EMERGING ARCHITECTURES IN THE VIRTUAL SCAPE

ARCHITECTURE OF (IM)POSSIBILITIES

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Framework

Digital space is an electronic medium that serves as an artificial environment for architectural work. At least two different architectural conceptualizations of this electronic world are available:

1. digital space is a studio for the development and testing of architectural products aimed at classical reality. Classical reality is understood as the natural and sociophysical world wherein we carry on our lives. In this interpretation, digital space depends on the rules and laws of the physical world and its value is tied to being a (representational) instrument for worry-free experiments and simulations. Utilizing digital space as a studio continues the historical tradition of using depictions to design, describe, reflect, or document buildings aimed for classical reality.

2. digital space, a reality of representations, is also a virtual place with nature, functions, aesthetics, order, etc., not necessarily following or referring to classical reality. In this immaterial world, people may work, meet other people, seek entertainment, find and generate information, etc. According to this interpretation, architecture should play a major role in the conceptualization, organization, and design of such an alternative reality. In other words, digital space is an environment in its own right that has no other justification than offering alternative experiences, structures and events to those of classical reality.

In this presentation we will investigate the potential of architecture within a digital space understood in the last sense.

Introduction

Producing architecture for digital space suffers from the conscious and unconscious preconceptions of what architecture has been and is in classical reality. At first sight, it would seem reasonable to think that the best way to study the emerging architectures of/for virtuality is to challenge the most basic tenets of traditional architecture. For instance, developing physically impossible architectures (i.e., totally unbuildable) might help us to liberate from imported constrains and thus open the true possibilities of a cyber-architecture.

Such an approach, however, would repeat experiences already available in the field (e.g., the works of Ledoux, Piranesi, Woods, etc.) and, what might be worse, may divert us from considering/studying the true architectural potential of the digital (due to its anti-reality stand).

Traditional architecture has had to conform to the inexorable laws of nature. The unavoidable infrastructure of classical reality has caused architecture to develop as a physical, stable, containing and inert object. In other words, there exists an a-priori relationship between the basic infrastructural constrains of an environment and the type of architecture that may evolve there. As digital space need not follow the rules of reality, it appears acceptable to reflect on the potential of cyber-architecture by investigating the digital rules that are ultimately alien to those governing the world wherein architecture has developed. We call these new digital laws the laws of potential.

Concentrating in what is infrastructurally unique to the cyber and its impacts in the act of architectural thinking and making (and in part to avoid the innate conditioning of classical reality) requires the analysis of those normal laws of the digital world that go against the natural laws of classical reality to offer a more useful methodology.

Our questions then are what are the laws of the Cyber, and how does architecture respond to these? The approach will be as direct, simple and conceptual as possible. There will be two parts to this presentation. The first one will focus on the ontology of construction in cyberspace and how it challenges our most traditional conceptions of architecture. The second part will explore the necessity of architecture to organize the cyber-experience and its implications in the development of a new architecture.

Part 1 : The infrastructural laws of potential

We have grown accustomed to electronic operations that defy the laws of the natural world. These days any software includes commands such as "save", "undo", "copy", "erase", "find", etc., whose implications we rarely reflect upon but nonetheless are remarkably puzzling. First, one must realize that it is these simple commands that mark, establish and sustain virtual existence within the cyber. For they create the operational realm or basic infrastructural order. Second, these commands cannot be performed in classical reality (at the very least not with the same degree of perfection and/or ease). Third and most importantly, these digital actions generate ontological and architectural potentials of unprecedented kinds.

It is intriguing that few philosophers and intellectuals have taken on these issues as subjects of investigation. If on one hand, ontological questions are somewhat out of date in late 20th century discourse (pushed aside by epistemology, linguistics-logic, and ethics), on the other hand it would seem pertinent that some attention should be placed in events and situations never before encountered and which characterize a large part of what drives our civilization.

It is particularly interesting to use architecture to conduct such a study. After all, traditional architecture has been the discipline associated with visions of reality based on classical ontologies of stability and materiality. Perhaps, for this very reason, architecture appears as the perfect platform from which one may question the ontological status of matter upon which most of our Western civilization has been built since the time of Aristotle. If architecture can let go of the idea of being as a permanent and independent entity, then any discipline can.

We will first analyze the laws of potential by studying the infrastructure of the cyber as represented by ordinary digital commands such as "save", "undo", "erase", "copy" and "find/go to". These commands will help us explore what architecture could be like in cyberspace.

The saving command is perhaps the most puzzling of all the ordinarily available digital actions. Saving generates ontological and architectural states that are inconceivable in classical reality:

The RAM state (that which is in progress and not yet saved). RAM allows that two different states of reality coexist very much like those described in the Shrodinger's cat paradox of quantum physics. There is that which is already saved (i.e., original state) and there is that which is in the process of being changed (new state). The nature of such an in-progress production/entity not yet saved is quite remarkable. Which one is the true entity/event? Is it the one that was saved earlier and thus is secured and stable, or is it the new one being built but not yet saved?

The progressive digital doing-undoing-saving creates a field of action in which fields of continuity (defined by that which is stable throughout the changes) and fields of discontinuity (that which is not) begin to form. The field of continuity is the only stable digital area and the closest it comes to the traditional notion of architecture. As the latest moves continue to unfold, there is an increasing ontological difference between the first and late states. The more a particular event/entity endures in RAM, the more its likelihood of becoming saved, thus existing in a stable form.

In other words, the RAM state creates the conception of architecture as a fuzzy cloud with a more or less stable center and whose ultimate manifestation awaits the act of saving. RAM architecture thus acquires a quantum formal existence that goes beyond the concept of liquidity advanced by Novak. It seems that the metaphor of gaseousity (something quite alien to the traditional idea of architecture) is a more appropriate model to conceive the impact of the laws of potential in architecture. This is a new, highly challenging proposition that is only possible in digital space.

The limbo state (that which is in process of being saved). The act of saving or not saving is the mechanism by which co-existing (defined and undefined) states of architectural reality are collapsed into one. At one point (while the RAM content is being recorded) there exists a period in which the entity exists nowhere and yet it does. As it becomes real in the digital world, it also becomes crystallized in a constructive albeit immaterial act. Issues of replacing the pre-existing saved versions or creating new versions are relevant (see below).

Considering the lack of security and stability (i.e., looseability) of the RAM state, it is understandable that the saving command is called as such. To save means (1) to rescue (free, release, liberate), (2) to keep (protect, safeguard, conserve, preserve, maintain), and (3) to store (accumulate, gather, collect, reserve, amass). At the same time, saving also brings issues of frugality and economical thrift. All these meanings are quite common to the practice of architecture and life in general, and suggest intriguing design potential when associated with the other dimensions of cyberspace.

That which is saved (the stable construct secured in memory). Traditional architecture could be clearly associated with this digital (saved) state, of unchangeable quality. However, there exist significant differences. First, a saved digital entity is in theory eternal (assuming a continuous availability of energy). Second, saving, as memory, is a magnetic disturbance and not a clearance of disorder. The save command allows for alternative constructions. As in quantum reality, different versions of the world may be generated, saved, and interfaced with.

The undo command is also fascinating. The temporal direction of classical reality (entropy) precludes the full reversion of an action once it has been carried out. There is always some mark (memory) and cost involved in such operation. However, in digital space, one can always undo. This implies a reality of certain temporal symmetry (unlike classical reality). In order to allow the undo, digital reality must keep in RAM the previous state(s), thus creating various realities at once. As a result, what is being made partakes with what was before such an action, thus creating a quantum field of multiple existences. An architecture of uncareness and of true (im)possibilities are its results. Having to pay little or no cost for making errors, the law of undo also creates low levels of pressures at the time of action which allows for high levels of exploration (positive) or a lack of attention and commitment (negative).

Architecture has always been about doing. In a way, an architecture of undo is antiarchitecture. Architecture cannot be undone except by demolition. To undo architecture is to tear it apart, it is to challenge the very character of construction. It is not deconstruction but rather unconstruction. The concept of unconstruction is strange as it implies an almost careful removal or erasure of the constructed.

Undo and erase are very much alike although the former eliminate an entity forever whereas the latter restores the previous state, hence implying a selective, controlled erasure. To erase is to delete memory. To erase is death in digital space but even the erasure may be undone. In addition, as one can always select areas to erase, the careful erasure or undo may create inconceivable alternative states/entities. Finally, the undo command challenges saving. To "undo" means to (1) cancel, omit, obliterate, erase something, or (2) eliminate, drop, leave out. In other words, undo is the opposite of saving.

The copying command challenges the concept of the original and special quality of architectural artifacts. What Benjamin advanced so long ago has gone to its ultimate result: the original and the copy are identical, hence it is meaningless to talk about identity. The copying command destroys the effort associated with physical construction. In physical reality, copying is a painful process even when highly industrialized and informed systems are employed. The most interesting issue that an architecture of digital copying brings about is not the art of skillful reproduction but instead the concept of the hybrid and the eclectic. By the selective copying/cutting and pasting of parts from a (original or other) source, architecture becomes the ultimate collage.

The potential of the command copy is due to the representational character of the cyber. Every digital event and being is representational and subject to the laws of representation, that is, to the whims of the designer, the software logic, and the power of the electronic engine that generates and supports the digital becoming. Electronic media may be the most delusive of all media. The rules of the cyber may purposely distort, bend, subvert to make appear that which cannot be, or is not in classical reality.

The traveling commands such as — find —, — go to — and —search — define the spatial infrastructure of the digital as they connect and communicate areas comprising electronic reality.

The resulting spatial structure is difficult to conceive both ontologically and structurally. In contrast to the real world, digital environments tend to be discontinuous, non-linear and hyper-dimensional. For instance, entities and users may not only be present in two places at once but also occupy the same space at the same time. Digital environments can also reverse interiority-exteriority, destroy the concept of materiality and stability, allow for infinite regressive or progressive scale and dimensional changes, and jump from digital site to digital site almost instantaneously. Cyberspace is closer to a quantum than to a Newtonian conception of space.

Part II : The experiental laws of potential

Grasping the laws of potential also means to study the laws of the digital at an experiential level, represented by ordinary

events of entry (orientation), circulation (access), and shelter (assessment). We will look at these events and how the present day vernacular of the digital coupled with kinetic changes necessitate architectural form in virtual environments.

The first experiential law of potential involves the event of entry into an environment. One must construct the context of the new environment in order to fulfill the purpose of entry. This orientation traditionally develops from our empirical knowledge of the place we are entering, as well as from the physical act of entry as procession. We conceptualize organization and purpose of a place based on our understanding of area site development, cultural traditions, regional geography and climatic conditions. We also visualize the order of space during approach. The passage of time and traveling of distance allows for acclimation. In traditional environments, our entry into a new place is prefaced within the context of similarity. We move through space that is adjacent to the one we are about to enter and therefore they share some environmental conditions.

In a virtual environment, entry consists of turning on, plugging in, double clicking, —jacking in,— lowering the HMD, etc. The plane of passage now becomes a switch or an icon or an opening of the eyes through new lenses. We no longer have, or have to have the opportunity for acclimation to the preluding contextual shift through voyage.

However, we still have the need for orientation to our environment. Our abrupt and non-contiguous entry into virtual worlds must be balanced by a quick location assurance. Here we can take advantage of the physiological shift and provide unique means of movement and sight that seek to orient the inhabitant. A global vantage point similar to an aerial view of a three-dimensional place can yield two-dimensional pattern recognition. One can learn much about the planning of Paris from the top of the Eiffel Tower. From the exaggerated Y dimension, the space flattens into two-dimensional patterns. But this is only one level of understanding. One must also walk the streets of Paris, listen to the traffic and conversation, smell the breeze and feel the sun to understand ones location within the city.

Multiple and instantaneous global vantage points could yield three-dimensional patterns and orders. Skeletal overlays (wire frame mode) against volumes (solid), an —x-ray vision,— could provide an understanding of the intended qualities of spaces. Mapping places through languages of text, color or symbols could also aid in orientation. Surfaces could become animate with sketches, advertising spaces within; the envelope as billboard. An augmented help overlay could exist for inhabitants with hotspots that roll-over information when activated.

Another experiential law of potential involves circulation. Circulation as an event is understood as accessing information within an environment. This is accomplished by movement or change of position (eye point or view point) in space. Traditionally, we circulate around and through structures to gather information. We change our position in space (eye point) to change our focus of study (view point). This circulation is based upon our physical scale and bodily needs. There is a ground plane that accommodates the size of our feet (or the treads of our tires, etc.). The ground plane is mainly horizontal to accommodate our mainly two-dimensional means of movement. The plane is of a certain texture and material to both comfort and support our passage.

In virtual environments, the change of position can be accomplished by flying, walking, skipping, flapping, singing, pointing, clicking, clucking, nose-twitching, or any other desirable action. This shift in kinesiology, no longer using our limbs to move through space, informs a new architecture of circulation. Surfaces for travel are no longer necessary, we can move freely, suspended in all dimensions. Spatial voids for passage are no longer necessary, we can move through planes and volumes.

We have always understood circulation as moving in time through continuous spaces. Hyper portals collapse the factor of time and the need for continuity. Circulation through spaces can now be a matter of activating the portal. No approach, no need for a path, only instantaneous entry.

However, surfaces for travel and spatial voids, these passages and entries imply movement and inform direction. Virtual architecture still needs to infer where and how we can access information. Digital vernacular may suggest the traveling commands (find, go to, search) as a method for access. Also, changes in appearance (typically of interface tools) imply movement or action such as the hour glass and blinking cursor.

This is lending towards dynamic architectures that are capable of transformation depending on the information they contain and the needs of the inhabitant. The change of position does not have to instigate with the inhabitant, the environment can actively circulate.— Here the eye point remains stable and the view point is dynamic. The circulation is now based upon the goals of the environment, or the goals of those accessing the information. The kinetic shift reverses the notion of formal circulation and stable information. The architecture is animate. Its form and animation are derived from the information it contains or is queried for.

Rather than serve as backdrop for activity, planes come into the foreground, animated with information. Smart agents or search mechanisms form space, visioning the desired information. The environment filters out all space not corresponding to the formal inquiry. The resulting spaces relate to the level of detail in the quest.

Shelter as an experiential law of potential depicts critical assessment of information within an environment. Tradition-

ally, walls, floors, and roofs combine to provide an envelope of shelter, an environmental, sensorial and physical protection. Overhead planes restrict environmental factors, underfoot planes provide ground that supports all activity. Vertical planes restrict and moderate environmental factors, and serve to restrict and direct inhabitant access.

Environmental factors, which we may know as snow, bugs, cold, etc., are not an assumed part of a virtual environment. Inclusion of sensorial factors, sight, hearing, smell, touch, taste, in virtual environments are dependent on the sophistication of the human-computer interface. Inhabitants physicality create the need to provide barriers from physical entry and, depending on object detection, may or may not be a part of the virtual environment.

An architecture that allows for assessment is still one of filters, but now what we are filtering has changed. Environmental factors may exist but they are more akin to Neal Stephenson's — Snow Crash — where what we need protection from are viruses. Environmental factors can also be thought of as an influx of information. Now that we have accessed the information, we need to critically assess it, meaning we need to isolate it from other information.

Typically, what we do now for shelter in these terms is capture the information (copy, save, download, or print to our own computer) and assess it at a later time. In a MUD, this shelter is accomplished by going to another room— or inside an object. In a 3-D virtual environment, it can be accomplished by providing assessment harbors, perhaps personal architectures that each inhabitant carries with them and expands or changes physicality in order to enter. These personal building blocks define architecture as a dynamic tool for shaping and creating environments.

"Assessment Harbors" will need to change the way we filter and restrict access. Assuming a visual human-computer interface, it will still be necessary to restrict vision of those outside and focus vision of those inside. Due to multi-dimensional travel, it will be necessary to provide multi-dimensional filters. A simple change from two-dimensional filters to three-dimensional will aid in assessment.

Traditionally we could get by with location as a filter, sheltering through distance, changes in vertical level, difficult egress, etc., but potentially instantaneous travel makes this obsolete. Instead, we may infer traditionally non-architectural filters to restrict access. Keys that could be codes, identities, or forms would allow access. Entry to these shelters is a command prompt, an intelligent mirror, or a keyhole. Once in, we are enveloped with the architecture.

We also have a potential shift in what we are sheltering or assessing. Virtual environments may need not shelter physicality but intangible information. Physical presence is replaced by mental or other sensual presence.

Conclusion

The fuzzy ontological states described in the first part were literally unimaginable before the arrival of electronic realities. From gaseous architectures to the concepts of unconstruction, the hyper and the eclectic-hybrid, these defy all our age old conceptualization of architecture. They create the potential of a new architecture.

The digital medium makes it possible to imagine and realize emerging architectures of common experience described in the second part. The process of entry, circulation and shelter are exposed to kinesthetic shifts and boundless laws that make animate architecture whose structure is information rather than structuring space to contain information.

Hence, we can conclude that the only constant in cyberspace is the constancy of potential. Everything, except the common sense imported from classical reality, is possible. Jacking into the digital means to switch our ontological/architectural paradigms from the concept of object permanency to the concept of permanency of potential.