

New Materialism

The skyline of Beijing has been transformed in recent months. A new generation of buildings has emerged. Some of them – such as the new CCTV headquarters building designed by OMA, the ‘Bird’s Nest’ Olympic stadium by Herzog & de Meuron, and the ‘Water Cube’ Olympic Aquatics Centre by PTW Architects - are among the most startlingly novel to be found anywhere in the world. These three buildings do not only provide a striking backdrop to this exhibition. They also seem to provide evidence of a shift in architectural sensibilities that underpins much of the work in the catalogue.

It is as though the old parameters that governed postmodern architectural culture are giving way to a fresh approach to design. This is most evident, perhaps, in attitudes towards structure and ornamentation. The emphasis on the ‘decorated shed’ which Venturi, Scott-Brown and Izenour had championed so much in their seminal book, *Learning from Las Vegas*, and which gripped architectural production for several decades, is – it would seem – finally on the wane.¹ What we are witnessing instead is a new expressivity where structure is no longer subordinated to ornament and hidden beneath the surface, and the façade is no longer dominated by the logic of curtain walling. Instead structure is being expressed on the outside and treated as a form of ornamentation. This is not to say that structure is being privileged over ornament. Rather the relationship between structure and ornamentation is being reconfigured so that structure has become ornamental, and ornament structural. Structure and ornament feed into and inform one another.

Behind this there is clearly an underlying interest in structural performance. Buzz-words such as ‘performativity’ have begun to appear, as concerns for structural efficiency play an ever greater role in the work of a certain group of progressive architects, many of them featured in this catalogue. Meanwhile architects from the past who had an acute awareness of structural performance – figures such as Antonio Gaudi, Frei Otto and Pier Luigi Nervi – have been revisited, and have become the focus of critical re-evaluation. Meanwhile certain leading contemporary structural engineers, such as Cecil Balmond – ‘material philosophers’, as Manuel DeLanda has called them - have begun to assume a certain cult status.

¹ Robert Venturi, Denise Scott Brown and Steven Izenour, *Learning from Las Vegas*, Cambridge: MIT Press, 1972, p. 87.

Paralleling this interest in structural performance is an increasing interest in environmental performance. Just as intelligent structures can reduce the amount of materials used, so too intelligent environmental design can reduce the amount of energy consumed. Both interests are ultimately part of the same logic of performativity – the urge to use materials efficiently and minimise waste. As such they cannot be dismissed as the latest fad in an architectural culture all too wrapped up in the latest fashions, but should also be seen to be operating within an ethical dimension in addressing concerns about sustainability.

This concern for performance has led to an increasing interest in materials and their behaviour. This refers both to the use of new materials – such as the ETFE used for pneumatic panels on the ‘Water Cube’ – but also to the intelligent use of more traditional materials – such as the steel structure of the ‘Bird’s Nest’.² Paradoxically, it has often been through ‘immaterial’ processes – through the use of programming, code and parametric software programmes – that material behaviours have been explored.³

Within contemporary architectural design, then, a significant shift in emphasis can be detected – a move away from an architecture based on purely visual concerns towards an architecture justified by its performance. Structural, constructional, economic, environmental and other parameters – concerns that were once relegated to the realm of secondary concerns – have become primary, and are being embraced as positive inputs into the design process from the outset. Architecture – it would seem – is no longer so preoccupied with style and appearance. It is as though a new paradigm has emerged.

This new paradigm can be understood as an attempt to overcome the scenography of postmodernism. It is an attempt to locate architectural discourse within a more objective and ethical framework, where efficient use of resources supercedes the aesthetic indulgences of works that came under the broad heading of postmodernism, which might include not only the somewhat conservative movement noted for its decorative use of applied decorative motifs – as postmodernism is understood most commonly within architectural culture – but also more progressive movements such as deconstructivism, all of which privilege appearance over performance.

² Ethylene tetrafluoroethylene is a fluorocarbon based polymer which has also been used on the Allianz Arena in Munich, Germany, and the Eden Project in Cornwall, England.

³ On this see Neil Leach, David Turnbull and Chris Williams (eds.), *Digital Tectonics*, London: Wiley, 2004.

Deleuze and New Scientific Thinking

A similar shift can be detected within architectural theory. If during the 1980s and 1990s architectural theory was dominated by an interest in literary theory and continental philosophy - from the structuralist logic that informed the early postmodernist quest for semiological concerns in architectural writers such as Charles Jencks and Robert Venturi to the poststructuralist enquiries into meaning in the work of Jacques Derrida that informed the work of architects such as Peter Eisenman and Bernard Tschumi - the first decade of the 21st century has been characterized by a waning of interest in this branch of theory.

This is not to endorse the position of architectural theorist, Michael Speaks, who claims that we have witnessed the 'death of theory'. For such a theory, it could be argued, is merely an anti-theory theory in that there is surely no position that stands outside theory. Any form of practice must be informed by a theoretical impulse, even if it is a positivistic one that purportedly disdains theory. Rather, I would claim, what we are witnessing is the ascendancy of a new branch of theory, one that engages with science, technology and material behaviour.

Much of this new theoretical work finds its grounding in the thinking of Gilles Deleuze. For if there is one continental philosopher of the 20th century who has survived the shifting sands of intellectual fashion, where the spotlight has moved on from linguistic concerns towards a more material understanding of the world it is Deleuze, who has become the philosopher of choice within certain progressive architectural circles, where the concept of the diagram holds a dominant position, and where questions of material performance have become paramount.

Deleuze makes few explicit references to architecture in his writings, but in *A Thousand Plateaus* - which he co-wrote with Félix Guattari - there is a very precise formulation offered about two alternative sensibilities towards architectural design.⁴ It is as though the whole history of architecture can be divided into two contrasting yet reciprocally related outlooks. One would be a broadly aesthetic outlook that tends to impose form on building materials, according to some preordained 'template'. (Here one immediately thinks of the role of proportions and other systems of visual ordering.) The other would be a broadly structural outlook that tends to allow forms to 'emerge' according to certain programmatic requirements.

⁴ Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi, London: Athlone, 1988.

The first sensibility is described by Deleuze and Guattari as the 'Romanesque'. The term seems somewhat restrictive, in that the principle covers a range of stylistic approaches which broadly come under the umbrella of the Classical. This would include not only the Classical as such — the Roman and Greek styles which mutated through the Romanesque, into the Renaissance, Mannerism, Baroque, and Neo-Classical — but also any outlook which focuses on appearance rather than performance.

The second could be broadly defined as the Gothic, which is configured not as a style, as it was in the nineteenth century, but as a method. It is a way of designing that privileges process over appearance. Form 'emerges' with time, much as the Gothic vault evolved over the centuries, becoming ever more refined in its structural efficiency, until it reached such intricacies as fan vaulting. Within this outlook architecture becomes the result of competing forces, a programmatic architecture that registers the impulses of human habitation, and adapts to those impulses. Deleuze and Guattari analyze the distinction between the Gothic spirit and the Romanesque as a 'qualitative' distinction, between a static and a dynamic model of understanding architecture.⁵

Rather than describing these two different outlooks in terms of style, Deleuze and Guattari refer to them in terms of different 'sciences'. One is a science of intensive thinking that perceives the world in terms of forces, flows, and process.⁶ The other is a science of extensive thinking that seeks to understand the world in terms of laws, fixity and representation. In other words, the one is a smooth science, and the other striated. Deleuze and Guattari also describe this opposition as being that between a nomad, war-machine science and a royal, state science. The latter is a science of fixed rules and given forms, a hierarchical system imposed from above.⁷ By contrast, the nomad war-machine science is a bottom-up model that responds in each individual instance to the particularities

⁵Gothic architecture is indeed inseparable from a will to build churches longer and taller than the Romanesque churches. Ever further, ever higher. . . But this difference is not simply quantitative; it marks a qualitative change: the static relation, form-matter, tends to fade into the background in favor of a dynamic relation, material-forces. It is the cutting of stone that turns it into material capable of holding and coordinating forces of thrust, and of constructing ever higher and longer vaults. The vault is no longer a form but the line of continuous variation of the stones. It is as if Gothic conquered a smooth space, while Romanesque remained partially within a striated space (in which the vault depends on the juxtaposition of parallel pillars).' Deleuze and Guattari, *A Thousand Plateaus*, p. 364.

⁶One does not represent, one engenders and traverses. This science is characterized less by the absence of equations than by the very different role they play: instead of being good forms absolutely that organize matter, they are "generated" as "forces of thrust" (*poussées*) by the material, in a qualitative calculus of the optimum.' Deleuze and Guattari, *A Thousand Plateaus*, p. 364.

⁷Royal, or State, science only tolerates and appropriates stone cutting by means of *templates* (the opposite of squaring), under conditions that restore the primacy of the fixed model of form, mathematical figures, and measurement.' Deleuze and Guattari, *A Thousand Plateaus*, p. 365.

of the moment.⁸ It is this Gothic spirit that is seemingly celebrated by certain contemporary architects working under the aegis of Deleuze's thinking in this 'performative turn' within architectural culture. Out of Deleuze's thinking a new 'performative' theory of architecture has emerged.

New Materialism

I will call this new theory, 'New Materialism', a term coined by Manuel DeLanda, a self-styled 'street philosopher' who has developed a certain reputation for his interpretation of the work of Deleuze, and who has had a major impact on architectural thinking through various teaching positions he has held in architectural schools in East Coast America. DeLanda uses this term to define a new theoretical paradigm, which operates as a retrospective manifesto for a movement whose genealogy stretches back to the work of biologist D'Arcy Wentworth Thompson, philosopher, Henri Bergson, and beyond, but also incorporates much recent scientific thinking that has emerged from centres of interdisciplinary scientific research, such as the MIT Media Lab and the Santa Fe Institute. DeLanda has effectively identified this new paradigm through his own theoretical writings. Books such as *A Thousand Years of Nonlinear History* recast the whole history of urban growth within a framework of material processes.⁹ He has followed this up with other books, such as *Intensive Science and Virtual Philosophy*, which examines the role of scientific theory in Deleuze's writing.¹⁰ Within a more precisely architectural framework, DeLanda has written a series of articles drawing upon Deleuze's notion of the 'Gothic' spirit, and exploring its relevance for thinking in terms of material behaviour.¹¹ Most recently he has published a series of articles on New Materialism in *Domus*, looking at biomimetics, intelligent materials and other contemporary material concerns.

New Materialism can be contrasted with the old dialectical materialism of Karl Marx. In some sense it relies on the same basic principle of Marxist thinking – that what we see on the surface is the product of deeper underlying processes. But it extends this principle from a simple economic arena into the whole of culture. The key behind New Materialism is to recognise that the emphasis today

⁸A further way to distinguish these two models of operation is the distinction Deleuze and Guattari make between 'minor' and 'major' sciences: 'the tendency of the broken line to become a curve, a whole operative geometry of the trait and movement, as pragmatic science of placings-in-variation that operates in a different manner than the royal or major science of Euclid's invariants and travels a long history of suspicion and even repression.' Deleuze and Guattari, *A Thousand Plateaus*, p. 109.

⁹ Manuel DeLanda, *A Thousand Years of Nonlinear History*, New York: Zone Books/Swerve Editions, 1997.

¹⁰ Manuel DeLanda, *Intensive Science and Virtual Philosophy*, London and New York: Continuum, 2002.

¹¹ See, for example, DeLanda 'Material Complexity' in Neil Leach, David Turnbull and Chris Williams (eds.), *Digital Tectonics*, London: Wiley, 2004.

is not on symbols but on material expressions. We are concerned less and less with symbolic content – what a building might ‘mean’ – and more and more with performance and material behaviours. Just as – in DeLanda’s terms – we need to understand our cities in terms of the economic, social and political forces that generate them, so too we need to understand architectural design in terms of material processes.¹²

New Materialism has yet to be defined in concrete terms even as a philosophical concept. Indeed if we are to look for a definition of the term, the best we could do is to see it articulated indirectly through DeLanda’s own writings. Within architectural culture, the term has been used even less often, and only by DeLanda himself. Nonetheless it is clear that it serves to draw together and make explicit a series of concerns expressed in progressive design circles, both through the works of progressive architectural practices, such as Atelier Manferdini, Matsys, Toyo Ito and Associates, OMA, LAVA, OCEAN and Material Ecology, and through the publication of various influential volumes which engage with the central themes of New Materialism, without using the term itself.¹³ It is reflected too in an increasing interest in innovative structural engineers, such as Cecil Balmond, Hanif Kara and Mutsuro Sasaki, and digital fabrication processes, such as CNC milling, laser cutting, 3D printing, which are playing an increasingly important role in architectural education throughout the world, especially in schools such as the Architectural Association, ETH Zurich and Harvard GSD. And it is reflected too in the increased interest in immaterial processes, such as scripting, programming and parametric modelling, that inform the design itself.

As such New Materialism could be used as a term to describe this new body of work – a body of work that offers a powerful riposte to the scenographical emphasis of postmodernism. For what we need to recognise is that there might be an apparent formal similarity between the work of these architects and ‘non-standard’ postmodern architects. But that is where the similarity ends. In the ‘postmodern’ approach towards design, the architect is perceived as the genius creator who imposes form on the world in a top-down process, and the primary role of the structural engineer is to make possible the fabrication of the designs of the master-architect, as close as possible to his/her initial poetic expression. Meanwhile the more

¹² If, for example, we were to look for an illustration of this new approach in terms of design processes, we might look to the example of stones on a riverbed in some mountain valley. It is not as though the stones collected there were arranged by God – as if s/he had spent an afternoon gardening there and had arranged the stones in a certain way – but by the forces of nature itself. The position of each stone is defined by its shape, weight and the forces that washed it there after the melting snows create a torrent of water that swept down the mountain.

¹³ See, for example, Michael Hensel, Achim Menges, Michael Weinstock (eds.), *Emergence: Morphogenetic Design Strategies*, London: Wiley, July 2004; Michael Hensel, Achim Menges, Michael Weinstock (eds.), *Techniques and Technologies in Morphogenetic Design*, London: Wiley, March 2006.

contemporary 'New Materialist' architects operating within the new morphogenetic paradigm have become the controllers of processes, facilitating the emergence of bottom-up form-finding processes that generate structural formations.

The difference, then, lies in the emphasis on form-finding over form-making, on bottom-up over top-down processes, and on formation rather than form. Indeed the term 'form' itself should be relegated to a subsidiary position to the term 'formation'. Meanwhile 'formation' must be recognized as being linked to the terms, 'information' and 'performance'. When architecture is 'informed' by performative considerations it becomes less a consideration of form in and off itself, and more a discourse of material formations. In other words, 'form' must be 'informed' by considerations of 'performative' principles to subscribe to a logic of material 'formation'.

The logic of New Materialism, in other words, is now appearing as a pervasive logic that is informing not only the work both of an emerging generation of students and architects whose work is included in this exhibition, but also the Bird's Nest, Water Cube and CCTV headquarters, the new buildings in Beijing that provide such a striking backdrop to the exhibition. There is a new paradigm in architectural production, and this catalogue is trying to capture that paradigm.

Neil Leach