NOTES

(1) N. from the editor: the film Moebius, co-discovered by the German mathematicians A. F. Moebius y J. B. Listing in 1858, is a one- face, one- edged surface.

(2) N. from the editor: Klein's bottle is a non orientable surface that lacks interior and exterior, described in 1882 by the German mathematician F. Klein. The original name was "Klein's surface", wrongly translated as "Klein's bottle".

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The desert laboratory: Strategies for three projects

Jean Pierre Crousse

Fluffy desert

The Peruvian coast is a long and thin strip of land limited on the East by the Andes and on the West by the Pacific Ocean, which is the Northern part of the Atacama desert, one of the driest in the world. However, the influence of the Humboldt ocean current produces in Peru a phenomenon of evaporation and reduction of the desert temperature that makes its climate conditions less extreme than those registered in the Atacama desert. The lack of rain and strong winds (except in some specific places) and the comfortable temperature which fluctuates between 15 ˚C in winter and 29 ˚C in summer without noticeable variations between day and night (due to a high environmental humidity percentage), make this desert a comfortable and "fluffy" environment. The fast-flowing rivers coming down from the Andes make water supply possible, although expensive, thus making the region inhabitable.

The high humidity of the environment and a uniform layer of clouds during more than two thirds of the year reduce solar radiation consideringly.

Summarising, in the Lima region there is a very particular desert, without shade, without heat or cold, extremely dry but crossed by rivers that provide it with water.

These landscape images are project subjects for us. Their singularity allows for a great formal freedom to inhabit and build it. This freedom is a double-edged sword, since only a sensitive approach can avoid the destruction of such a strong and absolute landscape, but so fragile at the same time.

The inhabited desert

Fortunately, the Peruvian desert has been inhabited since time immemorial, offering the invaluable lesson of its pre colombian architectural tradition. The cultures that established themselves in it, modified the landscape noticeably, increased the arable areas thanks to big hydraulic engineering works, and left us great lessons of land randomizig and rational management of the environmental offer.

The ancient Peruvians had the wisdom of establishing themselves between the arable areas and the desert, occupying the highlands, whenever possible, to dominate the territory visually. In the XVI century, the Europeans brought another vision regarding territorial occupation, prioritizing settlings on river banks and using agricultural areas in order to have direct control over them. We suffer this change of strategy enormously today as our cities have grown to the detriment of fertile areas of the desert.

We have recently learned to value the sensitivity of ancient Peruvians to intervene the landscape, diffusing

the borders between artifice and nature. Landscape characteristics were transformed by them into architecture matter.

This sensitive approach to such a characterized landscape induced in time certain similar solutions, some of which were retaken by the Europeans when they arrived in the new continent. In pre colombian times, constructions occupied the whole usable space between the arable areas of the narrow coastal valleys and the pronounced slopes of the Andean mountain range, an area defined by a walled enclosure. In colonial times, however, the Spanish used all the available space of their urban sites to build their houses, building a fence around the border when the constructions did not reach it. The closed and open spaces needed were developed within this compact enclosure.

The occupation inside the enclosure marks the difference between pre colombian coastal and colonial architecture. The distribution of living spaces inside it is labyrinthical in the first case and centrifugal in the second. The relationship between closed (interior) and open (exterior) spaces is inverse between the pre-colombian and colonial constructions, open spaces being predominant in the first ones and closed ones in the second. In spite of the fact that both used earth as a building material (adobe and quincha), the resulting image created by these strategies was very different: the Spanish buildings responded to a construction logic of addition of rooms, while pre colombian buildings seem to be solid matter extracted from the ground.

The orientated desert

The Peruvian desert strip constitutes an orientated and abstract landscape which has also conditioned the way in which man has built it and inhabited it. The strip, two thousand two hundred kilometers long with a width that fluctuates between five and one hundred kilometers, runs from South-Southeast to North-Northeast. It is crossed by fifty two rivers which form narrow valleys whose fertile soil makes cultivation possible. Thus, transversal valleys present a view of "transversal oasis" disseminated along the desert. The valleys run from East to West, while the way that joins them from pre-Colombian times goes from North to South. The sea can always be seen to the West; in the East, the Eastern Andes are also desertic.

This clear orientation of the desert and its borders regarding the trajectory of the sun form a completely abstract landscape, almost "cosmic". Its cultural expressions emulated its dimensions, its clarity and its abstraction, from architecture to textile art. It is difficult sometimes to distinguish between a textile image from the image of the landscape it belongs to: cosmogony, landscape and matter may be understood as a unit in its cultural manifestations.

PROJECTS

Project chronology

Three projects developed at Barclay and Crousse Architecture feed from these considerations[1]. However, the chronological relationship between them should be specified since the hypothesis verified during the design process has been useful for other projects that followed. The process allowed applying the project strategies used with increased precision, even though each project has specific characteristics that clearly distinguish them.

The "Church of Santa Cruz of Asia" is the first one. The project was born in November 2006, when the leader of the community of Santa Cruz de Asia asked us to build the temple of a settlement under construction, located in the future main square, in the middle of the desert, three hundred meters from the area inhabited at the time. This community, formed by people related to the construction area, was created as a result of the building of summer resorts in Asia, one hundred kilometers South of Lima (on the stretch of desert located between the valleys of Mala and Cañete). Its population of six thousand inhabitants grows to over twenty thousand in summer.

The project was developed in 2007. At the beginning of 2008 we were commissioned to design a house-workshop-museum where five works of the North American artist, James Turrel[2], would be exhibited. This project is located a few meters away from another of our office's works, the"Equis" house (2003), located in the bay of Escondida beach, fifteen kilometers South of Santa Cruz de Asia.

In August 2008 the Spanish Agency of International Cooperation opened a competition for the reconstruction of the Site Museum of the Paracas Culture, located in the natural desert reservation of Paracas, two hundred and fifty kilometers South of Lima. Our project won and it was developed during 2009.

As it was a joint project of the Spanish Cooperation, the Ministry of Culture and the Regional Government of Ica, the project approval and tender process lasted two years, which postponed starting the construction until the end of 2011.

In all the projects mentioned, the desert landscape is predominant, which determined a similar approach concerning the use of simple materials and technology. The soil colours and textures (sand and earth), which are also those of the landscape, were the same in the three projects. Image and matter became a constant, without a project determination.

PROJECT STRATEGIES

These projects gathered a series of project strategies, some already tried before in some residential projects, which were applied with a common objective.

In fact, the particular climate conditions of the desert allow stating that the role of ¨shelter¨ which is traditionally attributed to architecture does not make much sense here. However, in order to be able to inhabit the vastness of this totally abstract landscape, it is necessary to create ¨privacy shelters¨. The role of architecture can be redefined here to create the privacy needed to make it possible to inhabit the landscape.

Enclosure

Setting out the boundaries of the area of intervention by means of a continuous opaque surface, forming an enclosure of simple geometry, is the first strategy applied to create privacy in the three projects studied.

The enclosures, rather than being delimited by walls, are defined by constructions containing the programme, either supporting spaces, supported spaces or external living or circulating spaces. Inside each enclosure, the observer´s point of view varies at the vertical axis, thus protecting the privacy of the enclosures in certain cases and allowing the landscape to be revealed in others, depending on the requirements for use of the different spaces and the context where they are inserted.

In the case of the church and the Turrell museum, the enclosure is a consequence of the site; in the "Museo Paracas", on the other hand, it is the result of the occupation of a site that was free from archeological ruins (according to the certification of the Ministry of Culture). The geometry of the pre-existing museum acted as a memory of the place.

The enclosures have various degrees of opacity. In the church, it is totally opaque, separating the parishioner from the desert landscape (in the Christian religion, the desert has been perceived as a place of temptation, a dangerous place). In turn, thanks to the lack of rain, it opens up to the sky and frames it.

In the Turrell museum there are two enclosures, a horizontal one that covers the whole site, and a vertical one. Between them, a platform allows viewing the horizon and the ocean to the West, while a sole perforation in the vertical enclosure reveals the desert landscape to the East.

In the "Museo Paracas" the enclosure is divided into two by horizontal circulations that look like cracks and allow framing certain angles of the desert landscape.

Volumetric compactness

Due to the rational and economic traditional construction system, the three projects have a simple geometry: regular plant parallelopipeds in the case of museums and square in that of the church, where volumetric compactness is revealed by the enclosure. Compactness allows the volumes to integrate better into the naked vegetation landscape, making them look like extrusions of the soil itself or, seen in a different way, like pre-existing elements that have been discovered when removing sand while excavating. The open and closed exterior spaces equally form and define the volume.

Formal abstraction

The three projects use formal abstraction as a complement to compactness for integration into the landscape. Formal abstraction does not have an aesthetic origin inspired in the pictorial, but it responds to the wish to alter the scale. Since the desert does not have measurable or identifiable elements because of its size, (vegetation, constructions and so on) it diffuses the barriers between figure and background, turning the landscape into only one element that is blurred in the distance and exacerbates its abstract condition. In the project studied, the lack of elements that provide a human scale (such as doors, windows or railings), causes the constructions to mimetize with the effect of figure and background, making it difficult to relate them to known dimensions.

On the other hand, inside the enclosure there is a careful work on the scale, using the space measurements as a reference in relation to the human

body over the identification of the scale by dimensionally recognizable elements. The Le Corbusier Modulor *is used in all the projects to determine the dimensions of objects, surfaces and spaces discriminatingly using the red and blue[3] series which are harmonious in a golden section inside themselves.*

Interior-exterior ambiguity

The mildness of the climate allows us to apply freely and literally the concerns of modern and contemporary architecture to minimize the barriers between interior and exterior and to operate a transition between them. In our case, the diffusion between these two categories is added to the elimination of the barriers, making them ambiguous: interior spaces are created with characteristics of exteriority and exterior spaces with characteristics of interiority, essentially within the enclosure.

Among the three projects, the church is the one that exploits this strategy more widely because it is not subject to the needs of the conservation of the objects it houses. In it, the space of the nave merges with that of the yard, without an existing interior or exterior barrier. The tree yard, with its high walls, is not perceived as really "exterior", either. The sky appears to be the natural ceiling of this space. The intertropical situation of the region makes the trajectory of the sun in the zenith almost vertical. Therefore, giving the nave an East-West orientation, as tradition demands, it is enough to prevent the sunrays from making the parishioners uncomfortable during the religious services. The disappearance of "exterior" and "interior" categories is justified by the following consideration: by protecting itself from the desert, a synonym of lack of life according to the bible, the church houses and shelters the divine creation. Vegetation (represented by the four trees of the yard), animals (represented by the birds nesting in them) and human beings (congregated under the nave) are welcome and equally present in the house of God.

The case of the Turrell museum is particular. The works of the artist are luminous and, therefore, it is essential to have a transition between the exterior natural light and total semidarkness in order to appreciate them. This transition has been solved in the project by a ramp that comes down from the entrance level, in the open platform, to the exhibition level, located underground. The ramp, located under the vertical volume, allows for a slow progress that adapts the vision to the semidarkness. This walk is exterior, but under a roof and with spatial interiority characteristics. The same thing happens with the ramp at the other end of the enclosure, although this one is only partially covered. It is, then, a "continuous exterior" shaped by the luminous intensity.

On the other hand, in the "Museo Paracas", the need for conservation of the exhibited pieces requires the exhibition rooms to be closed, separating them from the rest of the building. For that purpose, the exterior spaces with interior quality are restricted to the circulation that joins the entrance, the workshops, the administration and the exhibition rooms.

Hybrid spatiality

If in pre-modern architecture natural light and its trajectory in the sky made space dynamic, the great contribution of modern space is having consciously introduced one more variable into its dynamics: the trajectory of the human being. From that moment on, time and space were closely linked in Western architecture.

These three projects have been propitious to take architectural spatiality to a hybridation between some strategies used by old Peruvians and certain contemporary approaches to the architecture project. We have wanted to explore in them the possibility of linking apparently contradictory spatial elements, like the pre-colombian labyrinth and the spiral, with the contemporary ideas of fluent space and phenomenon transparency.

In projects like "Museo Paracas", we have explored what we call "suggested space". We mean the space that is fluent in time, when the observer moves and manages to recompose it in his mind. Thus, a certain space that may obey the planimetric scheme of the labyrinth, may expand itself and generate depths thanks to those suggested spaces not perceived by the observer, but sensed due to slight transparencies, in the light coming from a hidden source or other project devices that entice the visitor to embark on a route and discover them.

In the "Museo Paracas", some devices for environmental correction separate the exhibition rooms and create spatial compressions, suggesting a concatenation of other spaces without by this revealing how they do it, giving the impression of being distributed in a labyrinthical way. In the church, the way from the entrance atrium suggests a spiral movement that goes through the nave, crosses the yard

and ends in the chapel. When entering one of these spaces, the spiral movement does not allow seeing the next space. But the spaces are suggested in the elements that guide the view, like the visual accents or the presence of natural light.

In the Turrell museum, the same luminic art works take us into the semidarkness by the hand, but it is the sound of the water falling from the terrace on the upper level what guides us through the exhibition spaces towards the exit. On approaching it, the natural light becomes present, "Skyspace" being the only work of the collection that uses natural light, which acts as the link between interior and exterior.

In all of these projects, there are some points where a diagonal transparency is produced that joins two ends of the space, producing a spatial expansion that allows perceiving the space to its maximum possible length.

Instrumental light

For the architect, working with light implies having power over time and space. In the projects studied, light is used in an instrumental way to reinforce project strategies put into practice and the concepts preceding them. So, that is why light is bright in the church, presenting nature as part of the divine creation and no longer considering communion with God as an exclusive, mystic and dramatized encounter between human being and the deity. Light is modular, in the case of the Turrell museum, where it is used as an instrument that prepares the view for the correct perception of works of art. Finally, light is technical in the case of the "Museo Paracas", filtered and regulated in the devices of environmental correction.

Light comes from key spaces in the strategy of ambiguity between interior and exterior. In the church, this comes from the yard, which is a living space, like the transitions between the rooms of the "Museo Paracas", from where the light comes through the environmental correction device. In the Turrell museum, light comes from the vertical circulation, formed by the entrance and exit ramps of the exhibition places.

Excavated mass

The strategy of "maximum occupation" of the site and the use of an enclosure to delimit it produces, as it has been seen, a compact volume. The formal abstraction leads us to perceive this volume as a mass and, taking this concept further, we can consider that this mass thus conceived, precedes the project. The typical additive logic in construction is not applied in these cases, as the project starts from a solid volume and not from a simple volumetric boundary when it is built.

So, in these projects, the pure prism that may be perceived as "stranded in the dunes of remote times", begins to model itself creating "empty" spaces by matter substraction. In this process, spaces are being created and discovered simultaneously, in the same way that archeologists excavate sand to discover ruins buried in the course of time. This substractive logic must be consistent with all the project scales in order to be intelligible and thus be able to characterize the buildings.

Continuous surface

The excavated matter does not accept elements foreign to it. This made us reduce the range of materials used to the minimum and create a continuous and homogeneous surface, in vertical and horizontal plans, which is possible because of the lack of rain. In the three projects, designed for economic reasons in traditional brickwork and reinforced concrete, the surfaces are plastered with cement, polished in some cases, painted in others and exposed when they are reinforced concrete surfaces. In these projects, the difference between the brickwork structure and the finished work is almost imperceptible.

Absent detail

Under this same logic, every superfluous detail is eliminated. The objective of the detail design is to make it "disappear" favouring the formal abstraction mentioned previously. The lights are thought of within the logic of the excavated mass, appearing like further excavations in the mass instead of objects added to it. The elements of contention and safety, such as railings, are assimilated like volumes-parapets or multipurpose objects, such as concrete benches or tables. Windows and doors are imagined as holes or "absence of mass" and the woodwork is without frames or watertight closures (again, because the climate allows it).

Colour

The use of colours applied to the plaster allows reinforcing the unity and the reading of the solid original. Likewise, using the colour palette taken from pre colombian textiles and the scant

chromatic remains present in its ruins nowadays (essentially sand and reddish ochre), buildings are protected from the relentless "visual aging" produced by the omnipresent desert dust on their walls. Inside, the warm colours disappear, making room for the freshness and calm provided by the white colour.

CONCLUSION

In these projects, developed in very different circumstances, the landscape and its history have triggered an approach similar to its relationship with spatiality, matter and its image. These processes have neither been premeditated nor planned, but a sensitive approach to the relationship among architecture, matter and landscape has generated the common project strategies that are useful to us today as a project baggage when we need to face similar projects. In these projects, the landscape image constitutes the matter with which the image is generated in architecture. m

NOTES

(1) Only one of these projects is being built, "Museo Paracas"; the other two remain, for the time being, in the graphic imagery and in some good models.

(2) Note from the editor: James Turrell (Pasadena, 1943) was an aerial cartographer and bachelor in psychology of perception before becoming an artist. From 1966 he has worked with light and space. In 1979 he bought a volcano in Arizona, the Roden, and currently he is transforming its crater into an observatory.

(3) Note from the editor: The blue and red series are numerical sequences derived from the measurements determined by Le Corbusier for a man with a raised hand.

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See page xx

What does rain smell like?

Claudio Magrini

ABSENCE

This article does not explore the predominance of the architectural image as a replacement of professional performance but, rather, what is sometimes automatically excluded: the direct contact with matter, understood in its physical and phenomenological terms and the way to approach it. In this dialectic game, the image, far from looking for the precision of visual reality, becomes an instrument of visualization (often blurred) of the approach to matter. The image is not interesting as a noun, as a representation of the finite product, but as a verb, as a continuous (momentary) manifestation of the project process in progress.

MATTER

"Architecture is always concrete matter. Architecture is not abstract, but concrete. A sketch, a project drawn on paper, is not architecture, but only an insufficient representation of architecture, comparable to music notes. Music needs performance, architecture needs construction. That is how its body is formed. And this is always sensual."

Peter Zumthor (2006a)

The following anecdote is going around: a newly graduated Chilean architect was sent to work at the Zumthor atelier with the purpose of acting as a contact link for a hotel where the Swiss architect was developing projects in the North of Chile. Zumthor asked her to develop certain space and gave her three weeks to do it. Loyal to the prevailing academic teaching methods, the architect applied herself enthusiastically and expediently to the complete development of the project. The procedure caused Zumthor´s irritation, as he had a diametrically opposed way of projecting, consistent in a process that he calls "slow architecture".

Contrary to what is superficial and obvious (products of the immediacy so highly praised by our society), the Swiss master advocates for a slow and patient search that comes out of matter itself. Of the same thing. "Das Ding an sich" *(the thing in itself[1]). The* noumenon, *that according to Kant, consists in the basic realities beyond the sensorial experience. In the case of Zumthor, it is the attributes that are intrinsic to matter. The physical, phenomenological and psychic matter.*

In one of his texts, "The hard core of beauty", Zumthor (2006b) states the wish to «develop an architecture that comes out of things and goes back to things» («...die von den Dingen ausgeht und zu den Dingen zurückkehrt»).

Undoubtedly, this project method is on the antipodes of preconceived forms and photo-realistic representations, practices so much in fashion today. At the beginning of the project process, the project reality does not exist yet, it has to be discovered, it has to be structured, it has to be woven gradually in time and with time. Then, How to give account of reality in nuce[2]*? How to represent it?*

When assuming how insufficient