



THE NEW ART OF MAKING

THE PRACTICE OF PRICE & MYERS GEOMETRICS
11th December 2015 – 7th February 2016

Gallery at Foyles
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When 20th century architect Alvar Aalto spoke of building art as being "...a synthesis of life in materialised form... not a splintered way of thinking, but all in harmony together", he was in a very different time, yet his ideal seems to resonate with the idea of an innovative and radical model of "digital craftsmanship", which combines architectural design, creative engineering and structural mechanics with sophisticated digital design tools and computerised fabrication to create a kind of multi-disciplinary "master craftsman", a "designer-maker". This has brought an exciting new freedom to the rendering

of sculptural form, working with materials in a way hitherto unimaginable, and has led to Price & Myers Geometrics playing a key role in a process which has hitherto been focused mainly on the artist and the curator. It heralds a pioneering new approach to commissioning art 'into the public realm', moving away from more traditional approaches to "public art" as a separate civic gesture or a corporate 'front-of-house' mark of wealth and success by designing large-scale artworks that are able to intervene in, and even replace, landscape, architecture, infrastructure and interior spaces. In a world where the interchange of disciplines is becoming the norm, a new breed of patrons sees nothing wrong in mixing architecture, landscape and infrastructure and in commissioning artists and creative engineers who can work alongside - or instead of - traditional urban practitioners. The idea of 'playing the city' has provided new opportunities for creative teams to re-imagine bridges, buildings and the urban landscape, changing the way art relates to the world. This necessitates a new way of working - a symbiotic relationship between curator, artist and the "designer-maker" Price & Myers Geometrics represent - through whose collaborative alchemy the vision is realised:

production of accurate models and templates -

something that had not been attempted before in

architecture and engineering which was, as Parker explained, '... at the cutting edge of what was possible, which allowed us to streamline ideas and draw from the inside out. So if you cut across Slipstream like a stick of rock you get an idea of the whole'.

Weighing 77 tons and 78 metres long, all the inventiveness of programming, fabrication and rigorous testing came together to realise the gigantic sculpture; the different planes of the aluminium cladding, the 250,000 rivets, the wrapping of the form around the supporting columns of the space - each part custom-designed to fit with every other custom-designed part - dazzling with its sheer audacity of scale and ambition, a triumph of Futurecity's cultural placemaking strategy.

Maarten Kleinhout of CSI (Commercial Systems International), the fabricators for Slipstream, described how

thicknesses and that was the main point of friction. It was really nice to have

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'Correct and Magnificent ...forms assembled in light.' - Le Corbusier

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It's the idea of a 'museum without walls', with a creative dialogue between the curator, the client, the artist, the engineer, the fabricator. It requires a more collaborative approach, and arguably a new breed of client, curator, artist, engineer and fabricator to make it happen. The playground for this approach is becoming more open: the market is interested in original ideas and applications, and in the kudos, attention and narrative which these bring, but they also need some persuasion to give up their bridges, landscape and architecture - thus the collaborative relationship between curator (Futurecity), client, artist and multi-disciplinary studio like Price & Myers - who realise the intervention - is of vital importance. (Mark Davy, Futurecity, 2015)

The New Art of Making showcases the over-arching creative vision of this revolutionary new approach to "cultural placemaking": Slipstream (2014), Vertical Shell (2015) and The Last Chair Arch (2015) - all complex artists' commissions conceived and curated by Futurecity - are a testimony to the collaboration and skill required to turn creative dreams into reality. "Building from first principals each time to "get" what the brief might be..." (Ralph Parker, 2015). Price & Myers worked iteratively with curator, artist and fabricator throughout, using their cutting-edge fusion of technological mastery and creative design, construction and engineering expertise to realise these spectacular interventions.

There are daring contrasts, beauty and excitement in the way Price & Myers use traditional materials such as aluminium, steel and wood, testing them and pushing them to the limits of their capabilities and strength as they soar, twist and span space. They emphasise that contemporary engineering has made highly ambitious and complex structures possible: where previously there would be no way of testing all the information without huge time and effort, all that has now changed with the advent of digital models which can then be laser-cut: The sculptures, bridges and innovative buildings are realised through digitally engineered Lego®-type kits, designed for each project, which allow for innovative and imaginative permutations - as opposed to the more traditional fabrication method which uses prefabricated standard components that are restrictive and often wasteful. Non-artwork architectural projects, such as Fisherman's Bridge (2008) (cleverly designed so that people crossing can strike the steel uprights to play a tune), Eel Net Bridge (2008), Meads Reach Bridge (2008), and Southend Pier Cultural Centre: (2012) show how Price & Myers' method of exploring novel ways to work with materials, site and dynamic juxtapositions threads through all their work, turning ordinary buildings and bridges into things of lyrical beauty.

The things you make elements of - whether sculptures, bridges or buildings - are systems, of fabricated, mass-produced industrial objects: If you think of all the things you can build with Lego® blocks, what digital craftsmanship allows you to do is to redefine the block and actually invent your own, based on materials and tools that you can put to work together. This gives you a whole range of possibilities and approaches for how you can fit materials together to produce something really bespoke. (Tim Lucas, Price & Myers, 2015)

The basic idea [of digital craftsmanship] is that the designer assumes a great deal of responsibility for how something is made and built. They actually put the craft into the object, which becomes something that is accurately made, fits seamlessly together, at whatever the devised scale is, and is highly co-ordinated. This involves digital design tools, CAD programmes, 3D and 2D digital fabrication tools, laser cutters, printers and robot arms. It could be a sculpture such as Slipstream or Vertical Shell, or something like a bridge or a building. We are the maker of it, working in collaboration with the artist or designer, honed with the expertise of the fabrication industry; before it is taken to a machine and the parts are produced and assembled. (Ralph Parker, Price & Myers, 2015)

Slipstream (2014), artist Richard Wilson RA's colossal sculpture for Heathrow's Terminal 2/The Queen's Terminal, based on a stunt plane twisting and cartwheeling through the air in a kinetic moment of travel, was always going to present design and fabrication challenges. Wilson's original drawings, flowing across the page with their wonderful loops of colour and movement and his paper and wood model planes, needed to be carefully translated into material sensations of speed, velocity, acceleration and deceleration. The collaborative intuiting and authoring during the design stage included Wilson rolling a hamster ball containing a paper model of the plane across the floor, and watching aerobatic pilot Paul Bonhomme cut the engine of his Zivco Edge 540 in a series of spectacular 'drops' and loops as it punched through the air, leaving a displaced slipstream. The advantages of digital craftsmanship came to the fore as Wilson's vision and passion was translated into computer data and fed into specifically designed programmes, allowing the

the different teams were all 'swept away by the same wave'. The 1:18 scale plywood facsimile of Slipstream (2013) or the 'hundred thousand-piece jigsaw' vividly reveals the enormous complexity of the shape, twists and angles of a structure containing 30,000 unique pieces. The bulkheads, exposed cross fins and slotted plywood, a symphony of precision engineering with hints of Umberto Boccioni's Unique Forms of Continuity in Space (1913), Marcel Duchamp's Nude Descending a Staircase (1912) and the energy of the Futurists. Slipstream marked a distinct shift from Price & Myers' old working model to the new, without which 30,000 individually manufactured pieces would have been inconceivable. The Rivet Series after Slipstream (2012), a backlit transparency, presents the sculpture's rivets as galaxy points in space, describing the sweeping motion of the sculpture and giving yet another artistic dimension to the fabrication.

Vertical Shell (2015) by Tobias Putrih, further demonstrates Futurecity's innovative vision and Price & Myers' skilled use of their digital craft toolbox. Seen from the street, this commission for the South Bank Tower lobby now provides a link with the cultural regeneration and artistic hub that the South Bank has become - where previously the idea had been only to fill the space with furniture: the sculpture's dramatic and dynamic form, an arresting construction of purple anodised aluminium, now rises tantalisingly almost to the ceiling. Will York of Price & Myers described how the most exciting part for him was that the sculpture's materials were pushed so far to the limit:

[Vertical Shell] is pushed further to the allowable capacity of anything I have ever engineered. There are parts that are working at ninety-eight or ninety-nine percent of their allowable capacity and that is something that you don't often get to do. You are dealing with the project from beginning to end, with everyone's insight and expertise pooled from the outset. This in turn produces a more beautiful work, as everyone is in sync. That is the beauty of digital tools: digital craftsmanship makes [this sculpture] possible. (Will York, Price & Myers, 2015)

Putrih is an artist who enjoys designing structures that often overhang and seem to be almost on the point of collapse. When working with Futurecity and Price & Myers to produce his spectacularly engineered sculpture, Putrih knew the space was tall and narrow with limited options, so he built the sculpture from the bottom up, using as inspiration an oyster shell that had been found nearby. His main concern was how the structure would visually affect the viewer when seen from the street, or when the viewer approached from inside the lobby and moved around it. Beginning with his hand drawings, Price & Myers worked with him on the design:

I wanted a minimal design and I had to lose some of the panels in the structure for space reasons, but it made it even more visible from the street. Usually I don't work with colour, but with Price & Myers, and helped by Futurecity, I played with different anodised renders, as some colours were unstable and I wanted the density of all the purple to be the same. I don't always know what is possible structurally, but I do know how to imagine and think, so I designed a 3D digital model and we worked to see what was achievable. Every piece was different, which was a challenge. Price & Myers used powerful software to calculate the possibilities for Vertical Shell, as I wanted to test the aluminium to its limits: I watched the statistical analysis spit out how much I could push. This was architecture and art intersecting in a real sense. (Tobias Putrih, 2015)

Putrih's technical background in physics meant that he had a particular engagement with the aluminium's tension and strength - how the anodised purple absorbed light, and how the sculpture looked from different viewpoints. He wanted it to be 'poetry'. The fins are so thin because Putrih wanted the points almost to disappear in places, while the constellation of silver polished rivets and bolts glow in the sea of purple, a contrast of fragility and strength viewed from different angles. During the testing stage Putrih modified the design with Price & Myers, cutting and losing some fins from the outer shape to make it even more of a structural challenge.

There was a great deal of discussion on plate

someone Pushing the boundaries saying "a bit thinner, a bit thinner". I remember quite long, heated phone conversations over 3.2cm versus 3.0cm thickness... That design push is fabulous to work with, and in the end we did solve the problem and sourced a different grade of aluminium that could be anodised. But we did have a kind of enormous toast rack-type structure to contend with, and if we hadn't had carefully-designed connectors everywhere, the structure would have been in danger of going over sideways. The really tricky step was designing all the slightly fatter connections - the connector tubes - that shared the weight of the entire sculpture equally, so no single element was overstressed. (Will York, Price & Myers, 2015)

Whereas most of Price & Myers projects are permanent Chair Arch: Masterclass in Sitting (2015) was differently conceived, and temporary. Developed by Futurecity in collaboration with the commissioned artist Andreas Lang of Public Works, it related to the tradition in High Wycombe - a centre for furniture makers - of marking special occasions by constructing an "arch of chairs" to demonstrate the town's skills and wares to visiting dignitaries. In recent years the arch had been reduced simply to chairs bolted to a structure, for Health and Safety reasons. Lang's vision was to produce a piece of chairs and nothing else. Price & Myers worked with computer-controlled plywood and found a structural load path to make what looked like a random balancing of three different designs of chairs in a fragile arch, yet stable enough to climb on. The result was magical: How was it pieced together? How was it supported? Where did the strength come from? The chairs, which were blue and standardised with holes that could be used to slot different permutations together, had hints of Shaker furniture and Bauhaus design, while the rawness of the exposed ply presented an inviting playfulness whilst still demonstrating the marriage between digital craftsmanship, mass production and individuality. After two weeks the structure was disassembled, and the chairs - a selection of which may be seen in the display at Foyle's - given to the public.

What excited me about the project were the kids' chairs and the different pieces of the puzzle that created a natural arch. The different materials are birch ply and spruce: there is a pleasing rawness in the mass-produced, balanced chairs, which are based on traditional craftsmanship and are sturdy enough for adults and children to safely climb on. (Rob Nilsson, Price & Myers, 2015)

In 1809, Friedrich von Schelling spoke of architecture as being 'frozen music', and it is the beautifully orchestrated engineering, the creation of the harmonious whole, that characterises Price & Myers Geometrics' digital craftsmanship model, which they use to realise sculptural Gesamtkunstwerks. As the artist Richard Wilson said of Slipstream when he saw it finally installed in Heathrow Terminal 2's Covered Court: 'There are plunging shadows on the surface, there are highlights on the glistening edges... it's like passing through the clouds and into the sun'. Works like

Assemble's controversial 2015 Turner prize-winning entry Granby Four Streets (2015), the regeneration of a Tottel street, architect Thomas Heatherwick's vision for a new London garden in the form of a pedestrian bridge across the River Thames (in progress), and Random International's Rainroom (2012), which changes an ordinary museum visit into an enchanting, interactive experience, have all brought formal recognition for a new creative age, literally embedding art in the daily lives of ordinary people through the harnessing of technology, artistic creativity and creative engineering. The ground-breaking collaborative projects realised by Futurecity and "designer-maker" studio Price & Myers Geometrics in The New Art of Making personify the magic of this visionary new age of public art.

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Slipstream (2013) - Richard Wilson RA
Photography: David Levine

Fisherman's Bridge (2008) - Honey
Photography: Ralph Parker RIBA

Masterclasses in Sitting, The Last Chair Arch (2015) - Andreas Lang
Photography: Thierry Bal

Vertical Shell (2015) - Tobias Putrih
Photography: by Ron Bambridge

Rivet series after Slipstream (2012) - Ralph Parker RIBA
Background Image

Southend Pier Head (2012) - White Arkitektler / Sprunt
Photography: Luke Hayes - Image overlaid