

Arch 384:

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2003 Nam June Paik Museum, Korea Competition

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“The works of the past always influence us, whether or not we care to admit it, or to structure an understanding of how that influence occurs. The past is not just that which we know, it is that which we use, in a variety of ways, in the making of new work.... The typology argument today asserts that despite the diversity of our culture there are still roots of this kind, which allow us to speak of the idea of a library, a museum, a city hall or a house. The continuity of these ideas of type, such as they are, are the esteemed examples which have established their line of inquiry in which new work may be effectively grounded.”

The Harvard Architectural Review. Volume 5. Precedent and Invention. Between History and Tradition: Notes Toward a Theory of Precedent. John E. Hancock.

Emergence of Typology Through Digital Design, Technology and Material

The dramatic increase and availability of new telecommunications and information technologies has brought about a significant cultural and social revolution that is also transforming the field of architecture. This era of accelerated change whereby bits of data circle the globe and the flow of information has surpassed material exchange has and will continue to affect the recognizable mechanical and physical form of urban form. Previously static and physically localized metropolitan populations have become fluid and mobile, following the dynamic movements, and relative transference of international capital investment and diversification. Mirroring this shift in urban typology, architecture itself is transforming, effectively redefining its boundaries, to align itself with an increasingly frameless and volatile world. The process and emergent form of architecture is becoming experimentally based on the amalgamation of topology and typology through digital input and natural

reference, a computational orchestration of digital spatial production with a kinematic, generative sculpting of space with an enhanced consideration of relevant and available materials.

The advent of the industrial revolution in the late nineteenth century was prevalent in architecture and urbanism, whereby newfound methods of harnessing power and energy were redefining the workings of the pre-nineteenth-century city while similar advancements in manufacturing and assembly allowed the emergence of a new structural logic, appearance and materiality of the most common building forms. The use of steel and reinforced concrete in multistory, free-span structures gave rise to startling new possibilities in construction. In employing the structural steel frame and Otis' mechanical elevator, Chicago architect Louis Sullivan (1856-1924) pioneered the concept particular to urban life in the twentieth century: the vertical city.¹ The form of the low-rise apartment block was essentially extruded to redefine and constitute an emergent typology that was rooted in a previous typological incarnation.

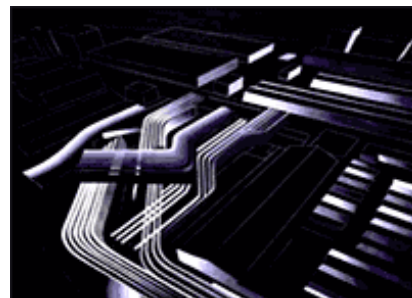
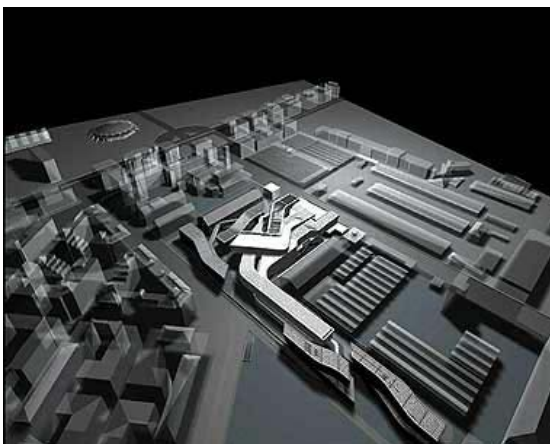
At the close of the last century it was and remains to be the information revolution that is changing the face of architecture essentially through an extrusion of idea and intent to produce forms that are an evolution of spatial dynamism based on recognizable typological forms. Digital technologies are blurring the real and virtual, organic and inorganic and are leading the architect into new territory where new and innovative forms are developing.

The term typology can refer to a number of definitions, one of which is the topographic study of a region: the survey and graphical delineation of a place and its configurations, elevations and positions. A typology effectively shows the interaction of elements, man-made and natural, on the earth's continuous surface. Another definition of topology is the anatomy of a particular area of the body or the figure and outline of an organism. D'Arcy Thompson (1860-1948), classicist, naturalist and biomathematician demonstrated that mathematical functions can be applied to pictures of one living organism to turn it into another. This brand of topology divulges the geometry and surface nature of that which is shared in the natural world. Unifying disparate entities in the same way, the

earth's surface unifies hill and valley, cliff and plain; these approaches to architecture are relational and may even emulate our own corporeal topologies, the soft geometries of the body's hollows and cavities. In the process, this architecture affirms the paradox of topology: a continuous looping into and out of, back and forth, on a surface without end or beginning, which has neither interior nor exterior, but which is always experienced as a single entity.²

These definitions and conclusions related to topology are useful in disseminating the formal relationship and form of the Nam June Paik Museum to its site in the hills of Kyonggi, Korea. As outlined in the project brief, the landscape and topographies inherent in the site were to be preserved and emphasized as much as possible in order to create a museum that does not overpower or seem unconnected with the site. In keeping with these considerations it was possible to develop a design process where the topology of the site itself would act as the formal generator for the building. To emulate the subtleties of the existing landscape and effectively integrate the multitude of functions necessary within the museum it was necessary to create a digital model of the site as a basis for an organic spatial manipulation.

Zaha Hadid's proposal for the Centre for Contemporary Arts addresses the question of its urban context by maintaining an indexicality to the former army barracks. This is in no way an attempt at topological pastiche, but instead continues the low-level urban texture set against the higher-level blocks on the surrounding sides of the site. In this way, the Centre is more like an 'urban graft', a second skin to the site.³



The NJP Museum in the same way responds to its site through a formal recognition and adherence to its spatial and topographical intricacies without an attempt to subjugate its function. Most notable in design and derived from the vertical extrusion of the site topography is the electronic media wall which runs the length of the NJP Museum and acts as an indicator of circulation, medium for digital display and narrative for the visitor. Hadid's Centre for Contemporary Arts utilizes a similar approach to construction in an effort to push the typological form of the gallery closer to its association with the digital and transient nature of the art in which it displays.

“In architectural terms, this is most virulently executed by the figure of the wall'. Against the traditional coding of the 'wall' in the museum as the privileged and immutable vertical armature for the display of paintings, or delineating discrete spaces to construct 'order' and linear 'narrative', we propose a critique of it through its emancipation. The 'wall' becomes the versatile engine for the staging of exhibition effects. In its various guises - solid wall, projection screen, canvas, window to the city - the exhibition wall is the primary space-making device. By running extensively across the site, cursively and gesturally, the lines traverse inside and out. Urban space is coincidental with gallery space, exchanging pavilion and court in a continuous oscillation under the same operation. And further deviations from the classical composition of the wall emerge as incidents where the walls become floor, or twist to become ceiling, or are voided to become a large window looking out. By constantly changing dimension and geometry, they adapt themselves to whatever curatorial role is needed. By setting within the gallery spaces a series of potential partitions that hang from the ceiling ribs, a versatile exhibition system is created. Organizational and spatial invention are thus dealt with simultaneously amidst a rhythm found in the echo of the walls to the structural ribs in the ceiling that also filter the light in varying intensities.”⁴

In keeping with the current trend towards green design and sustainability it was deemed essential to provide the NJP Museum with technology that would

minimize environmental impact and still enhance the building. Through careful manipulation of interior space and a recognition of the topological design to which we were adhering, it was possible to develop through manipulation of sine and cosine curves in digital space an intensive green roofscape that acted as an exterior gallery space as well as circulation, regulator of interior building temperature and connection between building elevations and was optimized for material strength. The form of the building's roof and the use of green building techniques once again provide the visitor an enhanced interaction with the site through a careful symbiosis of innate gallery typology with site topology. The Yokohama Port Terminal by Foreign Office Architects is an example of this desire to provide an organic roofscape that undulates according to the program within while effectively blurring the distinction between interior and exterior, one level from another.

“The articulation of the circulation system with the constructive system through this folded organization produced two distinct spatial qualities; the continuity of the exterior and the interior spaces and the continuity between the different levels of the building.”⁵



Perhaps the most influential of recent designs for gallery and museum spaces is the Guggenheim in Bilbao by Frank Gehry, both for the ground-breaking shapes and structural forms that were employed, and for the way in which the final form was rendered and constructed. The advent of the digital era has enabled radical architectural forms to infuse a new vitality into the stagnant

typologies that has dominated for much of the previous century and that had fallen out of favor in this age of transformability and globalization.

“...the builders of Reims or Chartres sought to use the highest engineering skills and best materials available to them to produce the heavenly Jerusalem on earth for the glory of God, as described by John the Evangelist in the Book of Revelations. In this increasingly secular age CATIA has now allowed the architect to achieve tectonic proportions that no Gothic mason could ever imagine, let alone replicate. Philip Johnson loves the Bilbao Guggenheim, calling it the most important building of our time. He said that he wept when he saw the interior of the museum, presumably because it provides irrefutable proof that the electronic revolution has finally, definitively supplanted the industrial predecessor, and that his profession will never face the same repressive physical restrictions again.”⁶



Like the Bilbao Guggenheim, the NJP Museum strived to emulate the changing requirements and desires of an increasingly nomadic and technologically driven public by providing a spectacle that speaks to the art and objects it houses rather than acting like a white box devoid of any tangible relationship to its contents. This was best accomplished through a deliberate manipulation of the viewer’s environment in which dynamic spaces effectively parallel the speed of cultural evolution with which Paik’s work concerns itself. Technology and media, which play a primary role in much of Paik’s creations, are

mirrored in the underlying form and technology of the NJP Museum. The lively forms obtained in both the Bilbao Guggenheim and the NJP Museum were a direct result of the architect's previously unavailable opportunity to create instantaneously in digital space a complex environment that spatially coherent and at the same time quite unique.

The typological idea behind the form of a building contains within it a set of innate configurations that tend to govern the initial perception of the viewer. As time and culture advances, these ideas of form and function change as well, often paralleling the current state of the cultural identity in terms of both its social and technological evolution. The digital era that we are currently held within has prompted a radical shift in the way in which the individual interacts with everything around them, and so too has architecture changed the way in which it is both created and concretized. The prospect of time was previously seen as an impediment to the life of a building, a constant source of initial delay and imminent decay whereas it has now taken an intimate role in the creation of an architecture that engages in a kinematic sculpting of space. Presently, time, movement and the topology of an undeniably globalized social environment has prompted architects to develop new spatial paradigms with the help of powerful animation softwares in an effort to create and view buildings as highly plastic, flexible art in which the building form is derived from not only the programmatic requirements but from synergistic energy derived from the incorporation into a world dominated by accelerated technological change and mobility.

¹ Zellner, Peter. Hybrid Space: New Forms in Digital Architecture. Rizzoli: New York, 1999. P. 8

² Ibid. P. 18

³ Zaha Hadid Architects MAXXI

<http://www.arcspace.com/architects/hadid/maxxi/>

⁴ The Centre for Contemporary Arts, Rome

http://www.designboom.com/portrait/zaha_r.html

⁵ Foreign Office Architects Yokohama International Port Terminal

http://www.arcspace.com/architects/foreign_office/

⁶ Steele, James. Architecture and Computers: Action and Reaction in the Digital Design Revolution. Watson-Guption Publications: New York, 2001. Pp. 127-129.