

The Virtual Museum of Architecture

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ABSTRACT

This paper proposes a virtual space project for the web which is capable of 'containing' virtual buildings or representations of real buildings (through computer rendering, video or photographs). Its theme requires a detailed study of the museum (from the 'meta-project' to the architectural development of the project itself) in order to demonstrate how the realization of a virtual project goes through those same criteria and methods acquired with traditional architectural studies and how it integrates new tools of representation and new disciplines like web-design.

KEYWORDS: virtual architecture, web museum

INTRODUCTION

The work reflects upon which 'forms' are able to contain a virtual museum but more generally it traces the new role of architecture within Information Society. Therefore, the aim is to give life to a virtual space which then stimulates the introduction of 'digital design' into an educational context collecting the precious work carried by professors and students in shared databases.

Moreover an architecture museum can be conceived for a youth market who may know little about architecture. It would include a 'permanent' display of important buildings, thematic exhibits

on particular aspects and clear explanations on the processes tied to the execution of architectural works. Other spaces such as Forums, Chat lines or on-line libraries and workshops, can offer opportunities for immediate exchange of ideas and the chance to discover more detailed information on a particular subject using.

The idea is to make 'architecture' easy to understand for everyone, thanks to a metaphorical structuring of the museum space and a reasoned application of the tools of representation offered by computers. We are convinced that this museum can feed a new impulse to the further development and spread of architectural themes.

VIRTUAL ARCHITECTURE ON THE WEB

From the analysis undertaken, and allowing for some exceptions, we can affirm that even today most museum sites follow a simple two-dimensional layout, while still exploiting the dynamic nature of hypertext, and that the realisation of websites remains in the realm of graphic design and apes all the clichés of the printed page.

Despite the use of attractive graphics and layout, the results are often disappointing and standardised. On the other hand, at least for now and with rare exceptions, the on-line museum does not present itself as an alternative

to the real museum but acts as a means to promote it, postponing the three-dimensional experience to an actual museum visit. But if the works exhibited are digital or virtual in themselves, then the virtual museum becomes a space which has no substitute and which requires accurate definition before it can be visited.

In situations such as these it becomes necessary for the designer to use three dimensions and here lies the architect's role, despite any difficulties of on-line publishing.

THE VIRTUAL MUSEUM OF ARCHITECTURE

As previously explained, the aim of virtual museums which contain representations of existing buildings/architectural works or which have a corresponding museum in the real world is not to substitute the physical experience of the works exhibited but to entice it. To convince a person, who may even live many kilometres away, to visit the museum itself. It is obvious that this is not the case for virtual museums which are accessible only on computer or via Internet and exhibit only digital works.

However the virtual architecture museum, as it is generically intended, comprises both these situations and is therefore a specific exception. This can be attributed to the unique nature of architectural disciplines which are the 'art of defining space' [1] and which include not only those works existing in physical reality but those expressed in a 'parallel' world, whether it be digital or whether it be defined by other forms of representation (cinema, painting, drawing...).

In addition, due to the vary nature of architectural works, the virtual

architecture museum can only contain representations of architecture which has been realised with the aim of inciting people to visit the physical buildings. It is interesting to note that the same occurs for a real museum which deals with the same subject. Such a museum, in fact, cannot contain the actual works being exhibited because of obvious factors such as physical size and context: it exhibits its representations.

The virtual museum differs from the real one because it allows access to digital spaces acting as a place of transit. Hence we see both the uniqueness and the necessity of a virtual architecture museum and that it should not be considered inferior to its real-life alter-ego.

It is also clear that a physical museum carries out an irreplaceable role in the conservation of forms of architectural representation (original projects, sketches, models...) but in terms of 'capacity' the virtual museum offers unlimited space for exhibition and storage with remarkable and innovative results.

We can thus affirm that the architecture museum, be it digital or real, is first of all a 'vestibule' before travelling elsewhere, a presentation of spaces, of building materials and processes. It is therefore essential that it be considered as an open organism, as a 'vestibule' for a logical sequence of paths and openings. These considerations are not new to museum studies but in the digital age they become enriched with new meanings.

DESIGN PATHS

Three points of reflection have been singled out and analysed and they apply

to any museum or work of architecture in general.

1-The container

2-The contained

3-Services

The container is the form or layout which defines the museum spatially, the contained is the database of architectural works and finally services are defined as all those support functions required by the museum and its contents.

The container

It has been decided 'a priori' not to depart from an existing form or combination of forms but to allow the structure to emerge through an analysis of the relationships between that which is contained. The transformation of thought, of its flow in architectural space is one of the most interesting aspects of virtual space design.

What kind of architectural script must we use to understand the meaning of the information revolution? The answer does not lie simply in atoms and their capacity for change but it must delve into their dynamic mode of interconnection. Just as digital civilisation has developed in a completely different fashion to the mechanical one, so has a new architecture developed which has been profoundly touched by electronic script, an architecture of nerves and not of body.[2]

Such a choice is also confirmed by today's ways of building. The envelope is becoming less and less important, making way for technical elements, services, bio-climatic control as if the nervous system were becoming more important than muscle or bone.

To use a 'dynamic' methodology for the design of virtual museums is therefore spontaneous since it is the 'neural' network of the relationship between the parts which will define its form.

Another aspect which features in current architectural debate is the capacity of an architectural work to be reversible and light (dismountable structures, recycling, light architecture..).

In the realm of virtual design, the concept of reversibility becomes that of non-consequentiality, that is the possibility to go or not to go into an virtual place, to activate and to experience it or to go back, to deactivate it and move into another space. This is tied to the dynamics of the inter-active and of hyper-text which allows us to choose from a number of different, non-sequential paths.

The concept of lightness is not to be associated only with the material aspect. It should not be intended as a mere reduction of weight but as a possibility to embrace the complexities of the world with levity and clarity. A wall surface acts as a barrier to information and blocks all that which tries to penetrate it. The sensible envelope, light and changeable, is like a skin which communicates with the outside, a filter which receives and transmits information. Transparency is, therefore, a unifying factor, a bridge with nature which implies mobility and communication.

The dichotomy which has always been seen to exist between architecture and nature, because of the former being 'fixed' and 'inorganic', the latter 'dynamic' and 'organic' now offers new themes for debate. Today's architectural research passes through fluid spaces, biomorphic forms, transparent filters,

through environments with soft transitions and light, changing thickness and hybrid materials whose transformations can be simulated and experienced through the computer.

The integration between architecture can only occur through architecture's capacity for change.

"...The butterfly, who projects the image of the universe in its organic movement, is the product of a series of creative phases: of an organism which goes from larva to chrysalis and to flying insect. How can architecture make this process visible? By acquiring a spiritual dimension and by borrowing its future forms from nature." [2] It is inevitable that such a thing should happen: thanks to increased communication a new consciousness has spread. It leads towards a respect for nature, to co-penetration, to the formation of consciousness and, because there is a relationship between organising and thinking about architectural form, this forms a prelude to new scenarios and environments.

As we know, the form of nature's organisms is not something 'a priori' but is the result of evolution, the explication of a balance which has developed through the years between each of its parts. Form this point of view, a biomorphic architectural form should not be a stylistic choice on the part of the architect but 'a consequence' of the relationship between its parts and between these parts and the environment.

Frei Otto points out that being close to nature "does not mean to design buildings which appear similar to nature without being at all natural".

This appears even more pertinent when we discuss virtual architecture. Since restrictions of space, time and context,

which influence form, no longer exist, virtual architecture can emerge naturally from flows and relationships therefore closely resembling an actual organism. It is also a unique characteristic of organisms to be able to communicate at a high level, directly, evocatively and metaphorically despite the fact that internally they are very complex. This capacity is influenced by the means of communication and derives from a simplification of language and is undoubtedly fruit of a 'formal transposition' which the computer forces us to make.

J.W.Mitchell says 'the web is an environment which is in no place in particular but at the same time everywhere' [3]. The necessity to overcome that sense of 'estrangement' produced by that which is digital because of its lack of canonical reference points and its 'anti-spatiality', has brought about the use of spatial metaphors such as site, address, navigation, web, desk, folder, mail...) which have become particularly effective because they are based on concepts that exist within our imagination and force us to make constant excursions into our subconscious, to an intimate self-exploration and a subjective form of interpretation. It is therefore inevitable that metaphor should become particularly effective when describing organic forms because it allows us to unite our fascination for creativity and the human intellect to that for creation and the works of nature.

When we refer to Cyberspace (in its more extensive range of meanings as 'space of information', or 'conceptual environment without any physical existence') or more simply to Internet, we allude to an entity which has no

structure which corresponds to that of any real-life model. On the Internet it makes no sense to say that a piece of information is 'above', 'below', 'to the left' or 'to the right'. If so it is only through a metaphorical use of terms which refer to an environment which has no spatial points of reference.

But it is possible to transform, abstract or represent information so as to allow someone to become aware of it in a way which is analogous to the experience they have with space and day to day objects in the real world. It is here that virtual spaces are structured in a similar way to physical space. The level of interaction that the user has with the digital allows to move through the space, changing perspective and point of view thus making the design of virtual space much closer to architectural design.

The virtual museum as an 'information object' in its entirety (and metaphorically conceived in its form) has no directionality or dimensions in respect to the web, it can be above or below, very small or very large. Its representation therefore has no scale and no points of reference. But in terms of subjective experience and interaction between space and user it becomes necessary to provide dimensions and reference points to the field of vision. Those metaphorical elements which are part of the museum and which define the internal spaces (ramps, lifts, columns...) will have plausible dimensions that the eye will read as such. In an absolute sense, these elements have no real dimensions because in reference to the information web they can be of any size and have any orientation. However, in relation to the necessity of their being perceived as defined elements such as ramps, lifts

and columns it is essential that they be described in terms of relative dimensions.

This does not refer to a banal metric definition of internal environments but more to a spatial definition. Such a necessity comes from a desire to give 'information' on the content through a metaphor which allows room for misunderstandings.

The contained

The works of architecture have been subdivided into the following categories:

1. Digital architecture

2. Hybrids

3. Non-digital architecture :

1. Digital architecture comprises those architectural works which come directly out of the computer and are expressed inside the visual space where they are visited.

2. Hybrids are works which are conceived with the help of a computer, they are very closely tied to it but are carried out in the real world. Therefore they are spaces which can be visited both through the computer and physically in real space.

3. Non-digital architecture comprises:

a) Architecture of reality.

All those works existing in the real world and conceived entirely through a 'traditional' use of design tools.

b) Architecture of representation.

Architecture which is represented in cinema, photographs, drawings or in written works where they find their spatial definition within their own representation. These are experienced in a space which is neither real nor digital. These representations can be either of existing architecture, of hybrids, of digital architecture.

Services

The Services are: library, photographic library, picture gallery, cinema, web-cam, simulator, museum shop, bookshop, offices, workshops, web-mastering and discussion forum.

As previously outlined, it is a prerequisite that each service be reached easily and from any point within the virtual museum. This characteristic has taken on a graphic form through a reticular system extended throughout the museum.

From a more detailed analysis it emerges that there are close ties between some service typologies and the categories of architectural works which can influence their placement within the museum. The web-cam, for example, is tied to the filming of real works in specific geographical positions within the real world.

THE MEDUSA

Before finally reaching a convincing form which could express completely the internal relationships of the museum, a number of schemes and diagrams have been developed which place relationships in evidence.

From an initial analysis, the necessity emerged to build an organism which could 'contain' the non-digital works while at the same time 'remaining open' to the digital ones. In addition it needed to provide a hybrid zone where interior and exterior remain undefined and a axis along which elements can be placed in relation to each other vertically.

Keeping in mind those considerations made in relation to the 'informative capacity of transparency', it becomes obvious that the object must present this characteristic while remaining

symbolically light and allowing for introspection.

These considerations have led to the development of an organism similar to a medusa, a metaphor of navigation and mobility, of strength and lightness.

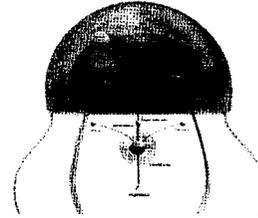


Figure 1: The Medusa

The initial form is intentionally and explicitly biomorphic but it has undergone a number of changes.

The tentacles have been eliminated to become a single, central axis of communication which connects the entry to the three basic experiential levels: digital works (first level), hybrids (second level), non-digital works (third level).

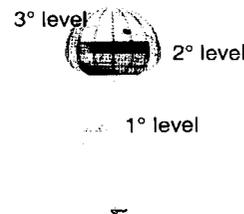


Figure 2: The three levels

A mobile disc-shaped element represents the museum's main navigation tool and provides symbolic access to several services and database. The lowest level contains the digital works area and is completely immersed in a metaphorical sea (cybersapace).

Here a large ring generates a symbolic aquatic vortex inside which the link to the digital works can occur.

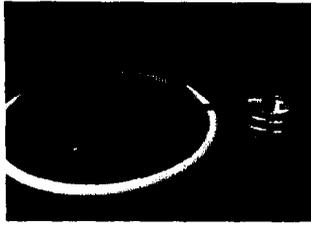


Figure 3: The first level

The second level regards the hybrids visualized by light spherical bodies flowing nomadically through water inside an open container.

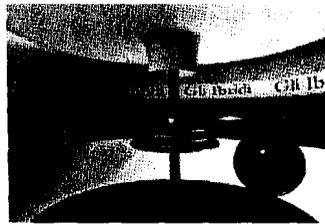


Figure 4: The second level

The third level is made from the concave back of the container filled to the brim by the water coming from the level underneath. In the middle of this body of water we find the 'islands' of real architecture.

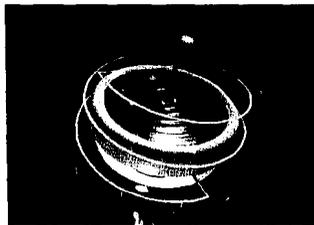


Figure 5: The third level

THE DATABASE

The database is the information heart of the museum and it contains all the works exhibited.

They are divided into the following categories:

1. permanent exhibition
2. thematic exhibitions

The museum's Database is a constantly evolving archive connected to other institutes of culture.

The works which make up the permanent exhibition can be listed or searched by name, by author, by date, by place through a specially tailored search engine.

In the thematic exhibitions the works are placed in relation to each other according to a particular theme (which can also be suggested by the user) making it possible for the user to go on a kind of guided tour. When a search is made on the database and a particular work or the title of an exhibition is selected the museum will immediately be activated on the relevant sector and the visit can begin.

THE ITINERANT MUSEUM

Upon completion of the Virtual architecture museum, it is deemed appropriate that a series of mobile elements be designed where terminals may be placed allowing access to the virtual museum and the web.

These elements will be envisioned as the virtual museum's physical offspring, elements which recall an object existing in another reality.

The mobile elements will have to be designed with stylistic elements which recall the virtual museum.

These will be dismountable (and therefore reversible) and can be placed in town squares, in front of real

museums and in particular in front of architecture schools.



Figure 6: The itinerant museum

METHODS OF REPRESENTATION

Non-digital architecture can be filmed or simulated (real architecture) and then reproduced (architecture of representation).

Hybrids may be visited virtually through a link and represented in their reality through film or simulation.

Digital architecture can only be visited through a transition or link.

By simulation we intend 3D renderings which can be explored, by reproduction we intend moving images (films, documentaries) and static images (books, photos, paintings, drawings) in digital form and finally by transition we intend the possibility to access other spaces or sites through transitions or links.

The virtual museum is an environment 'window and screen' which is capable of representing and reproducing a space, a 'simulation container', 'a vestibule' for transitions and finally a 'grid' which interconnects each part.

METHOD FOR USING MUSEUM SPACE

It is believed that the visit to the virtual museum should happen through subjectivity, through a linked series of screens which are controlled by the user. The user moves from one image to

another through simple transitions, by clicking on the left side of the screen the user moves to the left and so on.

The inherent simplicity of this system allows us to concentrate on a high quality graphic definition of the spaces combined with an interesting and captivating soundtrack.

In addition, fragments of animation are used to obtain a more realistic movement and they are also tended to offer the user pleasant surprises.

By using the mouse, the user is also able to carry out a number of operations (such as opening and closing doors, pushing buttons and turning handles).

CONCLUSIONS

We really believe the Information Society can be built also by architects but in the meanwhile we have to accept that a new type of architecture is emerging from the Information Society itself. In regards to architects and digital space arch. A. Eloueini states provocatively: "It is no longer the case that we operate in the real world, architecture today extends into the virtual. Architecture of the digital era must be able to operate both in the real and the virtual worlds. To build in the twentieth century does not mean building and intervening in today's metropoli, but it means building virtual cities which, like the first cities, were not built by architects." [4]

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Eleonora Cardellini is architect and webdesigner.

Graduated with the experimental thesis "The Virtual Museum of Architecture", she has recently joined the Multimedia Laboratory of Architecture in La Sapienza (Roma). She participated to the conference "Architettura and Multimedia" (La Sapienza, Rome, 2000), with a 'concept web-site project' called 'The swan' and won the contest "New Ideas for Rome Post-Jubilee 2000" with the 'web-cam installation' titled "Eyes on the city".

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