

## *The New Paradigm in Architecture*

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A change of heart, a new vision for architecture? If there really is a new paradigm in architecture then it will reflect changes in science, religion and politics and it does not take a clairvoyant to see that George Bush & Junta (as Gore Vidal calls them) are very much locked into a medieval world view (if that isn't an insult to the Gothic). No, the reigning disciplines are struggling with primitive orientations and will continue to be so until one catastrophe or another (global, ecological?) forces them to shift gears, there is no widespread cultural movement underway. Nevertheless, one can discern the beginnings of a shift in architecture that relates to a deep transformation going on in the sciences and in time, I believe, this will permeate all other areas of life. The new sciences of complexity – fractals, non-linear dynamics, the new cosmology, self-organising systems – have brought about a change in perspective. We have moved from a mechanistic view of the universe to one that is self-organising at all levels, from the atom to the galaxy. Illuminated by the computer, this new world view is paralleled by changes now occurring in architecture.

Several key buildings show its promise – those by Americans Frank Gehry, Peter Eisenman, and Daniel Libeskind. There is also a vast amount of other work on the edge of the new paradigm by the Dutch architects Rem Koolhaas, Ben van Berkel and MvRdV, or the Europeans Santiago Calatrava and Coop Himmelblau, or those who have moved on from high-tech in England, such as Norman Foster. These architects, as well as those that flirted with Deconstruction – Hadid, Moss, and Morphosis – look set to take on the philosophy. In Australia, ARM (Ashton Raggatt MacDougall) has been mining the territory for many years and another group, LAB, has completed a seminal work of the new movement, Melbourne's Federation Square. Soon there will be enough buildings to see if all this is more than a fashion, or change of style, but it certainly is the latter.

The emergent grammar is constantly provoking. It varies from ungainly blobs to elegant waveforms, from jagged fractals to impersonal datascares. It challenges the old languages of classicism and modernism with the idea that a new urban order is possible, one closer to the ever-varying patterns of nature. One may not like it at first, and be critical of its shortcomings, but on second glance it may turn out to be more interesting, more in tune with perception than the incessant repetition of colonnades and curtain walls.

The plurality of styles is a keynote. This reflects the underlying concern for the increasing pluralism of global cities. Growing out of the Post-Modern complexity of the 1960s and 1970s, Jane Jacobs and Robert Venturi, is the complexity theory of the 1980s, which forms the unifying idea. Pluralism leads to conflict, the inclusion of opposite tastes and composite goals, a melting and boiling pot. Modernist purity and reduction could not handle this reality very well. But the goals of the new paradigm are wider than the science and politics that support it, or the computer that allows it to be conceived and built economically. This is the shift in world view that sees nature and culture as growing out of the narrative of the universe, a story that has only recently been sketched by the new cosmology in the last thirty years. In a global culture of conflict this narrative provides a possible direction and iconography that transcend national and sectarian interests.

To see what is at stake one might start with those at the edge of the new tradition and see how they differ from those closer to the centre. I would call them Organi-Tech architects because they reflect both their Modernist parents, the high-tech architects who used to dominate Britain, and their grandparents, organic architects such as Frank Lloyd Wright and Hugo Haring who tried to parallel natural forms. Organi-Tech, like its twin 'Eco-Tech', straddles both sides of this duality; that is, it continues an obsession with technology and structural expression while, at the same time, becoming more ecological. The contradictions and hypocrisies this leads to, are openly admitted by Ken Yeang, who acknowledges that while the skyscraper is very un-ecological by nature it is hardly going to disappear as the corporate type of choice. So, like Foster, Piano and other Modernists committed to this reality, he aims to make them less environmentally costly. Richard Rogers is committed to this policy at the regional scale and currently making heroic attempts to change the entropic urban trends of Britain. Other Organi-Tech designers produce surprising structural metaphors that celebrate the organic nature of structure, the bones, muscles and rippling skin of an athlete at full stretch. Both Nicholas Grimshaw and Santiago Calatrava have designed expressive skeletons meant to dazzle the eye, especially when the sun is out (pl. 111).<sup>1</sup> They are filigreed light-traps, or pulsating exoskeletons that show our bodily relation to other organisms. One cannot help being moved by these spectacular constructions even if their message often may be too obvious.

Yet, while relating to nature and exploiting the computer in design these architects have not accepted the rest of the new philosophy. This is evident in several ways, particularly in their handling of structure. This they make, in the manner of Mies van der Rohe, excessively repetitive. They conceive prefabricated elements that are identical, or in mathematical jargon "self-same rather than self-similar", boringly replicated rather than fractal. Most of nature – galaxies, developing embryos, heartbeats and brain waves – grows and changes with minor variations. This insight was finally given a scientific basis by the late 1970s, after the computer scientist Benoit Mandelbrot wrote his polemical treatise *The Fractal Geometry of Nature* in 1977. It took more than a decade before the idea

was assimilated by architects, and translated into computer production for building. But by the 1990s it led to the promise of a new urban order that, like a rainforest, is always self-similar and always evolving slowly, an order more sensuous and surprising than the duplication of self-same elements. Perception delights in fractals, in a slightly varying stimulus, which is why, at dinner, it is better to compare wines than stick with the same one. Endless repetition dulls the palate, as Organi-Tech designers show when they multiply a good idea to exhaustion. Think of Renzo Piano's beautiful Kansai airport, the same interesting airfoil shape extruded for a whole mile, until it is boredom squared. Architects, by contrast, who use fractals – Libeskind, ARM, Morphosis – literally give us a break from their standard forms, and the young group LAB and Bates Smart have already pushed beyond these first experiments and refined the grammar.

Another identifiable group, producing *rounded* fractals, were recently christened "Blobmeisters" in New York. The label implies several truths, not all of them flattering. First that these 'meisters' were determined to capture the field, and do so with 'blob grammars' and abstruse theories based on computer analogies – cyberspace, hybrid space, digital hypersurface were some of the other terms. Often the "Blobmeisters" were young university professors and their students engaged in the usual turf wars. Greg Lynn, easily the most creative and intelligent of this group, has argued in a series of books that the blob is really a developed form of the cube. It can handle more information than the dumb box; its complexity and therefore sensitivity are potentially greater. But this is not the case, if the grammar is not scaled and phrased with skill and correlated with function. So many blobs are simply the result of stacked geodesics, like Grimshaw's Eden project, a series of bubble-forms that remind me of what geologists call globular clusters – enticing, edible, squashy in appearance. But these creations can sometimes be awkward, for instance around the entrance, or where they meet the ground or another structure. Norman Foster's two giant blobs, one for the Mayor of London the other for a new music centre in Newcastle, have these problems. The internal space and structure are more convincing than the way they relate to the city. By contrast, his Swiss Re Headquarters building is a perfected, stretched blob conceived as a city landmark. It started off life as an egg shape and then, after wind and structural studies, re-emerged as other natural metaphors – not only the far-fetched gherkin of the tabloids, but a more plausible and welcoming pinecone and pineapple. The spiral skycourts and aesthetic refinements give further rationale to these metaphors, making them multivalent and enigmatic in a plausible way, as I will argue. Once again the computer helped produce self-similar forms at an acceptable price. The entasis of this skyscraper, like that of a Doric column, leads to a new kind of propositional beauty, one worked out digitally (pl. 115).<sup>2</sup>

Foster's partial shift from a Cartesian to blob grammar marks a turn of mainstream practice towards the new paradigm. It follows many sculptural experiments, for instance those of Will Alsop in Marseilles and Frank Gehry in Europe, Japan and America. Ever since Gehry's New

Guggenheim opened in Bilbao, in 1997, architects realised a new kind of building type had emerged, and that there was a standard to surpass. His landmark building (telling euphemism for what used to be called a monument) pulls this former industrial city and its environs together – the river, the trains, cars, bridges and mountains – and it reflects the shifting moods of nature, the slightest change in sunlight or rain. Most importantly its forms are suggestive and enigmatic in ways that relate both to the natural context and the central role of the museum in a global culture. Indeed, because of what is called the Bilbao Effect, the enigmatic signifier has become *the* reigning method of designing large civic buildings, especially museums. This emergent strategy, which started in a small way during the 1950s with Ronchamp and the Sydney Opera House, has now become a dominant convention of the new paradigm. Peter Eisenman, Rem Koolhaas, Daniel Libeskind, Coop Himmelblau, Zaha Hadid, Morphosis, Eric Moss – and now mainstream architects such as Renzo Piano – produce suggestive and unusual shapes as a matter of course, as if architecture had become a branch of surrealist sculpture. It has, and the results may often be overblown, pseudo-art, but it is worth examining the multiple causes of this shift.

The chief negative reasons are cultural. With the continual decline of the Christian and Modern belief systems, with the rise of consumer society and a celebrity system, architects are caught in a vicious trap. They have little, if any, credible public conventions and ideologies to build for, they lack any iconography beyond a debased machine aesthetic (or High Tech) and an ecological imperative that has yet to produce accepted symbols, so they are pushed and pulled in opposite ways. The absence of all beliefs leads them to a degree zero minimalism, a good expression of neutrality, but of course one that is totally absorbed into the reigning system. By contrast, a competitive culture demands difference, significance, and fantastic expression in excess of the building task. The enigmatic signifier responds to this conundrum. The injunction is: you must design an extraordinary landmark, but it must not look like anything seen before and refer to no known religion, ideology or set of conventions. In the 1910s the artist Giorgio de Chirico, faced with similar perplexities, was asked what he painted and replied, “the enigma”.

The enigmatic signifier in the hands of Gehry can work well because he labours over the sculptural aspects of the form and light and adopts multiple metaphors that relate, albeit loosely, to the building’s role. Thus in his Disney Concert Hall, the overtones of music and cultural brio were interpreted with clashing petal forms, ship metaphors and symphonic images. At Bilbao many critics found similar allusions to fishes, ducks, trains, clouds and the adjacent hills (pls. 112, 113).<sup>3</sup> One excited writer acclaimed the structure a “Constructivist artichoke” – see analysis – another a “mermaid in metallic sequins”. Several of these organic overtones might be appropriate to the central place of art in the city today, the museum as cathedral; some might be subjective or accidental. But, with the best work in the new paradigm, these metaphors are more than random projections, the outcome of a Rorschach test or automatic, unconscious creation. They are emergent, multiva-

lent signifiers in search of an open interpretation, one related to the building task, the site and the language of the particular architecture. The idea of the ‘open work’ of art has been in the air since Umberto Eco proposed it as a typical response of artists and writers in the 1960s. Now, for social reasons, it has emerged more fully into architectural view. As the monument has mutated into the landmark building, as architects have lost most conventional iconography, they now hope to find through a process of search and invention, some emergent metaphors, those that amaze and delight but are not specific to any ideology.

Again this search is aided by computer – all Gehry’s curved buildings are produced this way, and at only little more expense than if they had been constructed from repetitive boxes. While he candidly admits he does not even know how to switch on a computer, and uses the machine to perfect and manufacture forms worked out sculpturally, younger architects exploit the generative aspects of the digital revolution. Dutch architects, in particular the group MvRdV, construct dataspace based on different assumptions and then allow the computer to model various results around each one. These are then turned into designs and presented polemically to the press, the public and politicians. Alternative societies are contrasted in their “Metacity/Datatown” of 1998 (pl. 132); for instance Holland as a high consumption Los Angeles is opposed to a country of thrifty vegetarians. The built implications of these choices are then exaggerated and turned into an ironic, democratic poetry. It is democratic because the data are a result of collective laws, building codes, straw poles and debated choice; it is ironic because these various forces conflict and often contradict each other, producing bizarre results; and it is poetic because the consequences are presented in deadpan, colourful juxtaposition. One case in point is their sheltered housing for the elderly, another their Dutch Pavilion for Expo 2000 (pl. 116).<sup>4</sup>

This last humorous construction alternates floors of open greenery and enclosed workspace, then surmounts them with wind turbines and a roof garden. At the top a pond collects rainwater and it is circulated throughout, forming an efficient cycle along with the heat re-circulated from the auditorium below. Ecological motivations alternate with economic efficiencies, nature’s cycles intermingle with human activities. One floor is a grid of trees in pots whose bases penetrate the floor below forming an interesting sculptural ceiling. Strange and sometimes appropriate associations are made. Edible plants and flowers occupy floors in repetitive rows, recalling the factory farms of Holland, which mass-produce a remorselessly standardised nature. An exterior stairway wraps the open and closed volume like a coil of black DNA. Semi-transparent screens and varying colours classify the activities like boxes of data on the computer screen. In effect, the forces at work in the Dutch system are handled digitally and emerge in unlikely new combinations. At this point a sceptic will ask how all this differs from the old Modernist commitment to treating the city as a mere summation of statistical forces, the very thing Jane Jacobs and the complexity paradigm criticise. Well, it has to be admitted that much of the thinking here, as elsewhere, is a carryover from the past.

The neutrality, the acceptance of urban and commercial forces as given, the pragmatism and opportunism are hardly a step forward. To reiterate, the new paradigm is at the beginning, not the middle or apex of its development and many architects such as Calatrava and MVRDV are only partially engaged with it. But, at the same time, these and other Dutch architects, and so many of the young exploiting cyberspace, also use the data as creative tools. Their datascares are often truly emergent structures, as well as Dadascares, new forms of bottom-up organisation not possible to realise before the advent of fast computation.

The same is true of another identifiable trend of the new paradigm, the emergence of the landform as a building type and its correlate, the waveform organised around a new grammar of strange attractors. Peter Eisenman has led the way with his Aronoff Centre in Cincinnati, a staccato landform that oscillates around a strange attractor of chevrons and zigzags. It looks in part like the jiggling of tectonic plates, an earthquake, the basic metaphor of the earth as a constantly shifting ground rather than the terra firma we assume. Matter comes alive in this architecture on a gigantic scale. His City of Culture in Santiago de Compostela, now under construction, is another undulating landform that picks up the surrounding landscape as well as other generating metaphors, the local emblem of the Coquille St Jacques and the adjacent medieval city.

Coop Himmelblau, like Morphosis and Zaha Hadid, has won several recent competitions with a wave-like landform – the schemes for a museum in Lyons, and a BMW centre in Germany. Then there is the LAB landform already mentioned, the one built by Enric Miralles in Alicante and those of Ben van Berkel under way. These ten or so artificial grounds really do constitute an emergent urban type, but the one that really put it on the architectural map was FOA's Yokohama Port Terminal, designed in 1995 and finished just before the final of the 2002 Soccer World Cup (pl. 114).<sup>5</sup> Part urban infrastructure and part civic space for sunbathing, festivals and public events, it has the mixture of activities typical of other landforms. Again it was conceived inside the belly of a computer, and the architects Moussavi and Zaero-Polo are quite proud about the way they were surprised by the emergent results, even when they did not like them (“an alienating artistic technique” to which they are, ironically, un-alienated). Shades of Park Hill Sheffield and automatic writing? They eschew the obvious wave and maritime metaphors, but there is no reason for the public to follow suit. This is just one more, exciting, enigmatic signifier.

I believe it is the job of architects to take responsibility for the public and esoteric meanings of a civic building, whether enigmatic or not, but this is an especially difficult task in a global culture without a shared value system. The temptation is to hide behind social and technical requirements, to use supposed determinants to suppress symbolism. Perhaps the only architect of the new paradigm who admits to both larger spiritual concerns and a public symbolism is Daniel Libeskind. His Imperial War Museum-North, outside Manchester, explicitly symbolises the various kinds of

war (on land, sea and in the air) as well as a globe that is fragmented by strife (pl. 117).<sup>6</sup> He constantly invokes the cultural and emotional plane of expression as the duty of the architect; he is not afraid of facing up to the fundamental issues of meaning and nihilism that silence other designers.

Libeskind won the competition for Ground Zero in New York because he faced the symbolic and spiritual issues of the problem both specifically and with the more allusive enigmatic signifier. Rather than be an inadvertent metaphor of death (the “skeletons and hanging bodies” of Vinoly's solution) or an evasive techno-abstraction (as were some of the other entries), he was specific about certain memorial signs: for instance, the “wedge of light” and the “1776 Tower” (both an ascending spiral and sign of the Statue of Liberty). At the same time the slashes, spirals of crystals and abstract slurry walls were suggestive of related meanings of memorialisation. Balancing specific signs with enigmatic signifiers kept his project from being read in an entirely aberrant way.

Perhaps, like Gehry, some of his expressive grammar is too often repeated across projects, and his patriotism a little heavy-handed, but one has to applaud his courage in confronting a major problem of the moment: the spiritual crisis, and the loss of a shared metaphysics. Many people, and some philosophers, would say this deprivation in the global age is inevitable and permanent. Yet other philosophers, notably Mary Midgely, argue that new credible, public concepts have emerged, such as the notion of the earth as a self-regulating system, Gaia. The metaphor of a dynamic planet tuning itself through feedback is, of course, one of the insights of the new paradigm in science, but whether architects come up with a public iconography based on Gaia remains to be seen. My belief is that the universe story will become a shared metaphysics and for this reason my own design work is centred around it: various sculptures of DNA, Black Hole Terraces, symmetry breaking structures, a universe cascade, and so forth (pl. 110).<sup>7</sup> Cosmogonesis, the narrative of the underlying process, is not yet a public religion, and may never become one, but it is still more than a diverting pastime of astrophysics. It is the orientation point for the future, in search of a corresponding iconology (that is, an underlying iconography). The Death of God, like the death of other major narratives over the last hundred years, may be confined to the West, especially visible now that the globe is arming for the ultimate clash of civilisations. But fundamentalisms, either American or Other, are not living cultural movements however powerful they may be. They have produced no art, architecture or writing worth preserving, and the deeper problems remain.

In spite of these problems, the question of whether the new paradigm exists in architecture is worth asking. Do these seven strands hold together, does something unite them? Does the Organi-Tech architecture relate to the fractal; do the enigmatic signifiers emerge out of datascares? Are they connected to the fashion for folding and blob-architecture, the prevalence of landforms and waves; an iconography based on Gaia and cosmogonesis? My view is that the sciences of complexity underlie all these movements, as much as does the computer, while an informing morality has yet to

emerge. The answer is mixed. As Nikolaus Pevsner wrote concerning the paradigm of Modernism in nineteenth-century Britain, seven swallows do not necessarily a summer make. True, this may be a false start, the old paradigm of Modernism can easily reassert its hegemony, as it is lurking behind every Bush and Blair. But a wind is stirring architecture; at least it is the beginning of a shift in theory and practice.

*For illustrations of this article, the reader is referred to pls. 110-117 and 132.*

<sup>1</sup> Santiago Calatrava, City of Arts and Sciences, Valencia, 1991-2002 (pl. 111). Positive organic metaphors but not a fractal grammar. This spectacular urban landscape has many qualities of the new paradigm, and several virtues such as the sculpted white concrete that profiles the structural forces in exciting and innovative ways, but the repetitive nature of the elements typifies the old way of thinking. Much Eco-Tech shows this ambivalent aspect – a half step towards the new paradigm.

<sup>2</sup> Norman Foster, Swiss Re Headquarters, London 1996-2002 (pl. 115). Originally conceived in an egg form, this blob shape was stretched to resemble many other organic things in addition to the notorious gherkin – a pinecone, pineapple, cucumber and phallus – as well as a missile, bullet and bomb. Not only does this polysemy make it an enigmatic signifier, but the computer-perfected entasis makes it a good example of propositional beauty – the central planned skyscraper with elegant double curves shooting to the sky.

<sup>3</sup> Frank Gehry, Guggenheim Bilbao, Bilbao 1993-1997 (pls. 112, 113). The popular and critical success of this building confirmed the enigmatic signifier as the convention for the contemporary monument. Although critics captured part of the suggested overtones of this building – Constructivist artichoke, fish, mermaid and boat – it is the capacity to mean many more things that makes the enigmatic signifier a multivalent symbol. Metaphors drawn by Madelon Vriesendorp.

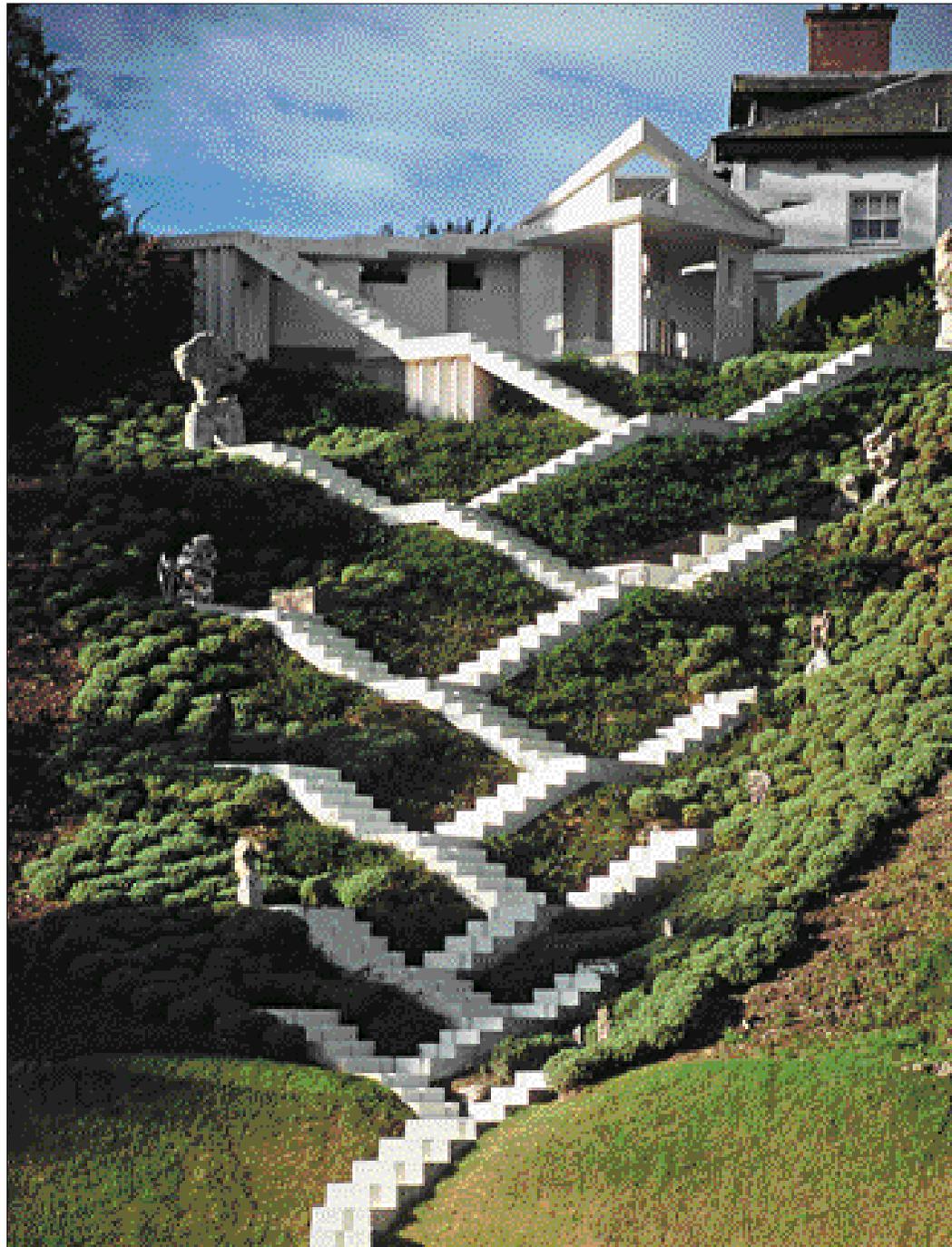
<sup>4</sup> MvRdV, Dutch Pavilion, Expo 2000, Hanover (pl. 116). A stack of synthetic ecologies and artificial grounds determined as a statistical representation of the future Dutch landscape. From the top down can be found 1) windmills, and water on the artificial lake that flows into 2) sheets of water in an exhibition space and then to 3) a forest grown with high-powered lights. Next level down 4) is an auditorium with projection

space, to 5) an agricultural section of smaller plants again artificially lit, to reach 6) a ground floor and grotto of houses and shops. Views and movement are celebrated by the exterior staircase. The sustainability of the closed cycle makes sense, the juxtaposition of gardens and moods is a delight, the remorseless logic humorous, but the question is raised: "Will all of life be managed and pharmed?" No wonder a vocal group in Holland want more wilderness.

<sup>5</sup> FOA, (Moussavi and Zaero-Polo), Yokohama International Port Terminal, 1995-2002 (pl. 114). The landform building as infrastructure and folded landscape of activities. Like the blob building the landform tends to merge floor, wall and roof in a seamless continuity. The architects do not intend the appropriate ship, water and wave metaphors, but like Mies van der Rohe seek a neutral, generic and technological architecture – yet they allow emergence of the unintended.

<sup>6</sup> Daniel Libeskind, Imperial War Museum-North, Trafford, Manchester, 1998-2002 (pl. 117). A symbolic, spiritual and cosmic architecture is still relatively rare but a few architects are trying. Here the globe shattered through conflict is reassembled as three curved shards: the tall Air Shard marks the entrance, and holds flying instruments of war in its open structure; the Earth Shard is a huge exhibition area with even the floor curving gently; the Water Shard curves down towards the adjacent canal and minesweeper moored there. This huge expressive structure is both a giant advertisement, in the sense of Venturi's Duck Building, and an enigmatic signifier of conflict and its resolutions.

<sup>7</sup> Charles Jencks, Universe Cascade, Portrack, Scotland, 2001 (pl. 110). The story of the universe over its 13.7-billion-year history can be understood in broad outlines as jumps in organisation; these are presented here using rocks of various types.





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114.



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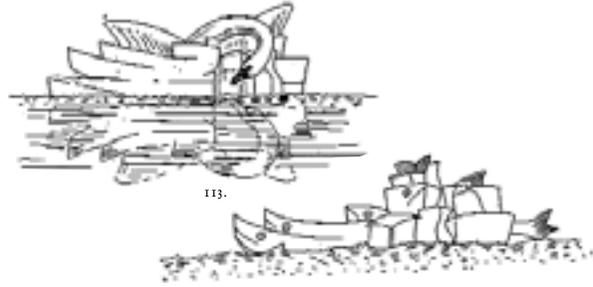


116.

- 114. FOA (Moussavi and Zaero-Polo), Yokohama International Port Terminal, Japan, 1995-2002.
- 115. Norman Foster, Swiss Re Headquarters, London, Great Britain, 1996-2002.
- 116. MvRdV, Dutch Pavilion, Expo 2000, Hanover, Germany, 2000.
- 117. Daniel Libeskind, Imperial War Museum-North, Manchester, Great Britain, 1998-2002.



117.



113.

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- 110. Charles Jencks, Universe Cascade, Portrack, Scotland, Great Britain, 2001.
  - 111. Santiago Calatrava, City of Arts and Sciences, Valencia, Spain, 1991-2002.
  - 112. Frank Gehry, Guggenheim Bilbao, Bilbao, Spain, 1993-1997.
  - 113. "Metaphors" of the Guggenheim Bilbao, Bilbao, Spain, 1993-1997.