammed earth because rammed earth is really quite difficult to construct.

Yes it is fantastic but the thing is, because I have been there, there is this group of villages, it's not only Abetenim. Abetenim is one of these eleven villages and some of them are completely remote, they don't even have a school building and so this huge library is supposed to serve all these villages but then how do you get children to from these villages to the library?

Yes and if it's raining ...

Yes and apart from that, children also work in the rural areas so if you don't understand culture you may do more harm than I mean I am sure the intentions were fantastic but ...

Of course the intentions are always fantastic but yeah I am always very scared when I see some of these things because I have spent mmmm so the community that me and

Hayford worked in I first went there in 2009 and I used to spend my weekends there when I was working for Adjey in Accra, I am starting to think that o know the dynamics of the community quite well but it's taken years before people are just seeing my Western face and being like oh we want this, we want this, we want this, and maybe went to the next level of actually having these conversations about coming up with a plan together. And I think in Ghana especially because Ghana is being the sort of poster child for the development sector because it's generally stable and there is a huge amount of NGOs and really a lot of the time I am very sceptical about impact and what I find working in some of these villages is that aid even though a lot of the time is coming from a good place has reduced the ability for people to help themselves. And to the point that I will go for a meeting with Hayford not because I am part of that particular program but because he thinks having me there we will get seen quicker and will be taken seriously because it's not just a young Ghanaian guy trying to ... and that's changing but unfortunately it's a little bit of a minefield and I always go these events and play devil's advocate and I am always seen as a bit of a cow but I think you really have to say and I think especially architects are very focused on 'we are going to build a school, we are going to do this, we are going to do that' so I can say who's teaching? You know there are these images of these dilapidated schools and what's really needed is, the investment should be in teachers' training before we even start building. And equally should we be building schools when the government should be building schools and we are taking away that responsibility from the local government. Where is that money going that's going for the schools if we are building the schools then is it being spent in other ways? I think it's like I said, like a minefield of complicated ethical questions and equally I find it quite difficult when architects say well yeah this is a beautiful building when they see these things. This woman who was in charge of the practice 26'10 (Anne Gropia?) she was really interesting and she said to me that there are these schools in the townships in Soweto and she said you know these European architecture schools come and build these ... and it's a really nice design that gets them into the architecture magazines and they leave and two months later there is a big leak in this roof that they have created and no-one knows how to repair it and it just gets bashed together and it's not actually fit for use because they haven't studied the way that people teach here so I just think you have to be so careful and I think a lot of money and that's what ASF does is to try to build capacity with local professionals and to create partnerships with local professionals. Like me being in Ghana for a while allowed me to engage with Juliet and TAP, even though Juliet studied here and what have you,

and running summer schools and empowering local students through an international dialogue to expand their horizons cause I think the architecture school in Kumasi has come a long way from when I first started to try and engage with them. I have always found it quite difficult to get a lot of excitement from them with these workshops. I am sure they get a lot people contacting them as well.

The architecture course at KNUST in Kumasi is like any other modern architecture course in Europe. It's a very 'normal' architecture school. They actually teach modern architecture so that's what they promote. So when you try to talk to them about a different agenda ... well I was invited to give a lecture there, and I went to give a lecture to the second year degree students about climate change adaptation and that's what they asked me to talk about. I talked to them about the work we were doing in Abetenim cause that's more hands-on. I started talking about the village as we lived in the village and everyone started laughing and the Professor who had invited me told me 'please don't get offended, nobody from this class has been to a village'. So it's a very elite crowd who studies architecture. But even here, and even where I come from, it's a very elite crowd who studies architecture, and that has been the case historically. So how do you kind of convert them to something else? Yeah it's a very 'normal' architecture school, you just have to try to inspire them as you do here. It's quite difficult. You know nobody wanted to come to joining us in Abetenim, everybody was excited about what we were trying to do in the village but nobody actually wanted to come to see it. I think no-one actually came.

In 2011 we we tried the *Local versus Global* in Ghana and we tried to get some local participants and actually we did but only through my networks of local architects working in Accra and equally the local architects from the Gha West Assembly, those guys came but in terms of Ghanaian students, I am not sure whether it was the marketing or something else but just to put it into perspective we had three Ethiopian students come from Ethiopia, the Ethiopian Institute of Architecture, they were all trainee lecturers. We had a good mix of people but it was definitely an international focus which I didn't really ... you know I really wanted it to be completely just Ghanaians students but I realised that's not really feasible right now but through things like TAP that's starting to become feasible and it's starting to be a really good level of engagement. The summer schools I ran, I don't know if you have met Edam, he is great and Adjua from Global Mamas was fantastic at the participatory staff, she was just so

good, she engaged with the women, and it was amazing to have her translating everything as well. She did the Global Mamas project when I got the internship with Adjei and through that she is now studying in the States for her Masters having studied originally in Kumasi. she is very keen to come back to Ghana and be very involved with Global Mamas and ...

That sounds fantastic. And how do you ... well for example I want to join ASF, how can one join ASF?

So ASF-UK is one of the chapters, there's ASF International, there's France, Spain, there's even Congo ...

I am from Greece and I know that there is one in Greece because I have seen some of their work online.

Yes it's quite interesting, everyone has slightly different mandate so the UK chapter is very much embedded in sort of more education capacity building rather than physical projects even though the ones that I have described to you in Ghana are physical but they have come through a very long process of engagement and I think it's exciting to start to say what are these spaces that we strategically creating through participatory processes, how does that manifest itself, why does this make this building different to some other project that's been ... but in terms of how you engage with that, so we have got three projects at the moment like I said *Resilience by Design* which has work in India and Ghana and recently Colombia so that's looking at resilience, and *Change by Design* looks at participatory urban planning at the moment focusing on London and Cape Town, Nairobi, Kita and Brasil. And then there is *Challenging Practice* which is a course, I don't know if you have come across it.

I have not seen this.

We developed this course and it was a European Union grant and it was ASF-UK, Sweden, France and Spain and Italy I think and it was to develop basically a short Masters, an affordable Masters for building environment professionals who want to get into development so that's the other sort of strand. What we are saying now to people that if you want to get involved with ASF is start with *Challenging Practice* stage 1 is

reading this open source document that you download of ten chapters and it's like a mini Development Masters with Disaster Risk Reduction ...

I see and is it against payment?

No, no, it's free. It is free and each chapter has about ten papers which have been written by ASF collectively and then peer reviewed by experts in the field and then we were sort of doing the evaluation last weekend. So stage 2 is a seminar and I think it's a hundred pounds for two days to do and to put that learning in practice, and then the third stage is either an internship or one of our workshops and either writing a four-thousand word piece on reflections of the course and your experiences, it can be a film, it can be a mixed media piece, it can be anything. We are trying to get as many people to recognise the *Challenging Practice* but that's quite a good way in and then what we now do is that any new people who start do the *Challenging Practice* first and through that we can connect and we are always looking for people to come in as associates especially people who are really engaged, I think we have got 15 acting associates, probably the 6 of us are the core team. Yeah we are looking for people but what we are trying to do is push people to do the *Challenging Practice*. If you are interested ... equally it's quite interesting I feel that the Nka have got quite a lot of exposure, they just need a little bit of a push to sort of step back and reflect and evaluate impact.

Absolutely. Maybe it's participatory workshops that they need ...

I don't think they need participatory design, they need some strategic workshops, they need that community to be like *ok so this is what's happening*. We all know what's happening, people go in and build all these earth things but what do you guys feel about it? Are you happy about it? And equally how could this be more focused? I can imagine that a lot of people are like why are all these people coming and spending all this money and doing all these buildings while we are struggling to get malaria medication, to feed our children and staff like that. If it carries on like it is there might be a complete disconnect and that's not what they would want I imagine at all.

Absolutely.

I know it's very easy to come in and everyone in the community is sort of Akwaba like smiley smiley smiley but they go home and they go like what are these fucking people doing? And that's what I have realised over a longer period of time, they think you are mad ... yes be critical constructively.

Do you know of Glasshouse?

Yeah I have been to a few of their events.

I got involved with them, actually I was involved with Women's Design Service I was working with them. I don't know if you know of them.

Yes they are a very old organisation, sort of real feminist ...

Yes.

I was involved with them for a year and half, the last year and a half they were actually active before the government took away their funds. They have become dormant now but nevertheless they have accomplished fantastic work. So through them I learned about participatory work and methodologies. I must say that coming from an architectural background in the beginning it was a struggle.

It is a real struggle.

Yes and then at some point I was completely humiliated by one of the women who attended a workshop I ran through Women's Design Service, maybe for the right reasons too. Since then I have thought about what the architecture school does to someone, I don't know but it could destroy you. It's so critical and sometimes it's critical in a very negative way that destroys your ego.

Yeah it destroys your ego and it breaks it down and then it builds it up and I find and I love teaching and I love engaging and I think this year has been quite eye opening for me cause I have always run workshops and done really fun stuff like with ASF I was doing festival and leading teams of students and I sort of know that engagement but then I went into architecture so I have been working at Leicester University and Oxford

Brookes this year and then suddenly you have to have this matrix and you have to put these people into boxes. And I just find quite a lot of people in, like tutors, I am so astounded how wrapped up in themselves and this architecture school and not being able to see outside. This is the problem and I think there is this whole debate now 'oh we need to make people more ready now for practice'. My third years in Oxford Brookes think that 'oh I am going to go into practice and my hopes are going to be crashed' because I am sort of a big advocate of the need to re-engage with why you became an architect and that political and social sphere and all of those things that you have forgotten working through these large developers and using consultation as a tick box exercise and completely wrapping yourself up in an office working 12-14 hour day and not looking outside so yeah ...

Absolutely, but I think similarly architecture schools, ok I am not now talking about the DPU (The Bartlett) or Oxford Brookes or particular schools that take development into consideration.

But Oxford Brookes has two offices because it has CENDEP but equally it has the Bartlett style very very focused imagery, you know, so it's so interesting at the end of the year because Alisha who used to be the manager of ASF and now she set back to associate role again but she runs Unit D and that's who I have been teaching with and with her husband Pete, so the Unit D is very much along the same lines as CENDEP and we were looking at Northern Ireland and post-conflict spaces last year but then assessing strategies for conflict transformation through public space or what have you versus very complex parametric structures that exist in a sort of vacuum from reality. To be honest over here we have extremely amazing imagery and highly complex buildings and structures but here we have got you know how do you mark something that isn't completely crazy and maybe isn't drawn as well? It's always a fight. And you know we have all these issues with architecture school being so elite anyway.

Yes definitely. We are so detached from everything else, from reality. I mean it's great to be creative. It's very nice to meet you and talk to you too, I knew you are involved with ASF but I didn't exactly understand how, I mean I didn't know the details which you shared with me. Your work sounds amazing, really good work.

I wish I could just do this. We are trying to get core funding because associates work twenty hours a month on ASF but I probably spend about sixty minimum. Last weekend I was running a seminar on Saturday and Sunday, preparing on Friday.

Where was the seminar?

Near King's Cross, that was for the *Challenging Practice*. But at least a couple of hours a day I spend on ASF work. So we are at a stage where we really need to, we have really consolidated a lot of our work and we are starting to know where we are going and maybe focus on being strategic but we do need more capacity in terms of you know just someone to be an administrator because none of us are financial people, just small things like so that the people to be able to be more focused on the program.

Yeah that would be great. It would be great if could get funds and do this as a job.

Ideally yes. And I am very much pushing for our programs to be longer term partnerships rather than workshops. With local partners you know, our local partners are always through our network and then work with somebody someone knows or has worked with either in academia or practice. But yes to set up this idea of impact and setting up indicators that sort of thing. So I have been really keen on doing it for a number of years and this idea of social impact assessment, we tried to do it in Cameroon we ran a workshop and we looked at the work of this particular NGO, they asked us to do an evaluation of their projects. It didn't turn out very well cause in the end they didn't actually want to hear the bad staff, that was the problem. But I am quite keen to look into that cause I think it's so important.

Great, thank you very much.

A.7 Interview through Skype from Algeria, 9th May 2015.

Please tell me a few things about your work, maybe from what you studied and then what you wanted to do and how you entered Cap Terre.

I studied architecture for 5 years at the University of Setif. Setif is a big town in the Northeast of Algeria and then after that I got my diploma and then I joined an office for training for 18 months and then in 2013 I passed an exam to join Cap Terre with 150 other architects so I passed the exam and continued at the same time working in the office, doing plans but nothing special, nothing about earthen architecture, I had no idea about that. But when I passed the exam I wanted to take a look and to search, I was interested in earthen architecture so I started to research and to google it and to find people who are working on that subject so at that time I found many people who specialize in earthen architecture. And I completed my 18 month training in the office to get my certification and to be able to open my own office. It works like this in Algeria. You have to practise for 18 months and you get your certification to be able to work alone and to open your own office so the same day that I finished the training I got the results.

Oh fantastic...

I passed the exam with 12 other architects. I was lucky to tell you the truth.

How did you discover Cap Terre?

I found a newspaper article, it was the beginning of Cap Terre as it was created in 2012 but back then they were just preparing the papers and the workers, etc. so we were the first architects, the first workers in Cap Terre. And we passed the exam in 2013, and received the result in April 2014, the same time that I finished my training. I was surprised because I didn't know that I would pass the exam. It was like 6 months waiting for the result. When I got the result I was lost, I didn't know what to do because I had my certification and was able to open my own office but then I participated for the first time in the international festival to promote earthen architecture during the third

time this festival had taken place and I liked it. I loved the architecture, I met some architects who were working with earthen architecture so I was surprised, I was like 'how did they do that?' they were architects but at the same time they were working with earth and they didn't have any problem with that. And it was exciting, it was funny at the same time and I liked it and I was thinking that an architect must put his hands on his work you know...

Of course.

Because I don't like to be just sitting at a desk and all the time working on the laptop. No, I said I am not used to that, I am not that person.

You are absolutely right.

To touch my work, to live with things, with my work gets exciting.

Can I ask you, when were training at university did you have any experience with your hands, like building with earth?

I had no experience at university, we were just taking lessons, classes, sometimes we would visit a heritage site but I had no experience with putting my hands on anything or working with materials.

So how did you learn how to build with earth? There is a skill to be learned for that, who taught you how to build with earth?

It was with Cap Terre because when I joined Cap Terre I was like I didn't know what to do the first time so we were all asking what is our job or what is our work there. And then we met our boss Yasmin Terki. She described our job, our mission and she asked about how we could make things better because twelve minds think better than one mind. So she asked us for ideas and she gave us the opportunity to create and to think and not just apply and just do the task without asking why. And it was my intention to specialise on plasters, I was at the same time reading books and I met some artists who were working with plasters, making artistic works, they were with us, they are native from Timimoun.

Are they masons?

Yes and they are artists. They work with earth, they make many beautiful things with earth their only client. I liked their work very much so I started asking them how they did that and from where they got their passion. So I started to learn, I was excited I liked everything. I was not bored like I was before in the office.

I understand this very well.

It was exciting because to work always with earth and with people who are specialising on that, everyday it's a new thing, everyday I learn a new thing. So then we started discovering the area because it was my first time in the desert when I joined Cap Terre so I had no idea about that side of my country, my own country so I didn't know what is going on, what I can find there. So we started to discover and to visit castles made only with earth so it was wonderful. It was amazing to meet people, I can tell that they are different because we were like opposite. We were like from the European side and they were from the African side because they have two different cultures, they are at the same time Berber who are the native and original people of the Algeria and they are also African. So it was a new thing for me and I started to learn and I was asking people about their tradition, about their... you know many things, there were many things to learn. And then at Cap Terre they organised training and invited many expert architects from Italy, Portugal, France who came to teach us how to build with earth and how to initiate and how to love this material. Everyone chose their workshops on rammed earth, adobe technique, and I chose the plaster.

So there are other people as well who are doing rammed earth, adobe...

Yes each one of us has to choose his technique so I chose the plaster and I was lucky because I loved it and found out that I made the right choice. So the others were jealous because they found out that plaster is exciting. There is always a new thing to learn and we can make artistic work and it's the definition of our job, of their jobs, so they were building even with compressed brick, rammed earth, but we are the definition, we are the beauty of the building because we apply the plaster with impression, with love. Everyone liked to do that. They even tried to change their workshop. It was a wonderful

time we were there for two weeks and it was amazing. So I continued to do research on the internet, on google, reading books about plastering and I loved it. So I found out it's a science it's not just a technique, it's a science really.

So you told me you are working on a wall at the moment, right?

Yes at the moment I am responsible for a wall, it's an old wall made with earth, made by the technique of adobe and it's 100 years old or more situated in the centre of Timimoun. It's the wall of the cemetery. I started in April it was hard to get the project because in the beginning the authorities wanted to destroy the wall as the others because there were four walls from each side so they destroyed the first one, the second one and then the third one and then we told them 'no stop we have to keep one wall, it's the principal one which is facing the street.

So after they destroyed them did they rebuild them in different materials?

Yes with cement. It was ridiculous because the walls were good, they did their job, it's just the plaster you know. They did the plastering many times and they put cement plastering. So then they wanted to build that in cement and they started with the first one, the second one, the third one and with the fourth one we said 'no we have to stop this, this is ridiculous because the wall was perfect we just have to renew the plaster, so we told them no. They don't even give us the money to continue the project because there was money for this project until we told them we don't need money, we just need workers from your side and materials, machines to transport the materials you know, we need some help. They agreed the first time and then we started working we wanted to use lime for the final layer of the plaster.

So the external layer is lime render?

Yes that's what we wanted to do, it's a thin layer of lime just to protect it in case of rain. So I asked them and gave them a list of materials that I needed to do the job and it contains lime and straw to mix the straw with the plaster and to make it better.

Is lime a local material in that part of Algeria?

Yes of course it's everywhere it's not that far from Timimoun and it's not expensive, it's cheap so we gave them the list of materials, we brought some materials because we found clay and sand cause you know the desert contains these everywhere. It was easy to get the materials.

And do you test the earth before using it?

Of course before we started working on the wall we did many tests so we used many ratios to know the properties of the clay we wanted to use so we used the technique of a bottle and put the earth inside and then added water to it and mixed everything together. It's a simple test and made many other tests just to find the perfect raction, the perfect mix between sand and earth. We were obliged to mix earth with sand because the earth that we found contained clay, it was like 90% clay.

So you needed to mix earth and sand with what else?

We needed to mix earth, sand and straw. That was for the backside of the wall and in the front side we mixed earth, sand, straw and lime. We put 5% lime and it was perfect we got the right ratio the right mix. So then when we found the right mixes for each layer, for each part of the wall, we started with preparing the earth and bringing it to the site and we started carrying the straw. We started working we took off the old plastering which was not in perfect situation so we took it off and we took off two layers of adobe because it was in a bad situation, it was not good so we took them off and then we brought new and good adobe so we put two layers. We started by preparing the wall and put some water before applying the first layer so shall I give the ratios?

Yes please go ahead and share with me whatever you like.

Ok the first layer was a mix between straw, the clay earth we found and the sand. One earth, three sand and one straw. It was the perfect ratio so we started working on the first layer and we finished the first layer it was like one centimetre. The sand was big between 2-5mm because from the first layer we had to apply a good layer for the coming layer. We used a mix between sand, clay and straw yes the three of them we did a mix and then we started...of course after taking off the old plaster and then we tried to make the wall plane (smooth/flat) so we started with the joints between the bricks because there was a space between them so we tried to do the plaster between the

bricks. So when we finished the first we did the next one, it was the same mix but we just replaced the sand with some other smaller sand and then we cut the straw in smaller size it was not the same as the first layer. For the backside of the wall we didn't use lime to stabilise the mix.

So why not lime on the inside of the wall?

Because it was not exposed to the rain because we asked the people how the rain comes on that side. It was not exposed so we didn't need to use lime. In our job we have to study we have to do economics so if we don't need to use lime then we won't use it. Everything has a reason to use it. And for the front side of the wall we used 5% of lime. First of all we put the lime in the water to make it like a paste so we used 5% in the mix and then we did the next layer so we haven't finished yet so that's why I told you that when I go there I have to finish the work before it gets hot.

So are you working with the local masons?

Yes of course. Ok I didn't tell you because the first time the authorities wanted to help us so they gave us four masons. It was perfect we were doing the work and it was good and then they decided to stop them from working so we had some trouble so the work was slow. And I was worried so I started to work with them, I found myself obliged to work there and I liked it, I like to touch the material.

So can I ask you so are you there to also teach them how to do it?

Yes yes yes it's to control the mixes and the ratios and how to prepare the earth, how to prepare the wall and all of that but the masons know their work. We did some tests before so we found out the perfect mixes because the traditional way to do the plasters is that only the experienced ones found the perfect ratio the perfect mixes because they just use their eyes to measure the ratio and it was not working all the time. They were using just their eyes they don't do the test and they don't use even straw. They don't use straw in the traditional way so that's why they don't agree with us with the earth construction so I was trying to explain that to them and explain why we use each material. They were surprised because they found that everything we do has a reason. And I showed them the result of the test and they were surprised they said that 'it's our

tradition to work with earth and we didn't even know. We didn't try even to think how to normalise all those techniques and all of that so they were at the same time surprised and sad because they left these techniques to work with cement and additional materials. So every time I tell them about the advantages of building with earth they were surprised and they agreed and love working with earth. So it my intention was not working on the wall but rather to and make them understand that everything we can do with only earth, with only natural materials and local materials. So I was focussing on teaching them better than working on the wall because we can do the wall we can build the wall. But it's the techniques that we have to keep, it's not the building.

It's really about culture, it's how to teach them about culture, local culture.

Yes it's their culture but they forgot their techniques, they stopped working with earth.

So is cement expensive there?

Yes of course, they bring cement from the North, from the Northern side of Algeria so it was completely ridiculous.

Can I ask you, why do you think because this happens a lot in many many places I mean it happens where I did my work, it happens everywhere but why do you think that the State doesn't support local traditional building methodologies and instead they support new modern methodologies?

There are many reasons for that. It's kind of corruption because with bringing additional materials from outside of the country they get advantages, they get money, you know the industry people, the businessmen, it's a circle who get money from that. So why would they care about people when they have money? They don't care about people or about their safety you know. The other reason is that it's not really important enough because I think that the money is more important for them so they don't care about people even if they want to use earth they have to develop the techniques so they will lose money so they prefer to get more money than to teach people how to build as they will lose their source of money.

So you are working in a rural environment right? You work in the desert. But what happens in the urban environment, in the cities in Algeria? Do they encourage the use of earth or is it not allowed?

Absolutely not, no they don't (encourage the use of earth). And even if we take the example of Timimoun it was the old side of Timimoun that wall all made by earth. But the people started to destroy their earth buildings and their earth homes and even the authorities help them, they give them money to build the new buildings and houses with cement. It's politics, it's ridiculous. And when I see that I get nervous, I get like what is going on here? And why do we have to use additional materials even when people know that earthen architecture is perfect for them? If you ask people they say yes we know that. Just ask them one question, how many A/C systems do you use in your house? They told me that for each room we use one A/C. but before when they had their earthen building they didn't even have one A/C so it was always my question to them to surprise them. Of course now in Algeria we don't have the problem of energy because we have electricity and all the energy freely, it's not the same as in Europe because in Europe they started to use and to think about earthen architecture, ecology and sustainable architecture because they don't have energy. They lost energy, they need energy. But here energy is for free. They don't even pay the bills of electricity they pay half.

Oh this is incredible.

So they don't have to think about economy of energy so then I ask them to think about later when all this is finished because the time is coming and we don't have oil and now the prices of oil is a catastrophe, they started to think about that. So now they started to change their minds about using natural materials.

Yes because the same problem we had in Ghana. I worked in rural Ghana so we had exactly the same problem, we had the local masons, the young ones didn't know how to build with earth and they had almost nobody to teach them so they abandoned it and started building with cement. Cement is very expensive of course you know.

It's the same thing. The masons changed their techniques from building with earth and now they build with cement so it's another technique so they lost their technique of

building with earth so our mission is to teach them and to keep the persons who know how to build with earth and try to develop techniques and to bring new techniques like rammed earth because here all the technique which is used in Algeria is 90% of earthen buildings is made by adobe. So we teach them other techniques like rammed earth and compressed brick. They were surprised when they found out that there are many techniques and not only adobe, and they liked the idea and started asking us to build their new houses and I was happy about that.

That's fantastic.

So then we told them that we are here to teach you and we cannot build with you but we can help you, we can do the plans and we can be with you for free because we work with the government. I am going to tell you something which is funny because we work for the government and also we have to tell the government to build with earth so at the same time there is the Minister of Culture and the Minister who takes care of people and gives them houses, probably the Minister of Housing, so we have to show them the quality of house building and others just give them houses, we have a problem here of housing because people don't have houses. Because it's getting expensive to buy a house or to build a house with new materials, with additional materials, so that's why we are working on this case and we tell them about the new material and why we have to spend money on new materials which are not good for us and they are not healthy. We are advantaged to have the natural materials which we can use and we also told them about the advantages and so on.

This is fantastic because when I worked in Ghana and even here in England it's a similar situation as the one you are talking about. And also I am going to ask you again about university because when I went to university for example they didn't teach us anything about earthen architecture, completely nothing.

Exactly nothing, I didn't even hear about earthen architecture, not a word believe me and I was like why we spend five years without knowing that there is earthen architecture. We didn't hear one word about that. This is ridiculous and this is the action and responsibility of authorities here because here in Algeria studying is for free because they teach us whatever they want to teach us. That's why I found that everything is prepared.

Yes but this is everywhere, the same thing happens everywhere.

We were prepared to learn how to build with earth but they didn't teach us.

So you are an architect, a young architect and you graduate from the school of architecture and you have to go somewhere else to retrain to become part of a group of architects who practise earthen architecture. So you need extra training after the formal training of architecture right?

Yes and it was ridiculous but why don't they teach us the real things? Why do they have to change their minds and they teach us just what they want to teach us? That's why sometimes I get nervous because we just lost five years.

I agree with you completely. Many years, we have lost many years.

We have lost many years. They are just talking about space and industrial materials and we can make this with cement, we can make this with concrete, we can make this with steel and they don't teach us the right thing. They don't give us the choice to choose between what we want to do and what is right to do.

Yes exactly.

So they manipulate us.

I understand but how has your formal architectural training helped you in your work at all?

Training was in a private office.

Sorry I meant your university training.

Here in Algeria we don't do actual training in our universities. Sometimes they take us to see buildings and to visit construction sites and to show us the techniques but it was

just superficial and it's not serious, it was only to see buildings and we don't get advantages from the visits.

Yes well I studied here in England.

But it's different because the quality of studying is different because here in Algeria because it's free we don't have the quality of study.

I don't know about that because even if you pay it still doesn't make a difference because they still teach you whatever they want to teach you so you have no choice at all. You need to leave university and then you have the choice that is if you get a choice even then. Some people don't have a choice.

I know and agree with you but it's different even if you think that it's the same study but it's not. I am telling you the truth because I don't have to hide that because studying architecture there is absolutely different than here because there people they see their projects, they go into training and it's serious.

Well you may think it's serious but I am telling you it's not serious (laughing) it's very superficial cause you are completely detached from anything, you are all about designing, space and the form.

Yes that's what they also teach us. That's the result of five years of university so I am trying to study new things. It's like I am in the beginning it's like I need another five years. In earthen architecture everything is different because we study what we want to study, I think we have got the right answer because we look for the answers, we touch the materials, we see, we visit, we live in earthen architecture so we don't have to ask anybody else because we work on it, these are the advantages, we are working on natural materials in Cap Terre. Even we don't get paid that well here but we like what we do, we love our job.

Do you get paid to work for Cap Terre?

Of course because we need money to live.

I am just asking because I didn't know.

I am going to tell you, I don't have a problem with that so I am going to tell you because here in Algeria we don't get paid well especially people who work with the government don't get a good pay. It's like \$500 (per month) for an architect. It's not really you know...but it's ok for us since I am learning, I am building myself, my career so I don't care about money since I am working on something that I like. And all my family are asking me why do you have to go to the desert and cross all this distance just for \$500. I tell them it's not for money, we are doing things that we love to do, doing good things we are good people. We don't care about money because if I work here for \$1000 I will work on something that I am not excited about and just obliged to work to get money. I am not going to be happy...of course because when I work with the earth I have reason I have a goal. It's not just waking up every day and doing the same thing and working on a laptop, not it's not... because I like everything I do. You know life is hard there and we don't have really good conditions to live and we try to survive but what keeps us motivated is earthen architecture.

It's like a mission.

Yes that's right.

Ok this is fantastic. So all this is great.

Actually I am trying not to staying at Cap Terre all the time but I am not telling you that I am going to leave Cap Terre but I want to go to Craterre if you know them.

Craterre, I know Craterre yes.

Yes they are in France and I want to specialise and to get a degree in earthen architecture there so you know I will learn many other things and improve my skills in earthen architecture. I don't want to just be looking in books and searching on the internet and asking people. I know all this is important so I am not telling you it's not good to do all this but we sometimes need to create something and because I love earthen architecture so I have to study and specialise in it and focus on it because I am trying to follow the same way which Yasmin Terki followed.

So do you work closely with Yasmin Terki?

Yes of course we are working together, it's like she is the teacher and I am the student so it's amazing. I learn many things from her. This time she came to the desert. Working with Yasmin is a good thing, it's an opportunity for each one of us, for each architect so we can ask her about many things and she is specialised in earth architecture because she studied in Craterre and she worked on many projects, big projects so it's a real opportunity for us.

Yes it is. Do you need to speak French to work for Cap Terre?

Of course and especially with Yasmin.

Especially with Yasmin? She doesn't speak English?

No she doesn't. I have to speak with her in French. She always speaks with us in French. She never uses Arabic with us especially with the architects. She is hard sometimes. She controls everything even if we make a mistake with a word she thinks she needs to correct us. She is that kind of woman. Sometimes she even screams at us, sometimes she really does but for our mission, for my passion I don't care about because i know she is like that and I am ok about it cause I am learning. Sometimes you have to make sacrifices, we have to be patient. But I know that when we get better she will not scream at us, she will give us our value and it's ok.

Ok this is fantastic thank you. For the time being I think because I have to transcribe and...

Anything you need I am here.

Of course we will definitely speak again because I am going to listen to this interview recording and maybe I will ask you some things on what you have said already or maybe I will ask you something else...

Yes ask me anything anytime about the project, about my work there about our mission at Cap Terre because I didn't tell you about our mission.

No no you didn't tell me about your mission.

I am going to talk about the mission of Cap Terre because each architect is part of the team so we have the same mission that is the technique of the team. So our mission is to keep the techniques that we have already in Timimoun and also to develop and to bring the new techniques and other techniques of building with earth of course. Our mission also is to keep the heritage and the patrimony buildings in Timimoun because it is the best destination for tourists in Algeria. When people come to Algeria the first place they want to visit is Timimoun especially in December because it's the best destination here. Our mission also is to help people who know and want to use earth in construction even with small or big parts of the construction. We try to help them with anything we can do. These are the three main missions of Cap Terre. We are working on the old heritage of Algeria it's not only of Timimoun because we try to make people understand that earthen architecture is not only in the desert. We show them buildings and examples from all over the world, from Spain from Portugal and they have bad weather conditions and they still build with earth. Why? Because they have developed the techniques and they use the right material for each part of the building. That's the case and that's how we try to make them understand that earthen architecture is not only in the desert especially in the last exposition of Cap Terre we received many people both from Algeria and outside of Algeria. So everyone has no idea, most people have no idea about earthen architecture. It was a big mission for us to describe to them and make them understand the reason for earthen architecture and that it is universal, it's not just in Algeria or China or anywhere else. It's universal. We try to learn by artistic work just to bring and to catch their eyes and when they can understand where we stand we start talking about earthen architecture. So they think that we are the producers of materials like earth and additional materials and they ask 'is that an additional material?' and we tell them that it's only earth. So they were like 'wow we can do this with earth!' We showed them the artistic work of the plaster which is made by our masons and at the same time our masons were working on artistic work so they could see that so they were surprised, they were saying 'we didn't know that we can do all of this with earth'. So when we catch their eyes we start talking about Cap Terre, about the masons, about buildings, about advantages, about how and what we can do with earth in just five

minutes. So it was hard and good at the same time because I felt happy to show a new thing to old people and when they heard that at the end they always thank you and they tell you that 'we are with you, we agree with you, we are going to help you'. It's all I want to hear from them. It's like they are telling you that you are in the right way so keep going and keep working and we are with you. And that is my motivation. So I kept working for twelve hours every day so talking without stopping. But I never got tired, I got tired of course, but with motivation I was happy at the same time. So it was like doing things that we love so...it was good yeah it was perfect. As I already told you I want to join Craterre for two years so I can be more specialised like your PhD so then maybe I will come back and choose another place and maybe I will leave Cap Terre to create my own way.

Or maybe you can train people of different communities how to build with earth and do the plastering.

I want to do work in the North of Algeria so people will know that there is earthen architecture not only in the South. That's what I am planning to do.

Well that's fantastic, great eh? Well thank you very much.

A.8 Interview in East London, 21st May 2015.

To show something but you don't know what you are showing because you don't know how to do it (earth building) so actually you are going there to learn and not to show. There aren't mechanisms where I could say to you this is where you can learn, I mean there are mechanisms that I could say to you 'go and do some training here and here and then you go there you will be better placed but there are not, I mean there are some, there are more now than 20 years ago but it's small, small, small. It doesn't come automatically, if you to the architecture school you are not automatically going to be taught about earth. Even in 7 years you can go a full 7 years without anyone ever mentioning earth. There will be some schools where it's more likely that somebody will mention earth but there are many that just won't.

Unless you bring it up yourself.

Unless you bring it up yourself in which case you may or may not get a hearing. If the tutors know nothing they will tend to stir you away from that course because they know nothing about it. So you get the circular situation that people that know nothing can't really train people who know nothing so they come out knowing nothing, not nothing about anything but just not about earth. So how do you get the pump to, you know you have to put a bit of water in the pump to get it to work and that's the situation that we face here and everywhere. It's just the standard normal situation.

So what do you think is the problem with that?

So there is no problem you just have to understand that you have to do everything. And as an architect you can't sort of take the position that 'well I am the architect and they do that and I do that and...' as a sort of machine that you press on. It's not like that because you will find there are various cogs which have not been inserted or have been removed, one of which of course is money, maybe one could say that it's the oil in the machine.... Everything has dried up you know, there may be knowledge but it's not been lubricated, not moving so you have to do everything. And I think probably the experience you had is quite a good one cause you suddenly realise that 'oh I am an

architect, I don't know this, this or this, and I don't know this situation or these people or their needs or who decides their needs, or who decides what will be built or won't be built and suddenly you are in a position that you realise that nobody knows anything so I will have to do everything.

Yes and learn together with the rest I suppose.

So the degree to which you are learning and the degree to which you are, if we say that the architect is the person who coordinates all of these activities from a distance, from your office, the extent to which you can do that and the extent to which you have to get in a taxi and go over there and talk to them so they can take something and carry it over here and actually do it and maybe spend a few days on site working with the masons to talk about this particular joint to this particular whatever it might be will depend on how much time you have to spend in a particular situation or area so when you look at Vault Nubien and the workshop you have been working for a long long time and it's not that their models are wrong but through time they find that certain things that they thought was an obvious way to proceed doesn't really work very well and we have to change this and, oh somebody has got married and they moved to the other end of the country and someone that we really relied on, that we trained and so on, they have gone. Now you have to start again, all these things that make it difficult because in the architecture school there isn't somebody there that knows how to do that staff. With Ghana, it's a long time since I was in Ghana, but typically what we will find is the crafts training or for hand skills. They are typically quite poor, I could say they are as poor as they are in the UK in terms of...

You mean the local builders or?

Well I mean if there training schools, they are set up to teach skills which are metal, cement, maybe wood, very often there are no carpentry skills. One of the things that I think is really important is carpentry skills because there are a lot of masonry skills that exist but when you come to put on the roof suddenly it's like ohhh. You see a carpenter can set out the whole site on the ground, they have those skills to set out the site, just like the mason does. Then the carpenter can call masons because they exist around and then the carpenter can put the roof on so in a way carpentry is quite a useful training.

But there aren't really in terms of training schools or programs for people coming out of school. They don't exist so much.

Not really. I guess they pick up skills from older masons.

Right, so you are learning on the job which is a good way to learn but very often it doesn't have a qualification so the guy will say well I can do this and then you find out maybe he can or maybe he can't. but he doesn't have a paper that you can say that he has reached level 2 or 3.

But maybe in some countries that's not very important, to have a paper.

So this is the issue for you, right you have arrived, you have got off the plane, how do you know?

Yes you don't know.

Right so you have to kind of do everything because you have to try and understand that well actually he does know how to do that and he actually doesn't. Because they both come to you the same, one doesn't come with a paper and the other one without. So now the issue is for you to understand what he actually can do and what he actually can't do.

But you are actually right that there are no training centres at least in Ghana, in Southern Ghana at least, that teach masons how to build with earth, rammed earth or how to ram the earth really.

So now you have got into a loop, there is no national standard for earth building, therefore there is no training standard. Why would you train somebody to learn something that there is no standard for? And this is a circular conversation. And it's a circular conversation here, and it's a circular conversation there. And it's a point where you, how you break into that circle and get it to stop going round and round like that. I mean that's what sort of set me off on standards.

Ok, well I wanted to ask you about how did you go into that? Why were you interested in that? What drove you?

Well we started, and this is sort of a history lesson but we started building with rammed earth. The first job that the person that employed me did was Ghana in 1979. The first job that I did was Sierra Leone and I kind of thought well this is really obvious, you just take some earth and some local labour, you build some walls and they are quite solid and even with a petrol shortage and with other things that would be real issues here we could actually build things. That's what got me started and I couldn't let go of it. But then you sort of realise that all of these places are kind of saying 'who the hell are you?' you know how do you just turn up and start?

How did you turn up? How did you get connected?

In the 1980s there was something called the Commonwealth Secretariat which was like a technical organisation which worked within the Commonwealth and had funds from Canada and Australia and people would propose projects and we would go and do a pilot project to prove costs, to prove feasibility and so on. And that's what got me started. And I realised it wasn't a very robust model that never went further. So we are going along like this and then we are saying we were looking for other funders and we are saying to the British government, to DFID, why don't you fund us, why don't you build schools, we know that we can build schools much cheaper, or clinics. So then they said we don't know what you are really talking about. So we got some funding from them to write a paper about what the process was. We did it with Newcastle University and quite a number of different organisations and as it came to the end we said there is quite a lot of work in here, and there are quite a lot of conclusions in here. How do we present them, as an academic paper or what? And we decided that we would put it into the format of a Code of Practice. So with standards you have got product standards and you have got process standards, training standards, then you have got codes of practice. And we decided that we would do it as a code of practice because a code of practice touches on a number of different areas of a process.

And it is not really looking to be a licensed technology, in other words you can have a code of practice and you can pick it up and say oh I can do that, I can follow the words, and I have to use my own practical knowledge in order to make this real but there's

nothing that I have to pay for. So we wrote a code of practice and although the British government has backed this but when you go back to some of these places and say look the British government and they yeah yeah we have heard from the British government before and we don't necessarily think they have our best interest at heart. So now you have to start all over again I decided to go to the standards organisation in Zimbabwe and said 'can we make this into a national standard?' This means going through a technical committee process to check that what we have said is correct, if it's not then you change. So that's what we did and made a national standard code of practice. That then led to talking to Zimbabwe's regional economic community which is SADC and so we have now 15 countries with that standard. Southern African development community is 15 countries, Tanzania and DRC and all of the countries south from there. So that's one part of the circle where you can make an intervention and say actually it doesn't just keep going round and round because there actually is a standard here. That means a standard not for a village house but for a village school which is always a government funded thing, even if they don't pay for the building they pay for the teachers. If they pay for the teachers they have to send the teachers to a government standard building. If there is a national standard they may accept it or they may not they can choose. But it's harder for them to reject it because although a standard is not law, it's a quasi legal instrument. It may have force in law but no-one stood up in parliament and said we are going to pass this act. So there is this funny thing where something is mandatory or it's not mandatory. Standards are not mandatory but you may have to follow a standard which is not a law so it's a weird thing where it's not law but it's backed by law. In Zimbabwe they have something called the Model Building By-Law, what we call the building regs, and the building regs say you can build with this, this or that or any standard material for which there is a standard written. So now the rammed earth standard has an authority in law but it's a sort of sideways authority . And that sort of gives it strength but it's also a weakness, it's a bit of a two-edged thing. Ok so now you have got a national standard but who's going to do it? Who has got the skills to do it?

Can I ask you, how do you create the national standard? Do you consider the local skills for creating the standards or do you create the standard considering only the skills of your own country? How do you do that?

When we wrote the original code of practice, we were thinking about, we were focused on Africa in general. We were thinking about what are the available materials and skills and expertise and all of that. So at one end you are thinking about Egypt or South Africa where they have got all of the equipment and at the other end you are thinking about Zambia where you are in a village and there may be some skills but there won't be paper qualifications, there will be handed on skills and if you are showing somebody something, you have to show them. So that was the basis of the code of practice and when I came to do the work again with Zimbabwe standards there were a lot of things where we didn't really have to say 'oh of course we said this is all going to be done with a mechanical digger, but here we do it with a shovel' because we had already considered a lot of the language in the original. You can have detailed conversations with that technical committee which is drawn from industry, academia, the ministries, other groups involved in maybe funding or insurance or whatever. There is a professional group and you say this and this and this and then the guy from the bank, or ministry or whatever says 'but what about this situation' and you haven't thought about that and it takes time to deal with all the issues. We sat in the technical committee for the Zimbabwe standards for 2 years, once a month for 2 years. So you go through it, everything line by line. If somebody says well we don't think that this is robust then you have to go off to the university and build something and say 'oh you know that did work'...

The local universities?

Yes. And then you have 2 years of public consultation where the document is sent out to the architects' association and the engineers' institute and see if they will have comments and then you have to deal with that comment if there is. There is quite a robust process but then once it's published as a standard, once it's published as a code of practice it doesn't mean that there are a lot of people lined up the street with the skills ready to do it. Now there's another round of things that you have to do in terms of training and so on. But it does mean that an NGO in West Africa, say, could insert themselves into the country more easily because they are working on the basis of a nationally derived standard. And that means that they don't have to stand there and say well I know I come from Spain but this is actually your own standard. I am not telling you what to do, I am helping you to do it. In just the same way as if you were doing something with cars and the car isn't built in Burkina Faso but there is a standard which

says this is the way that you repair something or you maintain something and then you can come from Spain and say we have these skills and they can work to the standard which you have agreed. And particularly with earth building it's very emotional because it's everywhere. Everybody knows it, they will all tell you 'my grandfather's house blah blah blah' but modernity, improvements, all of these things now is somehow in question in a way that it isn't with a car. Everybody knows that a car is taking us to a brave new world but they don't understand that necessarily with earth. And so you are making the case for earth, you are that voice for earth and you have to voice that for the architects, for the engineers, surveyors, the builders, for the ministry of education. You have to do everything because there is nobody else. And if you have got a standard it's just helpful to have the documents. So in a way for me the most important thing that would be most useful for NGOs to think about is how they might play a role as stakeholders in that process of technical kind of generation and acceptance. We came in and we thought we were going to be builders but it was like 'oh why do you want to be builders, there are all these other people you don't want to be builders'. What we want to do is make an environment in which builders can work. A couple of years ago we were doing this job in Zambia, and Zambia makes a lot of mud brick and they make good mud brick and they make mud brick in September 21:22 where you make the brick and in 2 days, 48 hours it's absolutely dry and ready to go. Fantastic, so fantastic. Even in Spain it won't do that. And here it will take a month you know to get to that. They can just do it. But there's no standard and therefore ... there's no standard practice and there's no training, there's no training document so the general sense is there's no value. So what it tends to mean is that it pushes the technology down in every way in its social acceptability, in its monetary value, and therefore people won't then build at that higher level, they won't think about the detail of this corner or this intersection, they won't think about how this connects nicely to that, cause there's no value, it's just mud. Thinking about standards is what you are trying to do is to give it sort of status and that status is really about ensuring that masons are supported in a number of different ways. We looked at the school that this community had built in mud brick. And there were beautiful bricks and they had done a beautiful job laying them in Zambia. But it was a single skin, they had not made a rubble trench or any kind of foundation, they just built straight off the floor, the internal floor was at the same level or slightly even weirdly a bit lower than the external floor, the roof was held on poles so wasn't held on the walls so there was no tie, there was no ring beam at the top of the wall which could just be timber but would just tie the corners together so that without any foundation, without any tying on the top

then most of these corners crack quite quickly cause they are just a single skin of mud brick. We could remake that school by thickening the corners, thickening the intersections, maybe just staying with a single skin in the larger expanses of wall but you put it on some sort of rubble trench foundation so that the moisture doesn't come up into it, you could build the floor up so that it can be swept out and kept clean, you could stabilise the floor with basic oils or waxes or whatever so that it's not dusty. So many very simple things, simple simple, simple, simple, building on the material and the knowledge which is there. But that just doesn't happen because ... so this thing about standards is the way to begin that conversation of improving ...

So do standards mean that you get a certificate as a builder?

The point about the existence of a standard is that it exists. Some people depending on the value of the contract, depending on the client, whether the client wants you to justify that you have used the standard and the walls are this thick and they are this high, and in some cases it will be like that. For a lot of other people it won't actually be like that. They will never look at the standard but the fact that it exists will allow them to operate in a different way where people say oh yeah there's value in that.

Exactly. Because when we were in the village in Ghana within the village there were some fantastic houses, compound houses made of earth and they were there for a 100 years, 120 years and were still standing very well actually. It was just the roof that was a disaster because they were kind of new and falling apart but the walls were standing very well. There were some others that were quite newer that were falling apart and a lot of them had fallen apart completely ... and people didn't want them any more ...

And so it becomes a self-fulfilling prophecy, we won't sort of say to the mason 'actually you have got to make that a bit thicker, you have got to tie this bit down and you have got to do all that sort of thing so then it becomes a job. It's not now a nice job and therefore it fails more rapidly and it's a self-fulfilling prophecy and you look at it and you go 'oh yeah it's shit, isn't it?' Oh we don't want that. But the thing is that equally at the same time people are doing the same thing with cement, they put a lot of money into the cement and they make the blocks with too much sand and too much water because they want to take the cement a little bit further and the blocks are rubbish actually, then the mortar is ... and you end up with the same thing because there isn't

that attention. So if it's bad for cement blocks imagine how bad it's going to be for mud blocks, actually probably it isn't that different for these cases in rural practice. So for me I think that organisations coming in to a country need to spend a little bit of time thinking about how they engage with the existing stakeholders. If you come in and you say I am not going to talk to the architects, I am not going to talk to the engineers, 28:11 I am not going to talk to the Ministry, I am not going to talk to the Standards Body, I am going to go off and build my beautiful thing over here and I am going to ignore all of you but just only involve myself with the local mason. It's great for that mason, it's great for that building but it doesn't have a wider ripple. And you need to have a wider ripple and people in the architecture school and people in the architectural association and people in the engineering school/institute, they need to know that people are coming and talking and there has to be that dialogue. You need them because you generate a standard, you need the cooperation of local stakeholders, to talk to the local Standards Organisation and say 'yes we agree, change this', you can't do it on your own, you have to have the local stakeholder buy in. So there's this sort of dialogue but there has been a sort of thing just for NGOs to come along and say 'we are showing you the way', never mind those people over there ...

Yes, 'we are showing you the way and then they get out of the country and sometimes they never return, and then there's no point in what they have done in that place.

So we have this, there's this sort of English phrase 'civil society' and we think the civil society is a great idea but very often we don't actually go and talk to it. We don't interact with it. It's a great idea but it doesn't really exist so I am not going to talk to it, well it might exist but ... I could say it's English hypocrisy but I think it's more than just English hypocrisy, I guess it's a wider thing than that. I mean definitely as someone from England I know that we have quite a strong tendency to that. Do as I say not as I do, you know that way of thinking.

Yes well I am from Greece ...

Ah you are from Greece? I beg your pardon but for some reason I thought you were Spanish.

Everybody thinks I am from Spain for some reason, also my name sounds a bit Spanish.

Yes!

Well it's a very similar situation in Greece as it is here. And there is a very similar tendency towards earth and lime renders and so on and suddenly you see that the economic crisis has made the use of earth in building visible. I mean the workshops that are happening right now in Greece are fantastic. A lot is happening everywhere because earth and lime ...

Right but do you have a national organisation that talks to itself?

No!

Right that's your job. That's your job right there. Forget about Africa. Just go back to Greece and set up a national organisation, it's the most powerful thing that you can do. We have got one here, there's one in France, in fact there's more than one in France and there's a problem because now they don't always agree. Same in Germany, there's one in Spain, Portugal. So now we are writing training standards with the European Consortium and Greece isn't in that consortium because you don't have a national body. So there's no-one who has sort of put their hand up and said 'oh we'll join you'. Why not? Because you haven't done it. You have to go and do it!

Well there is a lot of work done with earth and lime, I mean lime is everywhere, you see ...

The door is open but now someone has to step through it and say 'well ok it's time now we are going to make it'. I tell you we did it in 2008, I came back from Zimbabwe in 1998, it took me ten years to get to that point. And there isn't a day that goes by where I don't think shit I should have done it in 1998. As soon as you do it you've changed the conversation. I mean if you don't want to go back to Greece then go to Ghana and try and set it up in Ghana because every country needs this. There are thousands of masons in Ghana, nobody speaks for them, they don't speak for themselves, they are silent. Somebody has to go to Ghana and set it up, also in Nigeria, Zimbabwe, etc. etc. etc. ... but what I have seen is that the European organisations are able to project their voice. And that's why I say go and do it in Greece, it's really really important.

No I would love to go back to Greece ... It is important. There is already a lot of work and a lot of skills.

There's work and there are skills and you need to capture it and bring it together and say that we think this is best practice. There's this European document that we can adopt, there may be other things that we would like to change about it, ok fine, propose it!

It's a very similar situation in Greece. We had for example in the islands of the Ionian Sea up to the fifties they had a lot of earth/adobe buildings. Entire villages were built with earth/adobe and some really nice buildings. And then something happened, for instance an earthquake and when the buildings were flattened because of the earthquake then we got a lot of money from the UK to rebuild with cement. And people thought it was ok as it's also a matter of status.

It's the same everywhere. In Africa they have exactly the same issues that we do, 'oh you want to take us backwards' ... there is the same conversation here, there's no difference. People think it must be different in Africa but no it's exactly the same thing as here, for everyone everywhere.

You are right. It's the same in Algeria too cause I have an Algerian colleague who is telling me exactly the same thing.

Exactly. It's the same story again and again and again. It's quite boring actually. But if you begin to make a national body and you bring in academic partners and you bring in professional partners and maybe you find a funding partner and so on, and it's heritage as well and then you can move on.

It is related to health as well, you know I am just bringing up health because sometimes you are in countries where the priorities have changed because of many reasons like the economic crisis changes the priorities of a nation. So for example in Greece the majority of people care about how they will survive and not about 'eh let's do something with earth and related to heritage' you know... You know heritage could be part of it but the main concern would be survival.

Monday morning yeah ...

So what do you do about that?

Ok and there are all of these aspects in all of these places. And the Germans are really happy to talk and think about health in building whereas in England we just don't care. Oh this is the price, this is the price of the land, this is the price of the materials. If you say that you could actually make these things that is just healthier for you, people just look at you like you are just insane. Health is the doctor and that's the general thinking right. Different places have different attitudes to this. So if you can find an advocate, a Greek advocate who says that actually we have done this work that shows that this can work, well fantastic. Even better if they come from somewhere else because we do notice that if an expert comes from somewhere else they are much more influential. You know 'oh it's the French expert' great. Not just Greek, not just English. And these are games that you are playing because you are changing attitudes and changing attitudes involves playing games with what people think and what people think that they think, and what people think that other people think of what they think.

Yes absolutely. It is complicated.

It is complicated. It's not a simple thing how we have fallen into this thing that a material that has built beautiful buildings for many thousands of years has suddenly become something that we don't talk about and has no voice. How do you give it that voice? Well you have to do it in lots of different ways.

There is the Building and Road Research Institute (BRRI) which exists in many countries and also in Ghana and it's part of the KNUST University in Kumasi and they produce pozzolana and they offer training on rammed earth, earthbricks, they do training on how to use even a combination of pozzolana and concrete, they do a lot of training of masons every year that takes place for a month or two months. But if you are a mason you have to go there which means you need to leave your village and your livelihood. Even if it is free you still don't earn.

Yes you would still need money.

So I am in conversation with them (BRRI) about an idea, after my PhD, to create an initiative or a program with them and the local university to fund a program where the trainers could around the villages and train people.

Yes it's called *outreach*.

Exactly. So I thought that would be fantastic if it was to be the outcome of a PhD. I would be very happy to do that.

Brilliant. And think about outreach in Greece too.

Yes I think this is what I should be thinking about, an outreach program in Greece.

The reason I am saying this is because there is a here and there mentality attitude, but it's not here and there, it's everywhere, we would love an outreach program in the UK that would go around technical colleges and teach people who are being shown how to put concrete blocks onto cement mortar, how to put an earth brick onto earth mortar. It's the same activity pretty much, we would love an outreach, it's the same here as there, it's not different, there may be more extreme examples at both ends but it's essentially the same thing and it comes back to attitude and ...

Yes you are right. And also who are the experts nowadays who can build with earth? If they come from a background of architecture for example, who are these people?

And it's very interesting because you know Martin Rauch? He is a ceramicist, so he starts with pots. That's very logical. I am a carpenter, that's my background, I come from doing staff with wood. It's very logical because it's formwork and people come from all different angles. In fact we have got this European Consortium writing training standards, one of the people I can on with is French. I left school at 16 and I went to Trade school. He left school at 18 and his first job was pouring concrete in nuclear power stations. Now he works in Cameroon and the DRC and that part of the world and it's all mud brick and so we started off in really different points so that's really the point of the European training, this European idea of lifelong learning. You start with one set of skills and then it moves, your life changes and you are doing something completely

different and you have to accept that what you did at college isn't necessarily going to be the thing you end up doing.

Absolutely, hopefully not.

Hopefully not.

Because then it becomes boring.

Quite boring. Right so people hate Europe because they are idiots but Europe has got some good ideas you know. They have thought about things in quite creative ways that actually describe my life better than a lot of the descriptions of my life as seen here in the UK where you go out of school, you go to university you get a job and then you keep paying your debt and then you are dead.

It's the same thing in many countries. It's like that in Greece as well.

Right? Do you recognise that one?

I do. The only difference is that now people don't pay their debts because they can't.

You must come to Clayfest. Because then you can talk to Feile, she is from Ireland, you will have the same conversation about Ireland. She is doing the cob workshops. You have to come to clayfest, if you don't come to clayfest you'll miss ... you'll then have to go to Arizona, Sweden, Iceland, Ghana, Malawi, China, France. There won't be an opportunity quite like this.

Does it happen every year?

Well we always run a conference but this year we also have these four days of workshops, it's going to be totally different.

I would like to come. I will ask if I can get funds from the university to attend.

If not then just steal a bicycle 😊

That's a good idea, I will definitely omit this from the transcript. So can I ask you, before I went off to do fieldwork I had to do literature review and so on. So I was reading about standards, amongst other things, why for example earth building is not encouraged in urban areas in Africa. For example in Accra it's actually discouraged, people cannot build with earth and nowadays they can't even build compound houses in urban settings. They have imposed such restrictions, they don't necessarily tell you that you can't build a compound house but by imposing restrictions they have made it impossible for anyone to build a compound house.

Unless you employ a rather expensive architect who goes and talks to the people at the city board then you can do it. As a normal thing, no. There's always a way, isn't there?

Yes you are right, everywhere basically.

The point about the standard is that it takes it out of that expert thing and makes it into a norm. So I can apply for it, you can apply for it, anybody can apply for it. That's the difference. We have an expert industry here where to make a rammed earth building here you have to have an engineer, you have to have an engineer in design because we don't have a norm that can be applied by the local building regulator. So it's the same story here and there, it's discouraged in Accra, there isn't a national standard, blah blah blah. I don't know if you picked up in your literature review that there is an African regional standard for earth bricks, in fact there's fourteen African regional standards which means that any country can publish. Those were written by Craterre, largely written by Craterre in the 1990s and they became African regional standards in 1996. And some countries have published and adopted and mainly they are in the francophone region because that is where Craterre works and the stakeholders that they have engaged with. But there's no reason that the Kenyans couldn't do the same. And then once you have adopted a standard, but for that you need to engage the civil society. You need the Ghanaian architects and then maybe the Ghanaians will say that ok we will do this but we will put a thing at the front that says you can't build more than two storeys high. Experience grows and situations change and well maybe we don't need that in five years' time, we can take that out but because standards change over time, it's not like you set the standard and that's the end of the conversation, but there's this sort of idea that that's the end. It's just the beginning, because training comes from there, probably

we will make products from there, people do this, the equipment and so on. It relates to this piece of paper, this little piece of paper which says 'you can do it'. For me the thing is that a school is always an urban area because the Ministry for Education has to send their teacher to teach in that school and it has to meet their urban standard even though it's miles and miles and miles away. So it's always an urban building wherever it happens to be and that's why a standard is very very important. So that you can build a school in the middle of nowhere using the materials around you and still meet an urban standard. Now when you go to the urban area and say now I would like to build in this urban area it is a different conversation but you are still using the same mechanism.

This is all very interesting. And what is your idea about cement in for example stabilising an earth brick? Are you against it completely? Do you ever use cement?

If you look at all of the work on road building, it's always the case that if there is clay present underneath where the road is being built the stabilisation is done with lime, cement works immediately but overtime the clay will attack that cement. So it's clear to me that someone has done a lot of work that says 'don't mix clay with cement, just don't do it, use lime if you have got to but don't use cement'.

But if you don't have lime where you are because there are some areas where you can't get lime ...

Then if you are going to use cement then take the clay out. If you have got clay you can build.

Because we were not keen to use cement in order to stabilise the earth bricks in Ghana ...

Well I had quite a long discussion with Niall about it and the first thing is he sends this link back and says 'oh and here we are putting cement into the block and I just thought oh no...

We didn't want to do that, we really struggled as we said ok we are not using any cement one of the reasons being money cause it's very expensive and doesn't really bind with earth at all, it's a completely different material. But when we went to the

BRRRI and found out about pozzolana and they tested the soils for us, and told us we had to use cement but replace part of it with pozzolana, we were advised to use these three materials together; earth, pozzolana, and cement. So we ended up using very little cement.

People think that I am a bit I don't know what but in our culture we have quite expensive powders that are quite addictive, you take a little bit and (sniff) and you go oh actually if I am on a good night out that's the direction I am going and cement is exactly the same, you get one little 'sniff' and you are hooked and then you find all these academic papers which are all funded by the cement industry which justifies your addiction. But it's an addiction. You are stuck. You are stuck. You are not free, you are stuck with this thing.

Yes it's the construction industry.

And then it takes over in all sorts of funny ways. The BRRRI are funded by the government and probably the government is the biggest stakeholder in the cement industry in Ghana. So are we going to fund these people and they are not going to promote our beautiful material?

And what would you have done if you were there with us?

It's a difficult question to answer but I wouldn't have used cement. Maybe in the foundation but I wouldn't be mixing clay materials with cement, it's just not a good idea, I don't think it's a good idea. Over time, I mean I spent a year in Australia and we mixed a lot of cement in with what they call rammed earth and so on and they said 'it's just five per cent, just five per cent' but effectively what they are doing is building concrete. If you have got a wall that's that thick that's got 5% of cement is like having that's that thick that has got 10% of cement, well that's concrete. So it's just bloody concrete. Just be clear about what you are doing. And as soon as you start ('sniffing') you are hooked. It's very difficult to get off it. It gives a sense of security which may in certain circumstances be justified but you are saying to all of those people in that village is 'you can't really do this unless you have got cement'. That is the message that you are giving out, make no mistake that when you say to them 'you can't really do this without cement' what you are saying to them is you really can't do this without cement.

That is the message, there can't be no other message. Oh these guys came and built this great structure but we have to have cement. And that's a very damaging place to start. Cement is a fantastic material, you can build the Twin Towers but ... I know that we can build four-storey buildings with earth so I would rather you justify to me why you are building with cement, than I have to justify to you why I am building with earth. It always comes the other way round that I have to justify what I am doing. But I think if you are using cement it's 10% of all of our CO2 emissions, 10%. One in ten particles of CO2 that's gone into the atmosphere this year from human activity is in the production of cement. So it's a really big issue.

It is a big issue. And another big issue that we had there was the roof which I found very very problematic to think about the roof.

Yes.

I found it disgusting to use this corrugated tin roof. I hate tin roofs and was very vocal about it. We had huge arguments, I hate those roofs. They are rusting, they look horrific, they are hot, they are disgusting but people keep on using them. I never expected that I would go there and say yes lets use corrugated tin for the roof but everybody else wanted that and I got very angry and told somebody 'do you live in a house with a corrugated tin roof? Why do you support this idea here? Why don't you go back to Ireland or wherever you come from and build it there?' No because 'we' don't live like that, but who told you that they live like that? And I had done some research before I went to Ghana, I had read some fantastic books authored by Rapoport for example, looking into earth buildings around the world. He had sketched some fantastic details of earth roofs on earth buildings in Western Africa because that's the traditional way to build a roof in many parts of Africa. I thought ok we have all this information, it's a very old tradition, it's part of history so I thought let's try to do that, and people said no, no, no it's easier to get a tin roof.

Once you start something spinning round it's difficult to stop it.

Yes it is difficult to stop but what I am saying is that we are not Ghanaians, I personally never lived in a house or building with a tin roof. In Greece people use them for chicken coops. Who lives in a house with a corrugated tin roof? Nobody wants to at least. And

how can I go somewhere else and say that no I will do this here because you live like this and I can do it here. So I think it's unethical at the same time and it's very expensive, I don't remember exactly how much of our budget went to that shiny tin roof. I just could not believe it. I thought ok I am paying 300 euros and part of it funds the tin roof!