Roche & Sie Architectes and Philippe Parreno, Battery House, Chan Mai, Thailand, 2004

Right, below and page 24
Termed a 'hybrid muscle', Battery House is situated on the land of the local elephant keeper, its role to transfer the power of an elephant to an electric turbine.

Interactivity at the Centre of Avant-Garde Architectural Research

The onset of digital technologies is often cited as the determining force behind the recent paradigm shift in architecture. Here, Antonino Saggio makes the case for interactivity. He argues that it is interactivity rather than hardware or software that has been the essential catalyst, providing the fundamental precepts underlying contemporary communications and bringing with it a new configuring of relationships in which the subject takes centre stage and shifts the object to the periphery.

How and why is the concept of interactivity currently so central to architectural research in this period of history? Interactivity is now the catalysing element of architectural research and development activity because it is within this that the contemporary communication system, based on the possibility of creating metaphors and so of firstly navigating and then building hypertextual systems, resides. Secondly, interactivity places at its centre the subject (variability, reconfigurability, personalisation) instead of the absolute nature of the object (serialisation, standardisation, duplication). Thirdly, interactivity incorporates the fundamental feature of computer systems, namely the possibility of creating

interconnected, changeable models of information that can be constantly reconfigured. And lastly, interactivity plays, in structural terms, with time, and indicates an idea of continuous 'spatial reconfiguration' that changes the borders of both time and space that until now have been consolidated.[1]

Hypertexts and the Creation of Metaphors: Interactivity Within the World of Communications

Many of us will still remember the ways in which architecture used to be taught us. For a long time, the key word was objectivity. We had always to demonstrate analytically the relationship between a cause and a specific solution; good architecture sprang from this association. However, this way of thinking has now gone out of fashion, together with the great industrial model. Today, narration holds pride of place. Consequently, what comes first is the story to be told, and it is only after and within this narrative that the project develops. There are examples of this in front of us all.

We must also add a second factor to this narrative component, and it is here that interactivity comes into play. More and more, contemporary communication is also metaphorical. Metaphor replaces a unidirectional cause–effect reasoning with pluridimensionality and the discontinuity of rhetorical figures. Instead of in a linear manner, advances are made by hops and jumps.

But is not hypertext the communicative setting of these jumps? With HTML (hypertext mark-up language), its links and the Internet, is hypertext not an inalienable part of our way of thinking today?

The most fitting definition of hypertextual systems is that of being themselves settings in which metaphors are created. The challenge in this sector lies not only in creating predefined metaphors (for example, an artist's production exhibited in his virtual studio), but also that of being able to have 'mobile metaphors' that can be reconfigured each time by the user. An ever-growing number of systems are able to create actual metaphors that can be personalised (consider, for example, the creation of scenarios that can be played or visited through the use of artificial intelligence techniques, or searches in databases that can be personalised, or virtual simulations).

By this we mean that interactivity thrusts the sphere of contemporary communication towards a more

complex level: metaphors and images that are already defined begin to be replaced with the idea that we can ourselves create our own metaphors. This is the great challenge of the world of hypertextual communication. It is an open battle, one that is also political and social, and that implicates the development of an increasingly mature critical sense. When I teach, from the outset I ask all my students to create and publish their own web pages: this is no coincidence.

Interactivity and the Computer World

Information technology is the underlying 'mental landscape' of today's architecture. By mental landscape I mean that architectural research (since the outset) prefigures the ideal context in which it is located. Architecture prefigures this mental landscape by supporting some elements already present in reality, developing other elements and, above all, incorporating scientific or symbolic models that have succeeded each other over time. That is, architecture transforms these models into specific spatial interpretations.

Information technology is based on the characteristic of building 'mobile' and 'interconnected' models of information. These are moveable models because they change a datum, or because by changing a relationship they modify the results. This intrinsically dynamic, intrinsically interconnected mental landscape recreates reality in the form of mathematical relationships and processes. Interactivity in this context results in architecture being constantly modifiable and forming a sensitive setting in constant transformation – a setting that can also react with, and adapt to, a shift in users' desires through the creation of scenarios that can be explored as though they were hypertexts.

Just as Renaissance architecture transformed itself into something 'perspective-able', and just as Functionalist architecture completely restructured itself to become 'industry-able' (and I do not mean produced only in series, but also objective, serial, abstract, mechanical), so today's architecture is struggling to be 'information-able': it is struggling to incorporate within itself the dynamic, interconnected and, above all, interactive essence of the IT-based paradigm.

Interactivity and Time

Now we come to the last set of considerations, which is in some sense the most complex.

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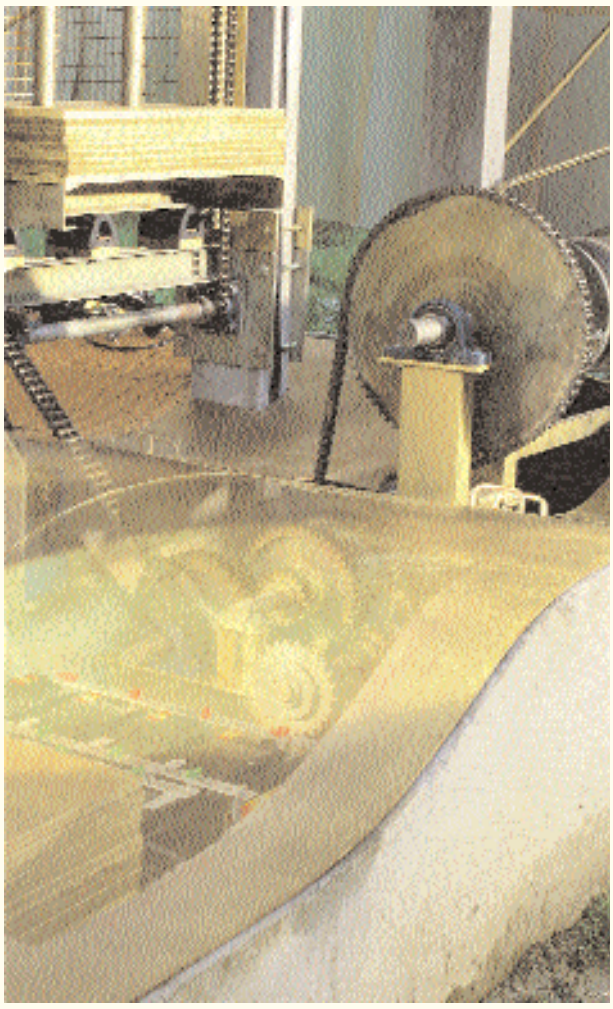
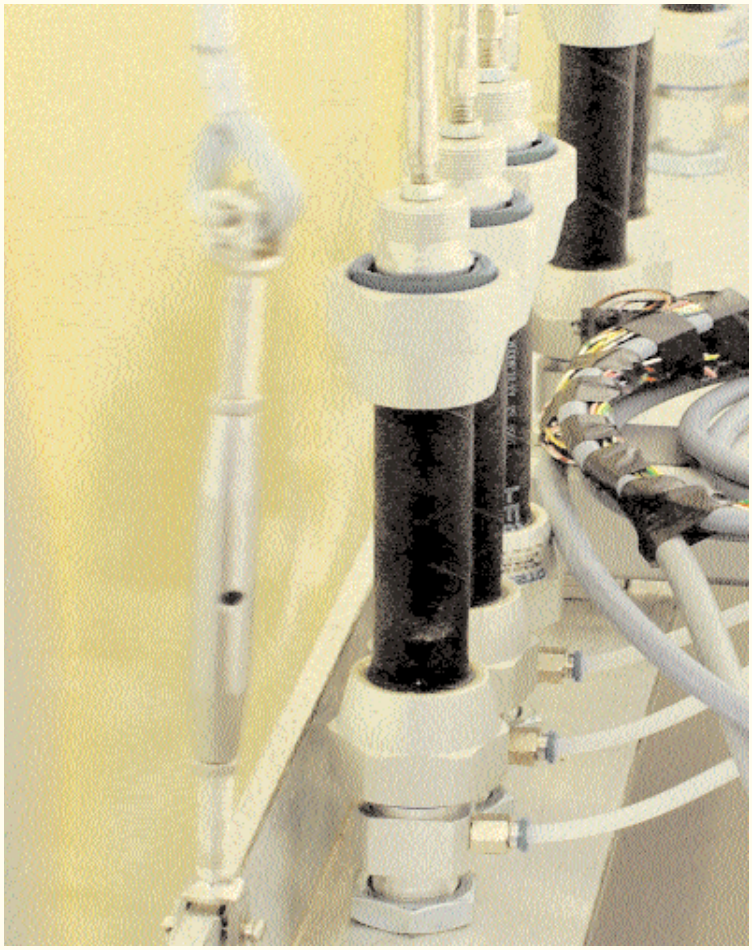
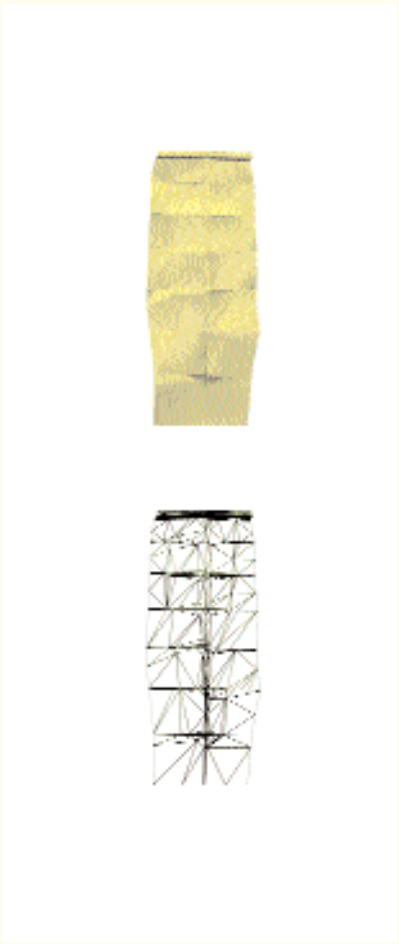


Roche & Sie Architectes and Philippe Parreno, Battery House, Chan Mai, Thailand, 2004

Right
Battery House is pneumatically ventilated by the light movement of the plastic leaves wrapped around its structure.





Roche & Sie Architectes and Philippe Parreno, Battery House, Chan Mai, Thailand, 2004

Above left and right
The intention is make a 135-square-metre energy-self-sufficient educational workshop on information technology and lighting for the neighbouring villages. As a result, the elephant supplies all the owners' electrical needs, and architecture becomes a vector in the process.

Interactivity is associated with time, which as Einstein himself wrote, is the only way to say something sensible about space. Let us recall some fundamental concepts. In the first place, space is not an objective reality (as we often believe), but is perceived culturally, historically and scientifically in very different ways. If we use time as a system for understanding space, we discover something that is highly effective. The jump rule prevails from one reference system to the other; it is the same jump that underlies hypertextual systems. (If I live in and know only a two-dimensional system – imagine a curved sheet of paper – in order to go from one point to another, I follow a route equal to T. Even if I curve the surface greatly, T still remains the same length. But if I look at this curved sheet from a three-dimensional world, I immediately note that A and B can be linked not only by segment T, but also by a far shorter spatial vector, 't', which travels, or rather jumps, through three-dimensional space.)

Interactivity in buildings can mean not only varying configurations and spaces according to changes in wishes or external input (as we have just seen), but also creating different systems of spatio-temporal reference. If an interactive system modifying architecture is linked to Internet-based navigational systems, the effect of the jump can pervade the whole of architecture: a jump from one spatial configuration to another, a jump between different information systems and, finally, a jump between different temporal states.

Associated with window interface systems, real-time navigation systems, remote depiction systems with naturally interactive, hologram-based systems (a brief step forward that will shortly be made), the great world of Internet can form an incredible 'thickener' and multiplier of spaces and times. We can have windows open at the same time on worlds far distant from each other, and literally jump from one to the other: live in them, try out accelerating or moving spaces, show and be shown, and all this in real time and in a continuous jump from one world to the other. The Internet is a necessary instrument for architecture in this stage of research, not only because of its pragmatic aspects, but also for its cognitive ones. As we learn more, we understand how a fundamental formulation takes effect through Internet and interactivity: from a lower system, we can have the projection of a higher level. This formulation means that it is possible, although

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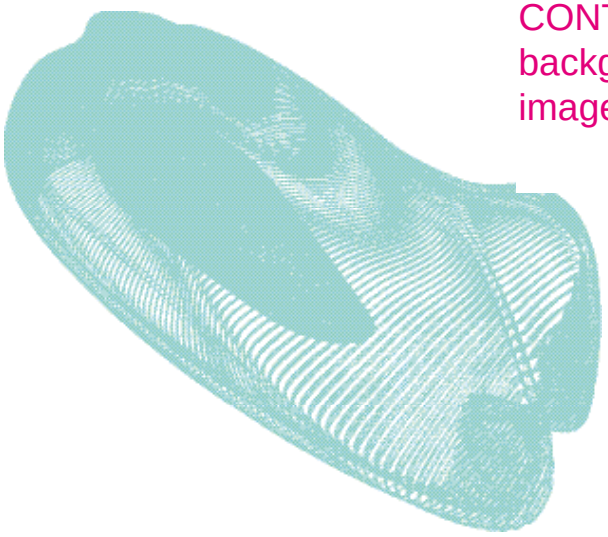


The interactivity incorporated within the physical nature of buildings means working at a new level of architectural complexity. But the greatest challenge of all is not scientific, nor technological. And neither is it even functional. No, the true challenge is, as always, of an aesthetic nature.

Decoi, Miran Galerie, Paris, 2003

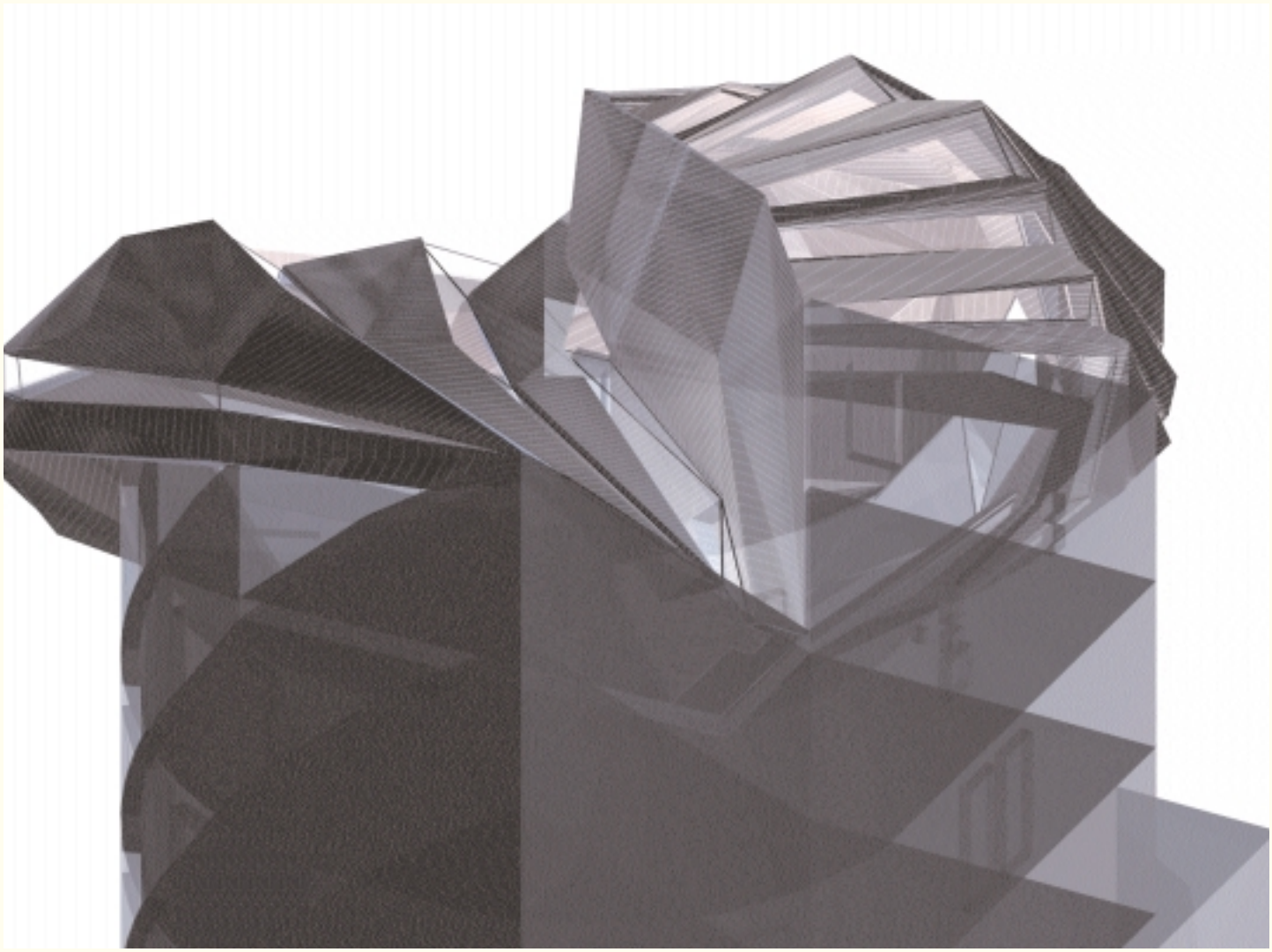
Above and below
Part of an interior renovation of a Parisian atelier that will be a fashion showroom. A completely curved shell that stretches the space of the gallery as it curls tautly to fill the space is to be built of laminated plywood cut by digitally controlled machinery, creating a homogenous field of materiality.

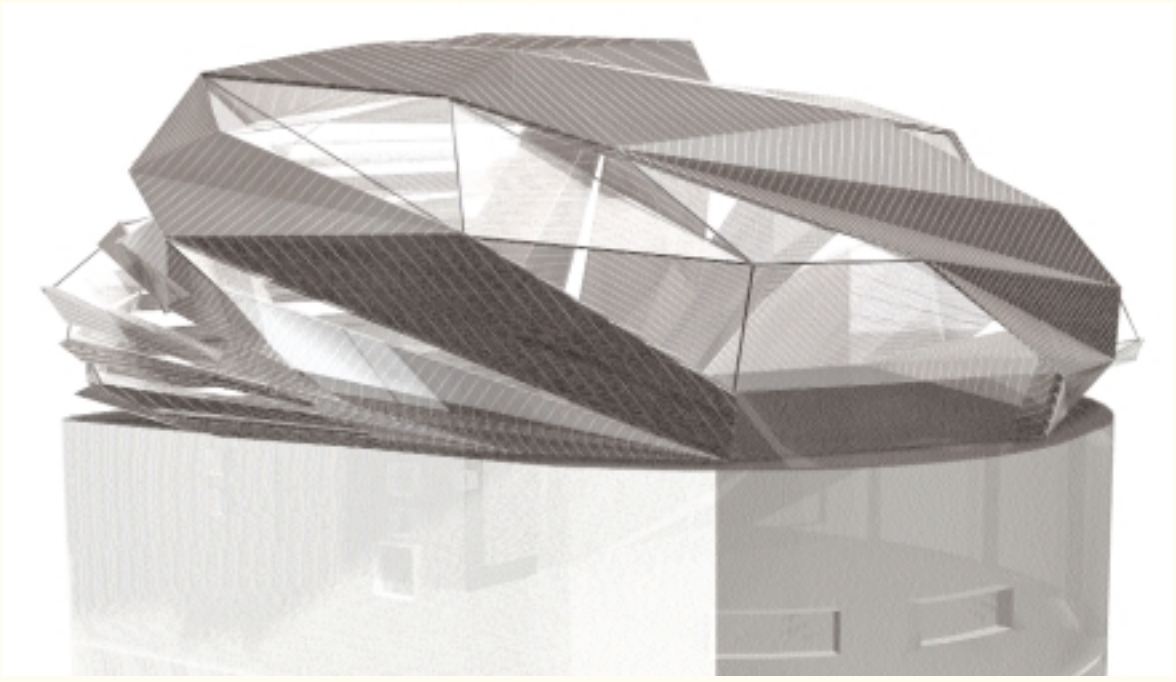
physically located within fixed three-dimensional spatio-temporal limits, to have ideas about a space with more dimensions than our own, and to use, imagine and, to some extent, understand it; even to design this multidimensional space.

At this point, I hope that it is now clear how three key questions can be traversed by the concept of interactivity. First of all, through the relationship with the world of contemporary communication and a greater subjectivity of choices (and both these components have an obvious implication with regard to the critical and political development of singularity). Moreover, interactivity is a central factor in the mental landscape of the new architectural research (through the absorption of the dynamic models of information technology). Finally, interactivity makes it possible to start to design and imagine spaces and architecture that develop in not just three dimensions but which project upon themselves the possibility of further dimensions through the process of jumping and discontinuity.

The interactivity incorporated within the physical nature of buildings means working at a new level of architectural complexity. But the greatest challenge of all is not scientific (creating increasingly mature mathematical models), nor technological (creating the physical and electronic systems to enable levels of interactivity and sensibility in buildings and settings). And neither is it even functional (understanding how to make interactivity an element of research in the 'crises' and difficulties of contemporary society, rather than just a game in the homes of the super rich). No, the true challenge is, as always, of an aesthetic nature. Searching for an aesthetic (that is, a way of seeing, interpreting and building the world of architecture) that is deeply and necessarily interactive. It is here that the role of the catalyst comes back into the picture.

Interactivity is the chemical reagent, the catalyst of all these components. It has, simultaneously, an ethical component and a political one, a technical and a technological one, and it also has a fundamental aesthetic component because it requires a revolution in sensing that pushes for a new awareness of contemporariness.





Decoi, Bankside Paramorph, London, ????

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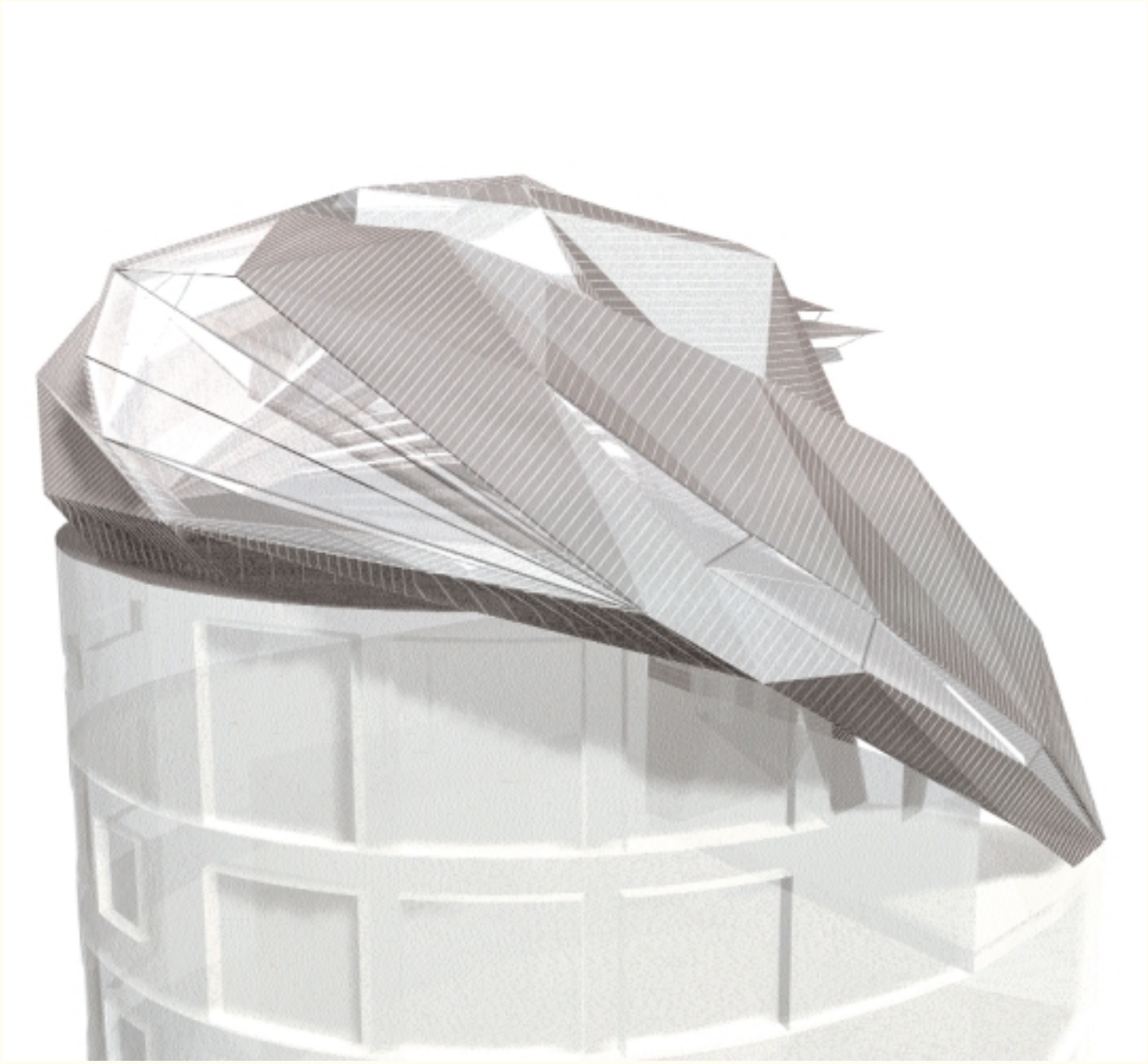
An extension to a tower-top apartment next to the Tate Modern in London, Bankside Paramorph is an exercise in 'parametric propensity', exploring the generative capacity of variable relational modelling possible with digital technologies.



Looking in an extremely summary manner at the change in the picture of contemporary architecture, we can say that if the formula for the Modern Movement was rightly *Neue Sachlichkeit* (New objectivity), the formula for today cannot be other than New Subjectivity. And it is interactivity that is the key to this new subjectivity.

Transparency used to be the aesthetic, and ethics the reason and technique of a world that wanted rationally to tackle an advance in civilisation in terms of quality of life for the great masses of industrial workers. Today, by contrast, interactivity constitutes a point of aggregation for present-day considerations about an architecture that, having gone beyond the objectivity of needs, can now tackle within its own modifications the subjectivity of the desires of today's men and women.

Note
1 These points are developed extensively in the 25 volumes of the IT *Revolution in Architecture* series, a major editorial project I initiated in 1998, published by Birkhäuser, Testo & Immagine (Italian) and Prominence (Chinese).

Antonino Saggio is professor of architecture at the University of Rome La Sapienza, an architect and planner, and the founder and editor of the book series *The IT Revolution in Architecture*, which now numbers 26 titles. He is the author of several books, including publications on Giuseppe Terragni, Peter Eisenman and Frank Gehry, and cofounded the magazine *Il Progetto*. He lectures internationally, and his website (www.citicord.uniroma1.it/saggio/) is a point of reference in architectural culture in Italy and internationally.