VIRTUAL ARCHITECTURE - REAL SPACE

Keynote Speaker

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We are in the very early stages of a digital revolution whose direction we will not be certain of for sometime, much in the same way that Enlightenment-era architects, theologians, and thinkers did not quite comprehend the profound changes taking place in their own time. Today's digital technologies are having profound effects on many different aspects of our contemporary understanding from the human genome to the mapping of the cosmos. Digital manipulations that use virtual-reality technologies form a major part of this revolution. As architects we are responding in a number of ways, by conceiving of entirely new geometric principles, new methodologies, and entirely novel approaches to representation beyond perspectival geometry.

Virtual architecture is an evolving discipline that results from the convergence of data mapping and simulation, digital form making, information "architecture," and virtual reality constructs and theory. This field of research is being defined by projects and clients that differ greatly from one to another. Conventional architectures tend to be based on permanence and geometric certainty whereas virtual architecture utilises digital technologies to augment real events, time, and space. In the history of architecture, representation — whether manifest through modeling or other forms of simulation — has always been part of the architects' repertoire of conceptualising and conceiving space.

Visionaries for their time, Claude Nicholas Ledoux, Etienne-Louis Boulee, Piranesi, Bruno Taut, and El Lissitzsky are but a few examples of architects whose works can be thought of in today's context as early and important examples of virtual architecture. The Campo Marzio of Piranesi,

for example, can be reinterpreted as a data environment in which the buildings and architectures he envisioned each represent an idealised accumulation of "architectonic" information. A similar interpretation could be applied to the proto-surrealist paintings of Bosch and Grünewald. Artists and architects have always searched for the means to represent utopias, dystopias, visions, possibilities, and actualities. In many ways, virtual architecture has its deep and profound precedents in these histories of visualisation and visionary works. The computer has merely extended our ability to visualise and theorise such spatial entities.

Virtual architecture is perhaps best understood as spatiality based on the alteration of reality, on mapping flux, and on the transformable possibilities of geometry within such realms. The commission to design the Virtual New York Stock Exchange (NYSE) necessitated a proposal for a multi-dimensional interactive data environment to be used primarily as a monitoring tool by the NYSE operations group. This project's virtual architecture was based on a data visualisation paradigm, where vast amounts of information could be more easily managed through a three-dimensional, manipulable digital interface. It is important to draw a distinction here between virtual architecture and virtual buildings, just as one draws a distinction between architecture and buildings. In virtual architecture the assumption is that spatial, informational, and temporal circumstances provoke experiences and create assemblies that are tangible and plastic.

Virtual buildings, on the other hand, tend to be representations of buildings and built space as we already know them to be: for example, a virtual rendition of Le Corbusier's unbuilt Palace of the Soviets complex. This is actually virtual representation, which we tend to call virtual buildings, especially if we can inhabit them in three-dimensional representations. Virtual architecture does not represent or attempt to mimic any aspect of "real" building; rather, it is architecturally significant for entirely different reasons. The Virtual NYSE is not a rendition or re-presentation of the existing facilities: Such a version would have entailed a model with marbled textures on the walls and perhaps even avatars strolling about the floor. That kind of representation ultimately is of little value in a data-driven information environment. The three-dimensional trading floor (3DTF) supplements the main trading floor, allowing users to enter a parallel "reality" and exist in an entirely different place.

The Guggenheim Virtual Museum (GVM) was another commission that had a very unique mandate and purpose. The Solomon R. Guggenheim Museum commissioned the project as an Internet-based museum for the display and deployment of digital art and Internet-produced art, anticipating a future where new forms of expression will inevitably require new and profoundly different methods of exhibition, collection, and use. This new museum on the Web is not restrained by gravity, traditional notions of

movement and viewing, inflexible formal strategies, or the physical limits of real space. The GVM celebrates new possibilities for architecture and experience, such as fluidity, immersion, and replay. For the moment, these criteria and concepts are only possible in cyberspace and through virtual reality; however, the inevitable challenge for architecture is to bring some of these discoveries into "first reality," making them an implicit part of our new built environments in the future.

Whereas the GVM is a multi-dimensional digital interface containing "visual" clusters in the form of artist commissioned works, it also posits a situation in which virtual architecture sits alongside the experience of actual architecture. In order to explore this possibility further in the built environment, Asymptote executed various projects at the 2000 Venice Biennale, including the construction of a large scale installation situated in the Biennale gardens on the historic exhibition grounds. This physical space contained computers and Web cameras that mapped the movement of people and the architecture itself over time. This data was broadcast at a 30-second refresh cycle on the Internet. The resulting physical changes to the actual architecture enacted by Biennale visitors were recorded and viewed throughout the world in real time, which allowed distant visitors to experience architecture in this "virtualised" and mediated condition.

The Venice experiments, and others constructed in various venues, explore the notion of the real in architecture as a blurred condition: that architecture today might be comprehended as a territory located between the real and the virtual. It is important to note that although the majority of attributes we associate with virtual architecture seem to exist far from the world of constructing and building architecture as we know it, the trajectory for the future is one of inevitable convergence of these distinctions. In the future, common architecture will probably merge with what is now developing only as virtual architecture, and it will be one of the next radical breakthrough in architectural design and discourse.

At Asymptote the computer increasingly plays a vital role in all phases of the design, from sketch to engineering and through to implementation. In this way, our work is influenced by digital tools and the new theories emerging today because of them. Virtual architecture, understood here as spatial realms predicated on data and information, undoubtedly influences the ways we now understand space, form, movement, and geometry. Virtual architecture is for the moment manifest mostly within virtual space, and the Internet is a prime protagonist in creating entirely new forms of "dwelling" but virtual architecture might very well constitute the pioneer effort in forging new forms of real habitation. In other words, the territory in which virtual architecture operates and thrives is a terrific test arena for inevitable futures, and in such an arena we stand to learn a lot about the future of architecture.

Our cities are already under the influence of virtualisation, as seen in experiments such as the UCLA Computer Visualisation Lab's Virtual LA project (1998). This project set out to digitise the entire city of Los Angeles in such a way that it allowed people to inhabit a proxy-reality. People were able to view traffic flows, public-transit movement, new building development, and the status of the city's infrastructure. The proposal allowed the citizens of Los Angeles to inhabit both a virtual and a real city simultaneously. For the moment this kind of virtual-reality environment, which other cities like Singapore, Toronto, and Kuala Lumpur, are constructing, is based primarily on the existing artifact, which is extrapolated into datascapes for virtual habitation. One can imagine new models and scenarios in which urban plans and strategies begin to incorporate virtual-reality technologies and infuse buildings and infrastructure with digital capabilities that mesh the parallel realities in the future.

Eventually, our need to comprehend and explore cyberspace and virtual reality will prompt us to incorporate these and other tools within architecture, and they will become increasingly compelling. As human beings we are drawn to explore and comprehend the unknown using every capability available to us. Virtual reality holds immense curiosity for us, just as the oceans and the infinite expanse of the universe do.