ENGLISH TEXT

"MÃE D'ÁGUA" OR TRANSLATING THE BRAGA STADIUM DESIGN

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"...I felt somehow that the book was trying to implicate me, it pulled me from under my jacket, it asked me not to abandon it to its fate and all the while giving me a challenge, it provoked me to a surprised duel of feints and blows. It was then that I decided to try. The problem was to develop in the best possible way, the individual tricks, but do it lightly, without feeling the effort and without creating impediments..."
Italo Calvino.[1]

This text states in part, a glossary of architectural principles adopted in the process of design and construction of the stadium in Braga designed by architect Eduardo Souto de Moura.

The position of the building was determined by the geological and morphological nature of the surrounding terrain and sun exposure. The excavation with its geometry creates an atmosphere of relations between the spectator, setting, the surrounding landscape and the public in the stands as it once occurred in the theaters of ancient Greece. Natural light was instrumental in making the spaces livable and the plasticity of the shapes in which we have tried to ensure, as far as possible, the continuity of both the vertical and horizontal elements. The dimensional control in the planning stage and implementation of the points of contact between the parts, tangencies, weights, seals, leaks, bevels, knots and joints respond to the search of the readability of proportions together with all the parts, looking for exact lightness. The reduction of the contact points has transformed the space between the elements into something brighter and more permeable. The big empty spaces lighten the mass of the eastern supports or the slenderness of the eastern pillars is the expression of desire to free the internal space of movement. The lightness was reached in the cantilevered ends of the horizontal structures generating an elevation that could be interpreted as an abstraction of the section, a type that tapers at the end due to the absence of the lateral support. Serial repetition of the structure of the stands is the result of the declared intention to subdivide the program into parts and organize it according to a logical use so as to facilitate a uniform and safe flow of circulation. The complex articulation, resting on an inclined plane of the ramp system, gives access to the East stand and to the space below the playing field. This solution solves the specific problem of the stadium position embedded in the rock and how to go through it. As a rule, the roof should cover at least 50% of spectators, ensuring physical comfort, as in the ancient Roman arenas where fabrics were placed on top of the stands. A fluting lowered to the bottom of each prefabricated bench receives rainwater and leads it to the collection system as in the ancient theaters. The coordination of the architectural project, of the various specialties implemented and the proportion of the structure has ensured that all facilities were incorporated into the concrete to allow for the continuous reading of the plasticity of the mass. A prototype was made to test the resistance of materials that were to be embedded in the concrete, the design of the stereotomy of the formwork and the compatibility between armed mesh and ducts. Finally, the dimension of the field is 120 X 80m of natural grass, 40 x 80cm is the space for each of the spectator's seat, 17cm is the height of the steps for the public stairs and the rule for the vertical development of the stands, between 8 and 10cm is the rate of visibility generated by the curvature of the stands, 3cm is the size of the point of tangency between structural elements and the bevels protecting the edges of the exposed reinforced concrete. The design of outdoor spaces connects the new building to the surrounding territory, to road infrastructures and underground utilities.

During the process of collaboration in the project by architect Souto de Moura, I have often experienced the legitimate and well-known fear that the translator feel when he face a particularly elaborate and complex text, that subtle anguish of the person that knows how to translate does not match "faire passer", because *then* the risk is *that of* renewing the operation of Caronte, carrying dead bodies.

I also conclude by citing Italo Calvino: *"... it is a special example of inventive translation which is the only way to be faithful to a text of its kind ... ultimately, I wanted to get at ease ..."*

Endnotes

1 CALVINO, Italo, From the *"Nota del traduttore"*, en: Queneau, Raymond, "I fiori blu", in the translation of Italo Calvino, ediciones Einaudi, 1967.

NOTES ON... THE STADIUM OF BRAGA

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Proximity to the city

Braga Municipal Stadium is placed on the northern slope of Monte Castro, within the set of Dume Sports Park. The architect Eduardo Souto de Moura led the multidisciplinary team responsible for turning into the reality the dream of large scale precision sprung from his imagination. The motive and the opportunity came from the celebration of the 2004 European Football Championships in Portugal.

Eduardo Souto de Moura has maintained a special relationship with the city of Braga from the beginning of his career as an architect. One of his earlier works, result of a competition he won, was Carandá Market, in a neighborhood on the outskirts of the city. There are several conceptual, but not formal, similarities between the market project and the stadium: cover, connect, give scale and serve as a node of growth for the city. In the market project, reinforced concrete was used in the limits of its technical possibilities to define a longitudinal covering with a significant overhang. This horizontal slab formed the market space as part of a covered walkway, which opened the city to its limits of growth. The market served as a focus for promoting the growth of the city on one of its edges, and even today, remodeled by Souto de Moura himself and integrated into the heart of the neighborhood, the market space, converted into a music school, continues to operate as a transit and urban connection.

The stadium also serves as a connection node and for the development of the city in its current northern limit. Its location at a point of about 40 meters between the elevation of the village and the area of growth in the valley of the river Cávado allows for the connection, on one hand, topographically difficult, between that area and Braga city center. The stadium also has the responsibility of covering one of its highest expressions. Some themes are repeated and 25 years later, Souto de Moura returns to operate in a very decisive way in the articulation of the city of Braga and with this second chance; he does it with an intervention of iconic scale and on a territorial and international level.

Setting the dreams on the land

It was clear from the outset that the architect Souto de Moura was not in the mood to create a typical stage. The references, drawings, the cultural conditions from which he started out, indicated directions closer to the interventions of the great works of architecture and engineering of the past, a Greek amphitheater anchored in the mountains could solve the transition from the city and meet the needs of the football spectacle.

The space provided in the management plan for all sports facilities clogged the available land, and so blocking the natural position of the path of water in its descent from the summit. Repositioning the stadium and inserting it into the mountain until it reached the place of the old granite quarry that crowned Mount Castro, frees up the valley space allowing the opening of a visual approach to the set in such a way that the parts built appeared in the Acropolis of Athens, slightly rotated with regarding to the observer along his route.

Anchoring the stadium to the land was one of the most intense processes in its creation. The placement of the stadium margins were set by UEFA (European Football Association) for the solar orientation of the playing fields, but conditioned in turn by the geometry, the views and especially the geology of the site which finally gave way to a five degree turn of the set. The stadium floated on the mountain during the time of defining its final overall geometry. A variation on the opening angle of the stands, the confirmation of the levels of connection between the existing slopes or the parameters of the amount of excavation required and its associated cost, veering the stadium slightly in the vertical or removing it and successively introducing it into the mountain in horizontal movements. Every little change in the parameters of the curves of visibility, changes in the required space in the benches to the west, served as a means to solve the complex program that it would house during the European Cup or the process of calculating the static sheets of the benches in flight lift back to magically move the building, still virtual in the drawings, repositioning it on the hillside/slope.

Access to the stadium from the upper level went from being collected by the top of the building, which took on the efforts of the roof, only to be the marks of fingers digging into the land to allow access to the submerged world in rock of the stadium, with the roof as a visual extension of the upper plaza, thus fulfilling the dream of Eduardo Souto de Moura and completing the perfect addition to the mountain.

The lower entrances always had the willing of the architect to be made by means of ramps. Here, the movements and the changes were due to both the inability of the crosses of circulation between the occupants of different grandstands and levels and the difficulty of ascertaining the precise geometry of two inclined planes alternating with inverted slopes with a third tilted perpendicular to them. The limits were set by the accessibility to all users and should not exceed the rate of 6% in the slope of any of the ramps. The stand to the east, as a ship that finally find its place, displays the gateway and the underground heart of the section, setting in stone the projection of the interstitial spaces between the sheets of concrete that give them support. With this firm gesture, the building freezes its action on the territory in a textual, natural, almost obvious moment, but that was the result of numerous attempts and approaches until finally everything seemed to be where it always should have been.

The defining process of the geometry

Another magical moment in the creative stage occurred in the instant a definitive course for the geometry of the sheets of the stands was set. For Eduardo Souto de Moura it was vital to convey the duality between the support on the mountain of the west stand and the cantilever of the east. This tension of opposites, put in balance by the third major player, the roof, was only possible if visually one stand was anchored in the rock bed and the other one emerging, jutting out in equilibrium from the territory.

To this end, the bottom of the layers of concrete was left to a geometry that should be; natural and elegant, capable of solving the transmission of loads and allow for maximum lightness in the steps of the public going through them, projecting itself above the access space that formed the lower plaza.

The steps and the inclination of the sheets went through so many changes, like those imposed by general questions of geometry and the implementation of the set, or those due to structural needs and the concentration of stress at the edges of the holes that allowed for the passage of people through horizontal connections of the stands. In another of the comings and goings in the defining process of the stadium, engineering and architecture work successively, one over the models of the other, in search of an agreement that seemed destined to the sinusoid. Finally, it was the circles on the defined sheets that were to establish the steps that broke the sinusoidal and closed, never better said, the circle of approximations to the shape. It maximized transverse permeability the architect Souto de Moura so longed for and who saw in those elements a solution and an end to the alterations of shape that had become an almost obsessive dialogue between the parties. Then along came Kahn to reaffirm the decision.

Similarly, the geometric conditions essential for the visibility of the interior curves were fixed, and a process of systematization and rationalization of the prefabricated elements that made up the benches of the different stands, the different starting points and berthing of the stairs were determined. Stairs that should travel the space between the sheets successively projecting outwards on them, while maintaining a constant relationship with the outer slope of the sheet in flight and looking for the accuracy of the contact point between the line and the collapse of the landing.

Being of another nature, the problems under the stairs at the west bank were no less, the relationship with the rock, overlapping, and the crosses of circulation of many different users, conditioned positions, sections, and of all their developments.

Covering the mountains

Vacchini Livio used to say that the act of covering was one of the highest aspirations of man, the fact of "portare il tecto" was at the root of architecture and that these basic issues were unchanged and eternal, we always end up returning to them.

In the Stadium of Braga, the act of covering was also a starting point and a beginning. The references and origins of the shape of the roof changed during development, adapting to the functional needs, to the approach to project development and the vital circumstances linked to Eduardo Souto de Moura's own trips.

The roof came out from the review of that made by Siza Viera in the Portuguese Pavilion in the Lisbon Expo, forced by the need for lighting and ventilation of the grass in the field. Walked by the limits of the circular shapes, in a version that seemed to recognize the textile itself, but was dismissed by the impositions caused by the televising of the games; the excessive contrast in the circular spots of light on the playing field prevented the digital eye from adapting to them in their pursuit of the ball.

Finally, after a trip to Peru by the architect, the idea of a split version of the cover came to him, in which the continuity was given to a pair of wires crossing the space between the upper ends of both stands. The construction was entrusted to the placement of prefabricated elements, supported on the cables and the deck came to represent the tension balance between the stands.

Then it came how to drain rainwater from this tent of atlantes, and it was done with a pair of gestures that rose to the occasion. If the cauldron is the symbol of the Olympic Flame, here water becomes the symbol of humankind power; the symbol of how to collect rainwater poured on a roof that shelters mountains.

Concrete as a tool of precision

The architecture of Eduardo Souto de Moura has as one of its anchor points, the precision of the elements that shape it. The construction is the foundation of the trade, but it transcends to become the hinge between the visual and materiality, between what we want things to be and how we present them.

The precision in which Souto de Moura worked on for years in small-scale works, is presented here as a yearning that almost seems disproportionate to the complexity and size of the task, and yet awards the stadium once more with the countless values as an architectural work. Precision, which has traditionally been associated with tectonics, steel architecture, wood and glass, expanded the margins of possibility with the accuracy of the definition of stone in the architecture of Souto de Moura, and breaks the boundaries of the imaginable when used in a concrete work with a scale like that of the Braga stadium. Concrete, for its form-adapting condition seems to avert any reference to the exact, to match, almost as if its nature would imply some degree of "laissez faire" as if their power was at odds with the formal precision or is out to take part of their inherent ability of expression.

Braga Stadium takes this tremendous challenge and successfully meets it by using basic tools of tangencies and joints, and at the same time forcing the interior of the concrete to take all other elements of the installation that should not be visible. The concept of tangency eliminates one of the operational characteristics of the concrete structures, the embedment of nodes and its hyperstaticity, leaving the solutions in the hands of simple supports that allow minimal contact between the elements that pass and stay, between those that bend or extend beyond the physical limit of the vertical structures.

The joints, with complex metal nodes, designed especially for the work, give the set back the elegance of the supported elements in a visual clarity that reflects the operation of the parts and the ways of transmission and the behavior of the loads, reducing what has been built to the exact representation of the calculation models.

The insertion of the facilities within the concrete structure itself adds an extra complexity to the construction on of structural elements, but brings back the magical appearance of visible devices of the same and in the exact places where they should be, running seemingly unrelated networks that serve them. This capability given to the concrete leads it to the paroxysm of the containment functions; it's responsible for the support of the building; it is responsible for the visual and formal definition of it; it solves both encounters and transitions as well as space elements and acts as a container of everything that makes the building facilities work and finally establishes a material dialogue with the stone, with the rock on which the building is inserted and with which one should have a conversation, *"with that natural concrete, coming from the artificial cut of the stone, we think that world there was more natural..."*[1].

Alvaro Siza once wrote in a corner of a piece of paper hanging on one of the corkboards in Eduardo Souto de Moura's studio, "o minimalismo sempre deu coisas muito compridas"[2], and is not at all simple, that more complex programs, large scale works, mandatory meeting places between architecture and engineering properly end up collecting some of the premises of the architecture of Eduardo Souto de Moura, designed and developed from national programs. In the Braga

stadium they succeed and the Architecture that is presented to us as impossible to discern its limits with engineering, in the most poetic of its versions, that which transcends the work of man to become a world heritage site.

Endnotes

1 *"With that natural concrete, coming from the artificial cut of the stone, we think that world there was more natural..."*
SOUTO DE MOURA, Eduardo, *"Engenharia e arquitectura: as duas faces da mesma moeda"*, en: CANNATÁ, Michele and Fátima Fernandes, *"Estadio Municipal de Braga"*, Civilização Editora, Porto, 2007, p. 13.

2 Portuguese pun difficult to translate because of the double meaning of the term "compridas" and its opposed meaning of the least understood as little. "Minimalism always gave big things."

FIELDS FOR SPORT

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"A common culture unites fields and city"
Adolf Loos, 1918

Man must once again become educated. This idea runs through the writings of Adolf Loos in the interwar period. The citizen must restore their connection with nature, and for this, should go to the country, he says. This form of relationship is not the intermittent and casual outings of the hiker or vacationer encountering nature, but more on a permanent basis. Going to the country is more complex and deep.
The Viennese architect argues that uniting the two cultures was only possible when you're young. *"Children should live in the country all year round, the intimate contact with the seasons in the country, forest and meadows. That would leave non-displaced men, but they would be cultivated, to live with self confidence, wherever they had to live"*.[1]

In Loos' writings of this period, there is a constant reference to the figure of the farmer and his way of life. The lesson taught by the peasant is to detach from the ornament that has engulfed the city's architecture because, in the field, construction is still true as there is the precious link between man and nature. The example of the farmer is present in what Loos considers as "dishonoring the lake." The farmer does not dishonor the place where he lives -the field- because he builds his house for himself and his family, that is, because the farmer has the culture: the balance between the interior and exterior of a person, is the only thing that makes a thought and an action reasonable".[2]

By contrast, the union of the countryside and the city determined by the spirit of the machine of modernity was announced when Le Corbusier raised the cry of "We must kill the street-corridor" to replace it with parks. The shape of this union is not the seasonal division of life between city and countryside, as suggested by Loos, but the complete demolition of the old city to raise on its ruins a new urban order dominated by the geometry and rationality, all of which has been invaded by nature.

The experience of walking through the new Contemporary City (1922) is told by Le Corbusier as if it were a walk in the park (Fig. 1). *"You will be under the trees, surrounded by lawns of grass. Around you there are huge green spaces. Healthy air, almost no noise, we can't see the houses! How can it be? Through the branches of trees, through the grids of the foliage the sky can be seen, at great distances from each other, a mass of glass, huge, taller than any building in the world. Glass that shimmers in blue and shining in the grey of winter, as if floating in the air, weightless on the ground and glittering at night, electric magic. [...] This is because you find yourself in the parks and also because the highways are far away"* [3]. Le Corbusier calls for the retrieval of the land use because modern life needs it more than ever as a favorable stage for the desired binding of town and country.

In 1925, Le Corbusier established a plan for the University campus students, a basic and standard living cell for all young people, a small machine for housing to which each student was entitled. "Sort, classify, set the cell and its elements. Economy. Efficiency. Architecture!" [4], Le Corbusier would say that was the problem of the new time, but when young people wanted to finds themselves outside this standard housing and common areas, they must go to the playing field. The housing cell is the origin of the new architecture and beyond. The sports fields are the spaces reserved for hosting the meeting of people.

The Architectural form

The debate on city reform occurred in the early decade of the twentieth century coinciding in Germany with the movement to improve the city park which helped to significantly expand the scope of the German cultural renewal in the context of modernity. Conflicts between city life and country life caused a rise, first, with the initiatives of the garden cities, and later with the Siedlungen, prototypes in residential facilities seeking the confluence of the two models life. The German model is known as a third way between the capitalist model and the socialist model.

After the Great War, the need to find a new way to express to the world, the benefits of the machine period in a new way intensified. The internal debates among German designers of the Werkbund are a good example of this change of creed. The normative and rational regulations of Peter and Walter Gropius Berhens opposed the group of Henry Van de Velde and Bruno Taut, which sought the expression of *Kunstwollen* or the artistic will of the creator. Between rationality and expressionism, the third way was moved to reform the city and parks. In it, Taut had a decisive influence on his work as a theorist, designer and garden-settlement planner before the war, which was commissioned by the Deutsche Gesellschaft Gartenstadt.

The settlements of the Gartenstadt kolinie reform, built for the workers of the Krupp-Gruson mills, in the vicinity of Magdeburg between 1913-1915 and Gartenstadt am Falkenberg, built in the same years around Grunau Berlin, presented a subtle rural romance with a great visual burden which rests on the assumption of thinkers from different periods: from Rousseau to Tolstoy and of Scheerbart Koprotkin. But after the war, Taut prophesied "the dissolving of the city" and the return to earth. He imagined the life of men through extensions of meadows, forests and lakes, interspersed with small settlements of garden houses scattered throughout the area. [5] These utopian imaginings from his expressionist stage as a member of the Crystal Chain serve as the seed for the specific achievements in the 20´s of the Gross Siedlung in the suburbs of Magdeburg and Berlin. [6]

The Gross Siedlung Britz of Berlin (1925-1931), popularly known as the horseshoe is a collaboration between Bruno and Max Taut, the urban planner Martin Wagner and landscape gardener Leberetch Migge. Taut would indicate some years after completing the project that the opinion of the entire team of architects, was that the outer space around the homes had a key effect on the character of the house because it was something more than a small garden, it implied a sense of urban space, it was something defined by the set of buildings.

The shape of the horseshoe comes from Taut's expressionist thinking on the biological power of nature, but the design of its interior space is the result of the thinking of Migge. The landscape posed a double alignment of private gardens in the inner ring connected to the housing by small roads, while the central area was free with a horseshoe-shaped pond in the center surrounded by an expanse of open lawn. The entrance from the street was surrounded by groups of black poplars (Fig. 2). The open area was designed for active use, especially by children, who could play and wade through the pond and the expanse of lawn.
The simplicity of the central space gave merit to the rationality of the building, the color composition and severity of their façades and the explosion of shapes and colors of the private gardens. Some years before, Migge had theorized a suggestive and unlikely Gartenkultur understood as a program of "socialization of urban green spaces" with the view of self-sustaining households, through the direct cultivation of a piece of land attached to the house. In the interior of the horseshoe, Taut and Migge didn't want to "dishonor the lake." In its architectural form there are private gardens desired by Migge for their cultural reform, and also a large expanse of lawn with a pond in the center that were imagined as a fragment of Volkspark (town park) contained by the architecture.
The architectural form of this space for the village was a free and open field, available to all, where play and sport were allowed.

The free form

The revolts of the social movements that took place from the second half of the 19th century until the First World War, won the status reform of the working class. The conquest of the regulation of working hours and leisure time led to the need to give content to the recreation of the working masses in order to appease insurgents and rebel spirits, forcing the city park in Germany to go through a renewal process. This was a motivation for planners, architects and landscapers to find the appropriate form for new recreational areas coinciding with the expansion of the sport culture.

In 1906, Germany hosted the first public park contest with the premise of finding a new type of park that differed from the bourgeois model thought only for walking and the contemplation of natural scenes. The new model would be reflected in the winning project of the architect Fritz Schumacher. The Stadtpark in Hamburg (1909) proposed the most characteristic of this type of park, the central prairie of grass intended as a place for the gathering of people. The social masses should live the park by using it and not in the sense of passive entertainment or theatre but of a space for active participation in the open air. In the park one could play sports, lie on the grass, paddle in the water, go horseback riding, listen to musical concerts, see art exhibitions and enjoy the physical pleasure and sense of vegetation. This was the new program of uses that Volkspark intended, said Schumacher in 1928. [7]

In 1913, the German People's Park (Deustscher Volkspark Bund) was founded, which provides the main prerequisites for the reform of the popular parks of the future, according to the following hope: *"parks should not be equipped only and primarily for walking, with little areas for other activities. To fulfill its main function, it should provide ample space for all kinds of games, which should be available to all. Only then will it become part of the life of the people of Germany.... Avenues and rows of trees should close the areas of sports and allow for large expanses of water. There, people from all walks of life can meet and enjoy the pleasures of a place designed to offset the footpaths of the countryside destroyed by industry, and provide an oasis of peace in which to escape from the pressures of the work week."* [8]

Functional changes that were introduced in a very short time in these parks showed the social conquest Martin Wagner spoke about in 1915, when he achieved that nature ceased to be a decorative fact and became a functional value based on its use. [9] For Wagner, the greatest possession of a person is himself. And so, popular parks in large cities that adopted a use value allowed for the physical development of the individual for the activities that could be carried out in the areas destined for play and sport.

In 1916, Wagner together with Migge presented a proposal for a youth park (Judgenpark) with the idea of combining the war memorial parks with parks for sports. These places, rather than being monuments to the fallen, were meant to be spaces of action for the living. This project, designed for the Pichelswärder peninsula in Berlin but was never built, defined the basic structure of what in the years to come served as a model for popular German city parks (Fig. 3). The lake that surrounds the peninsula was an outdoor area reserved for swimming and sailing and, in the middle of the wood the park was organized along a main axial street intended for parades of young people entering the open space of Massenspiele.[10] Along this axis and by excavating the forest mass, different spaces have followed that have an eminently geometrical character: the garden of national defense, the garden of youth, wildlife garden, the garden for celebrations, the garden for art exhibitions, an outdoor theater and, at one end, residential settlements for war veterans. The park is intended to solemnize the strength of the nation, offering a place to live and grow with nature - represented by the forest and the lake because these were part of Germany's own roots.

The 20's were also characterized because sport entered the cultural debate that existed in the Weimar Republic, becoming associated with democratic and nationalist ideologies. There were radicals that advocated that sport was a product phenomenon of the time allowing for the international opening of German society, still asleep in its past, to the democratic countries and in addition, contributed to the acceptance of the individual democratic values by practicing competitive sports. The progressive improvement of the individual to obtain records and improve their scores, the setting of rules for sports competition and disciplines were equated with democratic values. In these years, sport also became another product of the show that kept the masses entertained and occupied their leisure time. The athletes were exalted as new folk heroes, icons of a new religion.

Sport has been rooted in German society since the 19th century and was considered as paramilitary training for the youth and made the establishment of a social order possible. After the war, the insistence that the German youth practice sports in the city parks intended the return to lifting the spirits of a dejected and defeated society (Fig. 4). Sport provoked catharsis and the rehabilitation of young people by imposing self-discipline. Sports in parks also allowed for the collective rebuilding of the community in which it was practiced.

The popularization of sport in Germany during these years can be understood from two aspects. One is a consequence of the attraction to practice modern sports as more of an effect of the process of the Americanization culture that European nations were undergoing and the other, is the assessment of the practicing of sport as an activity associated with Greek culture that, in Germany, since the Enlightenment, had a strong presence among the intellectual classes and social elites (Fig. 5). Now, in the town parks, modern man could aspire to classic training and find the balance of body and mind.

But the reality of the turbulent Weimar Republic made the struggle between the intellectual and anti-intellectual, the supporters of democracy and capitalism, the cultural debates between conservatives and reformers, socialists and communists, broke the balance of the Greek ideal of man betting on predominance of body over mind. [11] "Training the body, the hypertrophy of the mind," Willy Meisl who was the most influential sports journalist of the Weimar Republic, pointed this out as the sign of that time. [12] The culture of the body would exploit the values of a superior race that would lead to eugenics policy and use sport as an ideological weapon of National Socialism.

The will to find a common culture that unites country and city is a desire that is at the very origin of modernity. The practice of sport is a means of restoring this culture. Sport is an activity that young people can do in the field, as referred to Loos, and also under the great trees of the contemporary city parks, as hinted by Le Corbusier. However, in the German cities, popular parks gave new shape to the field that consisted in a sequence of open spaces in nature in where a social study was carried out and where the active use of space through amateur sport, allowed people to improvise any other type of unusual behavior outside the imposed order. The interest aroused by spaces for sport in the popular parks is that, at the beginning of the modern movement, far beyond its specific form, defined a type of scenario that was the expression of social liberation of the masses in the city, to whom the opportunity was given to train both body and mind, according to the ideal of the classic man (Fig. 6). The sports fields of modernity were entrusted to individuals alone and collectively, in a newly-formed image that could grow intellectually and physically to find the balance inside and out of the common man. What Loos considered necessary to have a common culture.

Endnotes

1 "Cuidad y campo", 1918. LOOS, Adolf, *Escritos II, 1910-1932*, Madrid, El Croquis Editorial, 1993, pg. 99

2 "Arquitectura", 1910. Ibídem, pg. 24

3 LE CORBUSIER, *Precisiones,* Barcelona, Poseidón, 1978, pg. 222

4 BOESIGER, Willy and STORONOV, Oscar, *Le Corbusier. Obra Completa, Vol I, 1910-1929*, Zurich, Les Editions d'Architecture, 1973, pg. 775 BOYD WHYTE, Ian, "Taut visionario". En: NERDINGER, Winfried (et al.). *Bruno Taut. 1880-1938*. Milán, Electa, 2001, pgs. 68-89

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ARCHITECTURE FOR SPORT: THE STADIUM

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The title of this paper could have been a question: Is it possible to define some characteristics of sports architecture? We will try by looking at three classical aspects: the function, the construction and the shape and we will focus on a sporting type par excellence, the stadium.

If we consider the functional aspects, it is clear that the complexity of the stadiums grows exponentially as the number of spectators increase. In big stadiums, the number of types of users is very high. We can list them: athletes, judges, the media; written or audiovisual, spectators at various levels, potentially dangerous groups of fans, VIPs, VVIPs, security personnel or volunteers. These groups are normally separate, with their own point of access, circulation and evacuation routes, but should, at some point come into contact. One cannot access athletes before or during their performance, but once they are finished, they must match the media's previously agreed conditions: this serves as an example to illustrate how many other relationships must be restricted or are made possible depending on the moment.

If we look at a scene from the show itself, complications appear that relate to the minimum and maximum separation between spectators and players and these will result in visibility problems that in the case of large capacity stadiums, will be conditioned by allowing the maximum number of slopes to guarantee the safety of spectators. All these determining factors briefly mentioned here, make the design of large sports buildings a difficult exercise that demandingly puts to the test the work of the architect. If architecture is always mediated by functional problems, it becomes even more evident in the buildings to which we are referring.

Despite these difficulties, some stadiums have been able to find the formal solutions that were identified in the expression of functional problems. The first case is that of the San Siro stadium in Milan, where the ramps to the upper galleries occupy the entire building's facade is a clear and beautiful example of this approach to the problem.

If we speak from the constructive point of view, these buildings did not set out to pose a spatial problem. It was enough just to create a slope or take advantage of the existing ones to organize and achieve a stand from which the spectators could have a good view of the horizontal surface on which the show takes place.

Problems arise from the moment you decide to cover, at least, the areas occupied by the spectators, preserving an unobstructed view of the game. The roof construction problems are mainly structural but can also include drainage or lighting problems and from this moment on become the greatest difficulty facing the design of these buildings.

In the traditional English football stadiums, the stands were covered with conventional structures in which slender columns of wood or metal were used as support, partially hindering the vision of the spectators. To avoid these obstacles, they begin to build cantilevered roofs that started from the higher areas of the stadium. These structures are limited and from a certain size, the increase of resistant material ceases to be useful given the parallel increase in weight and therefore, no longer making them economically viable. It is therefore necessary to resort to other techniques and among them are cable and tensioned fabric roofs, which first appeared in the Munich Olympic Stadium in 1972. In this cover, all elements are tensioned except for the vertical masts which transfer the gravitational weight to the ground.

To prevent the presence of the masts, other types of tensioned roofs appear. These structures consist of a compression ring located on the outer perimeter of the stadium and a pull ring on the central oculi connected by a pair of radial wires. In this way, covers are attained that are equivalent to a cantilevered roof of 50 or 60 meters.

The roof of the stands in the Zarzuela racetrack (1941) by Arniches, Dominguez and Torroja or the Munich Olympic Stadium (1972) by Gunther Bernisch are two examples of cantilevered roofs and cable structures respectively in which the structural invention, concentrated on the roof, becomes the most important feature of the building. The roof of the stadium in Stuttgart or the Olympic one in Rome, belong to the type of roof with a tension and compression double ring.

Something also needs to be said about the shape of the buildings used for sport.

When examining items for sport we admire them for their beauty, whether or not we practice the sport for which they were made. The shape of these objects is the most direct translation of the function for which they were designed. Be it skis, a golf club or a bicycle, there is nothing in their shape that is not related to the function in which they must comply with, their shape is the result of the optimization of the function for which they are intended. In the case of the bicycle, its shape and beauty arose from the search for the minimum weight and necessary resistance and the optimum relationship with the body of the rider. Especially necessary, is the design of its wheels, stabilized by a radial system of tensors that transforms any compression into traction. From this point, structures have been generated in which the efficiency of effort and the reduction of material and therefore weight, have allowed for dimensions that, previously, were unthinkable.

The question for the architect would be if the buildings for sports should share with sports equipment that direct expression through the construction, of the function for which they were created, as was certainly the case of the San Siro, the Munich Olympic Stadium or the Zarzuela Racetrack. There is no doubt that the answer should be closer to these examples rather than those more recent in which the appearance of the building comes from metaphors derived from the author's personal imagination.

Improvement and expansion of the Chapin

Jerez de la Frontera, Cádiz. 2000-2003

The former stadium was built in 1987 and designed to host football matches and athletic competitions with a capacity for 17,500 spectators.

With a floor that follows the trace design of the athletics track, the stands in the stadium consist of two sections (high and low). These were interrupted in the northwest and southeast ends to allow service vehicles access to the field.

The building was designed with certain structural rationality, so that the same frame can give shape to the whole building. In total, 110 frames are placed every 6 m. The entire structure was made in situ with concrete except for some prefabricated elements such as the beams and the top of the exterior facade.

On top of the existing building a 18 meter span cantilevered roof was built so that it completely covers the stands, protecting the spectators from the sun and rain.

The new roof, also flies outward approximately 4.5 m, giving rise to a perimeter bay that surrounds the original building, giving the stadium its new image and allows for the expansion of the stands at the top.

In this new span we find the access point to the stands as well as the complementary services to the public (bars, toilets, etc..), freeing up the previous space for public circulation of the old stairs. Walkways provide access to the higher stands.

In the VIP area, and at the top of the stands, the new span allows for an area in which VIPS can access independently from the outside. There are a succession of boxes, press boxes for media, the photo-finish room and the control and security offices for the stadium. On a medium level and with a direct access to the Presidential Box, a room is designed to function as a waiting room for the same.

A decision was made to incorporate other uses that would allow for the continuous operation of the building even when sporting events were not held. To this end and where the original building's perimeter was left open, two buildings have been constructed; a hotel on the northwest corner and a public sports center on the southeast corner with gymnasiums and an indoor swimming pool. Both buildings allow you to see the interior of the stadium.

Madrid Stadium / La Peineta

Los Arcentales Avenue and M40. Madrid. Spain. 1989-1994

Madrid Stadium was conceived as the centrepiece of a set of sports facilities, which were rooted in a competition and were set to become the City of Sports of Madrid region. The Stadium is situated to the East of the city and its boundaries are a stretch of M40 bypass and the end of Los Arcentales Avenue.

A unitary solution was chosen from the earliest competition proposals, where the complex constitutes a previous whole project able to direct the later buildings.

The key and centrepiece of this planning is a square platform of 360 meters each side, on which the stadium is placed and where the different sports halls would be connected to. All general services of the complex are placed under this platform, at the front part of the Stadium. These services are arranged in two floors and are illuminated some patios.

So far the part built is just a first stage -20.000 spectators- that it is expected to be extended. In fact, a project is already being developed for its extension and to turn it into the new Atlético Madrid headquarters.

The depressed position of the sports court generates a lower grandstand for 8.000 spectators. On the platform rises the upper grandstand with a capacity of 12.500 spectators which, understood like a very autonomous piece, becomes formally a very powerful element. The aim was to generate a synthetic architecture, where geometry, construction and used match up. The position of the grandstands, adjoining to home straight, concentrates the largest amount of spectators where the

most important moments of athletics occur; and, on the other hand, it is suitable for the organization of music shows or other kind of event necessaries in order to maintain this sort of facilities.

Outwards, the grandstand appears leaning on a series of concrete walls with a different curvature. A large extent of it juts out over the upper terrace, from where the view of Madrid is recovered after going up through some levels. The openings on the walls (200x20) are repeated throughout the walls, solving both lighting and ventilation and, at the same time, generating unexpected light effects throughout the day.

The different levels of the upper grandstand lead the spectators to the stands accesses. The stair cores are located between the huge concrete walls. On façade remains a volume where each floor alternates service uses and stair landings; thus, the external face of the grandstand rests cleanly upon its supports.

Cartuja Stadium. Alamillo Park

North side of Cartuja Island, Seville. 1997-2000

The Place

The stadium is situated in the Northern side of Cartuja Island, on a site suitable to house a building of this kind due to its easy accessibility, massive parking space availability for vehicles and for its proximity to other major sporting facilities.

It deals with a distinctly horizontal landscape area and is close to the Alamillo metropolitan park. It seemed advisable from the beginning to plan a building that would cause the least possible visual impact on the environment. The level of the sports track had been lowered with respect to the natural ground levels to achieve a lower height of building on the slope, thus achieving an outer silhouette with a low horizontal appearance for a building this size.

As an additional advantage, this solution provides access and evacuation of the public to a mid level so that the gaps that have been saved are reduced considerably and accentuates the striking effect of discovering as once inside one can see the true scale of the stand with a capacity for approximately 60,000 spectators, the majority sheltered from the sun and rain under a 22,000 m2 suspended cable roof.

The predetermined orientation of the athletics track which deviates slightly from the north-south alignment, places the building in this direction. The proximity of the pavilions of the Expo `92 and the viaduct of San Lázaro- Camas, from which there is an elevated view of the stand, bringing about the search for an opening in the façade towards that point: a large south facing window that allows for a view of the inside of the stadium from the outside which at night turns into a showcase of what is happening through the window pane.

The uses

From its outset, the stadium was designed as an athletics stadium, and to be easily transformed for the exclusive use as a soccer stadium, lowering the current level of the playing field and expanding the stands so that the spectators can be closer to its edge. But the building also houses other uses (commercial spaces, restaurants, fitness center, offices ...) that allows for its continuous use even when football games or athletic competitions are not being held.

To this end, four triangular buildings have been planned in the corners of the stadium that give rise to its unique floor near the octagon. These buildings, six stories high, intend to house a hotel, offices of the Municipal Institute of Sport and sport federations, recreation center, etc. have in its uniqueness of its upper levels, large voids that allows for the overview of the stand and sports facilities.

Thus, the stadium as a whole, a building that is intended to be the receptacle for major sporting and cultural events and cultural values that has been equipped the most appropriate means for its operation. A multipurpose receptacle building which is seen from the outside as a unified architectural entity rather than the result of the addition of different elements (seats, roof, corner buildings, south-facing window ...) arising from its technical and functional needs.

The roof

A very important element in the architecture of the stadium and especially in its interior space is the roof. Based on the technique of cables and stretched membranes, with a double compression ring and one of traction, the novelty of this roof lies in the elimination of any secondary structure. All roofs of previously built stadiums with this technique (Stuttgart, Rome's Olimpico ...) left a series of visible cables and sometimes posts that don't appear on the roof of the stadium in Seville. Any additional element has also been eliminated to provoke the curvature - and the resulting tension – of the PVC membrane.

This was made possible by modifying the traditional system of the pairing of upper and lower cables/ for a solution that alternates the upper and lower cables. The membrane goes from the upper to lower wires so that none remain open and visible. The resulting membrane surface, while ensuring the draining off of water, does not require any secondary elements of tension to deal with double-curved surfaces, that is, required in both directions, avoiding the flapping that is produced by wind.

Expansion project of the Peineta stadium

The Peineta stadium was designed as the beginning piece of an initial set of facilities that would integrate the sports city in the Community of Madrid. The solution focused on one single element, the stands next to the arrivals line which are supported on transverse walls and allow for the easy identification of the building in the distance. For years the building had remained isolated and received the nickname *"the comb"*. The starting point for expansion was a football stadium with a capacity for approximately 70,000 spectators and which could also be transformed into an athletics stadium with a capacity for 60,000 spectators in the event that Madrid is chosen to host the Olympics.

The stadium expansion project was conducted in a way that allows the spectators to be as close as possible to the playing field. In addition, providing all the necessary services and finally achieving an image that in some way can be identified with Atletico Madrid. In doing so, it had to forecast all that would be necessary in the event of having to adapt it to athletics (visual, evacuations, etc.).

Considering these aspects, together with the needs coming from security, evacuation and good visibility, the expansion involves the construction of a new stand that has its perimeter on a bay where public accesses, boxes and all the complementary services; toilets, bars , shops are located.

This moderate intervention whose outward appearance mimics the current stadium -the new facade uses the same openings - intended to accompany the already established external image of the La Peineta.

A light roof, which protects the spectators, sits on the set of bleachers as if it were a large cloak, adaptable to various situations, and providing a unity with the intervention. The set was designed with the intention of achieving a very flat profile building, able to generate the least possible impact on its surrounding environment. Hence the effort to eliminate the appearance of masts, or even more, to control the usual spectacle of tensile structures, an option almost obligatory in order to achieve the equivalent cantilever of 50 to 60 meters.

The designed roof is included in the type of tensile structures. The main structure consists of a double compression outer ring and a double inner ring of traction and two sets of radial wires. The mesh thus formed is covered by membranes stretched over the winged ring formed by an upper cable and another corresponding to a consecutive cantilever. The light coming from the roof (the distance between the rings of compression and tension) is about 57 m. The fact that both rings are double, allows for the division of the required height of the roof, which is a considerable alteration compared to the Stadium of Seville.

The roof will cover the main stand, the "comb" as well as all new stands to be built along the perimeter of the stadium. Since the new stands do not reach the height of the Piñata, the roof elevation varies in height, placing the top level of the compression ring at 37 meters above the reference level access platform in the east and 30 meters the north and south, reaching 42 meters above the Piñata.

From the compression ring, cantilevers are generated in a metal structure with unequal successive trusses that generate double-curved surfaces that can be covered by tensioned membranes without the need for secondary structural elements, thereby using the same technique throughout the roof. This cantilever reaches the outer perimeter of the Piñata and extends around the stadium, sometimes higher and sometimes lower. Its underside is red (the color that identifies Athletic de Madrid) and both the vision and the concealment of that red color along the perimeter will be important in the final definition of the image of the stadium.

SPORTS CENTRE AND HIGH SCHOOL IN MARSEILLES. FRANCE

The aim of the program was constructing a gymnasium and outdoor beach-volley practice grounds inside the plot of the technical high school René Caillié in Marseilles. Located nearby a motorway, a little river runs along

the slope, and makes it liable to flooding. On the eastern part of the building, a new 20 meters wide urban boulevard will cross a great part of the plot, and will drive to destruction an ancient "bastide" (Marseilles soap industrialist big summertime house).

All those constraints and the plot form led us to implant the building and the sports centre on the southern limit. The project works with parallel programmatic stripes pointing from north to south:

First the constructed stripe with the gymnasium, then the sanded stripe with the beach volley play ground and the parking stripe ready to be connected with the future urban boulevard.

The parking strip and the beach volley stripe are slightly underneath the ground level of the gymnasium in order to keep it away from any flood.

The northern elevation is facing the future urban boulevard, and will become the main elevation, not only of the gymnasium but also of the whole technical high school.

The construction takes place in a site with the scar of the highway, the "bastide" to be destructed and the calcareous skyline of the hills.

All those site specificities led us to work with concrete. Its presence reorganized the heteroclite grid of the area from the hills to the river. On a second glance, the stain mold concrete let us think of the surrounding tree trunks.

The "chiens-assis" windows, composed of very thin metal structure, are facing north and and receive uniform light. They create a dialog with the landscape by reinterpreting the surrounding slope roofs. The external skin of those "chien –assis" windows is made of polycarbonate panels and aluminum leaves fit as tortoiseshell. They match more or less with the concrete mass of the gymnasium, and their delicacy contrast with the concrete mass.

The main idea of rough materials is also pursued inside the gymnasium in order to facilitate up keeping, and durability.

SPORTS COMPLEX, RAVAL IN BARCELONA. SPAIN

The Can Ricart Municipal Sports Complex is a building located in the heart of the southern part of Raval in Barcelona which has become in recent years an important area for actions. The fitting out of the area is important for the revitalization of the neighborhood in the traditionally more degraded sector and must contribute to the integration of all social sectors in the area for the local residents through their use in sport and wellness activities.

The building completes the block between the Rambla del Raval and Horts dels de Sant Pau Gardens. At the architectural level, the strategy was based on a pre-existing project that was particularly complex because in the set, two buildings were integrated that have a strong entity like that of the sports pavilion (1989) and industrial buildings of the 19th century of Can Ricart, presumably by the foreman Josep Fontserè. The main focus of the architects was to achieve a compact set and that was coherent on a functional level and that volumetrically maintains the reading of the three bodies that make it up: the two existing buildings and the new construction that contains the pool, formally standalone.

The building of Can Ricart, which was in quite bad shape, has been restored with the original spirit of its defining characteristics. The façade by Josep Fontserè has been restored, recuperating the original colors of stucco, and has laid bare a central double height space in which the Ricart family had the front office. This space has been renovated with sensitivity, while maintaining its original spirit and recovering a skylight that had been covered over the central space. In the other façades, battered by the multiple interventions which happened over the years by adding and knocking down production warehouses, the work consisted in recovering original openings and providing a unified patina in order to subtly see the wounds of history on its walls.

The new building is austere in materials and content. The façade is made of concrete, which has been textured so that it gives tribute to the beginnings of the textile industry in Catalonia in this area of the city.

The main space, the pool, is open and bright. It establishes a strong visual relationship on the one hand with, in its length, the Park of Sant Pau, which is slightly elevated, and the church of Sant Pau del Camp, and on the other, with a generous courtyard inside the complex and the rear façade of the building of Can Ricart.

SPORTS AND CULTURAL FACILITIES IN SAINT JEAN SUR VEYLE, RHÔNE-ALPES. FRANCE

The sports and cultural centre built in Saint Jean sur Veyle welcomes team sports, martial arts and dance classes.

The project fits in line towards the end of a field, away from the village, in order to get the new building easily noticed from all access roads. The building's composition of volumes is simple and deliberate.

Wood and concrete are intertwined inside and outside.

The overall composition brings out a significant mass of wood surrounded with a mass of concrete at a lower level. All activities and accesses are around the main sports hall located at the heart of the building. On top of the mass, two north-oriented strips homogeneously and naturally illuminate the inside. From the outside, at night, the building looks like a lantern and shows through the activity.

It is implanted so that the main hall is mostly east-west oriented. As they are located on the same level as the main hall, the Dojo and dancing rooms open onto the north. As such, they will benefit from gentle lightning with no direct exposure to the sun. The stage and its dedicated enclosed rooms are south oriented. Finally, common rooms open onto the main entrance, on the east side.

The main hall is wide-open and certainly the most visible room from the outside. It is an invitation to enter the building. It allows us to imagine a huge room and sportsmen in action. It is equally a common room at the heart of the building. It invites us to communication. Very functional, the layout directs us to the various areas. A staircase leads to the cloakrooms right under the seats and fitness suites. An access balcony attached to the main hall leads to the meeting room. It also allows access to changing and exhibition rooms.

From afar, we discover a huge room that allows having an overall view onto the field. At ground level, seats are accessible from the north side. A staircase allows going to the lower level of the room.

The large room has been conceived to offer a great quality atmosphere inside. The structure is made in wooden laminated porticos stuck together giving it a friendly aspect. In its base, the seats and walls accommodating the stage are made with concrete. They do form a pedestal within the slope. The top part is made with wood which contributes to create a friendly and intimate atmosphere. A stage that may be disassembled is facing the seats to become one independent feature. The building that included a stage and changing rooms can be turned into an exhibition centre accessible via an isolated hall.

For social events, the room can be transformed. The curtains go down and the removable seats are deployed. The public enters and the show can start.

SPORTS HALL IN BRUSSELS. BELGIUM

The school-site KA Hiel acts as a green space in an urban context. The campus area features great differences in height as well as much diversity in buildings and pavilions. The constructions at the edges of the building block vary from attached houses to high solitary apartment buildings.

Down-scaling

According to the campus philosophy, the new sports hall is implanted as an autonomous object. By positioning it in the talus of this sloping terrain, it affects the building-volume as a downscaling method.

The new sports hall shows a harmonious transition between the main building and the small-scaled nursery school. A natural incision in the sloping terrain provides the entrance to the sports hall.

An inspiring sport building

The pretty closed building manifests itself on the outside as a 'do/play-building'. The internal playing field has been transferred to the outside walls. The concrete volume features colored sports field lines that can be used as tennis wall, a soccer wall, climbing wall. It aims to inspire the students and be respectful to the environment.

Sculpture

The structure of the roof consists of a wooden frame, suspended from upside-down beams. This roof structure gives the building a sculptural character.

AQUATIC COMPLEX FOR THE PAN AMERICAN GAMES 2010 (MEDELLÍN) OF PAISAJES EMERGENTES OR A CORAL REEF ON DRY LAND

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The Aquatic Complex for Pan American Games of Medellín 2010 *Paisajes Emergentes*[1] - Luis Callejas, Edgar Mazo and Sebastian Mejia is developed in two significant phases: the competition phase and the design and construction phase. We will take advantage of the available documentation of both phases to reflect on the quality of the produced space and the distance between imagining and building.

In the competition phase, the architectural team reinforces the idea of water gardens, presenting a comprehensive picture of the total flooding of the complex and through this effect, looks at incorporating climatological variations to the set and noting the presence of the atmosphere in the project [2]. Brightness, reflections, water pressure and water texture... help to support the idea of continuity, of unlimited expansion. And this, despite the fact that competition plans and models define an ideal state of abstraction and isolation, and in it, no data is provided by neither neighbouring environments nor urban context. In addition, in said material for the competition, the set only has four pools.

In these drawings a mirror plane is shown, able to reflect climatic variations and incorporate them into the project as an inevitable part of it, and insist on the demonstration of botanical knowledge, promoting the development of the project as a garden, in an attempt to also incorporate some unpredictability to the building.

However, the review of project documentation and images of the building and construction already completed - of which have eight swimming pools, instead of four-and perhaps in a less obvious approach, show a slightly different reality of the imagined, obtained by other means.

In another time, Lanzarote must once have been submerged by the sea. There was little fertile soil for plants to grow and most of the surface was covered by rock, gravel and sand; strong winds must blow constantly as there were no plants that grew higher than the waist of a human being. [...] The bare bushes resembled a coral reef –a coral reef on dry land, the terrain of the sea exposed on the surface. [...] The forms of living beings are the loci of their motions. Indeed, they are 'fluid bodies'" [3]

These words by Toyo Ito-written in another context, are useful to describe the impression you get looking at the pictures of the Aquatic Complex for the Pan American Games under the leaden and overcast sky of Medellín: the feeling that people – the spectators, local users, professional athletes, maintenance personnel- passing through the installation, move submerged in a water density that is not seen and together with the building make up a marine ecosystem: a coral reef.

It's easy to have an ample iconography of underwater ecosystems as they have wide media coverage: clear waters, warm and dense; the sunlight through the water, showing the suspension of particles; species of animals that remind us of shrubs punished by the ceaseless wind: small, round, stuck to the ground, with not much floral presence; the support for pale coral, with a dense and not very prominent relief, provides an undistinguished textured surface pattern, the colored fish that go wavy supported by the density of the salt water, which oppresses them while sustaining them...

This collective *mediated* image of the coral reef seems applicable, point by point, to the image we get from the Aquatic Complex for the Pan American Games, once built. We understand that architects manage to thicken the atmosphere, the air; they make the users float in the Medellin air turning them into *fluid bodies* that swim or dive through the complex instead of walking through it.

This sensation is produced by subtly intertwined combinations of many small elements. Among others, the willingness of the individual volume, subject to a complex order that governs the whole set, the transformation of the support built in a foreign entity to its environment, which establish the necessary connections but is formally self-sufficient, the choice of a system of routes that allows each species to flow without disturbing or being disturbed, the selection of plant species typical of wetlands, appropriate to floodplains, have little bearing, growing close to the ground, almost creeping and arranged in delimited areas with clustered growth. Also remarkable, is the decision to give a uniformed textured pattern throughout the set, consisting of vertical stripes in the concrete. These stripes are made by inserting metal angular profiles in the formwork of the concrete walls with a paused distribution, giving a continuous bas-relief to the surface. There are many more details such as windows that let you see synchronized swimming or patios that introduce natural light into the offices of athletes or local users that remind us of the light rays that pass through the reef...

In our view, this image of an *coral reef on dry land* provided by the acute awareness and sensitivity of Toyo Ito - in a text devoted to the fluidity of space [4] - is in accordance to what can be seen in Medellin, but, above all, introduces the notion that the reading of any quality of space, must come from the power of observation and perception of the spectator - and, therefore, bonds that space which can be set in memories and feelings- more than the intrinsic qualities of the space in question, per se.

As we stated in the beginning, the Aquatic Complex for Pan American Games in Medellin 2010 exemplifies two basic issues that are intertwined: the architectural space -or of any kind- is only qualified if someone sees it and gives it quality through their own experience, a notion that is clearly different from the proposal in the competition; and, secondly, the architectural syntax resists translation into construction - even if the transfer had been more direct - and it inevitably collides with the material reality [5] creating a conflict between the conceptual and the concrete.

And in this case, from the observation and analysis of the process undergone by the competition project, building project and construction, what is really useful for us is to check the high density acquired by the project when individuals are widely taken into account. That is, we see how *the* architects of *Paisajes Emergentes* who were starting out with an abstract image of sparkling and extensive water plans to which they trusted with the *atmospheric quality* [6] that impregnates the building - regardless of who enjoys it – have passed to designing and constructing a building in which the notion more clearly detectable is the need for the person who perceives the space- properly characterized, as we have already discussed- for its qualification and, in this case, for the incorporation of *unpredictability.* This is evident because the architects we refer to, in their many interviews, insist that the building can only be understood and taken in by going through it not just looking at it – what is referred to as *perceived fluency* an idea put forward by Ito and firmly binds us to the notions of anti-object of Kuma [7] or the Japanese experience of Taut [8].

We understand that this transformation of the objectives and means of the project is clearly positive, defining a much more complex solution. Even more, it introduces the notion that *someone* is needed to add a higher level of complexity to the project and therefore to the building, not yet in the spatial perception but also as a seal of its production: the building also exhibits the existence of a project that directed its construction, the existence of someone who thought it with intelligence and emotion. The building is presented as a trace of the project and the project as *traces of intention* [9], like poetics.

Many things have been written about the poetics in architecture but we want to rescue the words of Turnovsky that remind us that the

"The precondition of the poetic is a degree of indeterminacy, and for something to be perceived as indeterminate it must offer the root option of also being perceived as *not* indeterminate. 'The true poetics is always both poetic and non-poetic, i.e., practical at the same time.' Good architecture is always also practical; this is why it is so well suited to poetic statements [...]. Conversely, of course, any architecture mired in excessive rhetoric is unlikely ever to rise to the level of poetry" [10]

We are a little tired of the architectural rhetoric. Perhaps, thinking in people and their needs, not only could raise the complexity level of projects, but even it could approach them to poetry ... we so need.

Paisajes Emergentes is a team of architects that work from Medellín (Columbia) and was founded in 2007 by: Luis Callejas (Medellín, 1981), Edgar Mazo (Medellín, 1976) and Sebastián Mejía (Medellín, 1982). They all graduated from the National University of Columbia and have participated in conferences, seminars and exhibitions in various Universities. Among them, Harvard GSD, Bauhaus Universität (Weimar), University of Toronto (Canada), University of Waterloo (Canada), Arizona State University (EEUU), Escola da Cidade (Brasil).

Endnotes

1 More information in http:/www.paisajesemergentes.com/

2 Consult: http://quaderns.coac.net/en/2011/09/262-paisajesemergente-liga/

3 TOYO, Ito, *Tarzans in the media forest,* Architectural Association, London, 2011, p. 117

4 TOYO, Ito, *Tarzans in the media forest,* Architectural Association, London, 2011, p. 116. "But the transparency of the Barcelona Pavilion is not that of clear air. Rather, it makes us feel as if we

were looking at things deep underwater, and would better describe as translucent. The infinity fluidity we sense in the pavilion must arise from this translucent liquid-like space. What we experience here is not the flow of air but the sense of wandering and drifting gently underwater. It is this sensation that makes the space distinct and unique"

5 TURNOVSKY, Jan, *The poetics of a wall projection*, Architectural Association, London, 2009, p. 7

6 ÁBALOS, Iñaki (ed.), Naturaleza y artificio. El ideal pintoresco en arquitectura y el paisajismo contemporáneos, GG, Barcelona, 2009, p. 221

7 KUMA, Kengo, *Anti-object: The Dissolution and Disintegration of Architecture,* AA Publications, London, 2008, p. 32

8 TURNOVSKY, Jan, *The poetics of a wall projection*, Architectural Association, London, 2008, p. 20 and ss.

9 TURNOVSKY, Jan, *The poetics of a wall projection*, Architectural Association, London, 2009, p. 44

10 TURNOVSKY, Jan, *The poetics of a wall projection*, Architectural Association, London, 2009, p. 4-5

CUSTÓIAS FOOTBALL FIELD

This Project tries to harmonize the natural slope of the ground with the big leveled platform of the sport field with 9000sqm.

The best solution was to place this platform in an intermediate level, allowing to create a floor below the soccer field where all the facilities are located and to use the ground outside to create a garden which kind of closes the outside space.

Colour was used as na attempt of achieving this plasticity and character that reinforce the idea of mass, a heavy mineral mass that was almost sculpted by a knife. This static mass is the scenery where the players move with outstanding Dynamics.

MUNICIPAL POOLS OF POVOAÇÃO, SÃO MIGUEL. AÇORES. PORTUGAL

The village of Povoação is located on the Archipelago of the Azores, on the southern edge of the island of S. Miguel.

Protected from the sea by a slope, the building is going to occupy a plot comprised of a flat, rectangular platform already prepared and used by the Municipal Council for other outdoor sports activities. This platform was achieved by «sacrificing» the slope, imposing a cut that distorts its natural volume.

The project takes advantage of the existing cut to construct the building along its length, seeking a «fusion» between the new construction and the surrounding landscape. Its volume is fragmented and «runs», forming masses of black basalt, which correspond to the various functional groups of the programme.

The coverings are «contaminated» by the green of the surrounding fields, punctuated by skylights, which ensure natural lighting of the interior spaces.

A square of basalt gives physical support to the building, defining courses and accesses around an Araucaria, whose verticality and symbolic load announce and upgrade this new public space.

Inside, the programme is organised from the competition and training tanks, maintaining basalt as the dominant element in the entire composition.

On the upper floor, an outdoor esplanade supporting the bar looks out to sea.

CAPE TOWN STADIUM, CAPE TOWN, SOUTH AFRICA

The skyline of Cape Town is dominated by Table Mountain, Signal Hill and the Atlantic Ocean. Cape Town Stadium forms a landmark at the foot of Signal Hill, and fits respectfully into its environment. The challenge was to create a standalone building in this unique location that enriches rather than mars the world "famous picture" postcard setting.

Specifically, the job was to design a stadium on part of Green Point Common, an 80ha public park in the city center that would become iconic of Cape Town. The Common also contains South Africa's oldest golf course and oldest rugby club. It is surrounded by residential areas, and is close to Cape Town's central business district on the old Victoria & Alfred Waterfront, which is now the city's main tourist attraction. Green Point Common has history in Cape Town. It was a rocky wasteland until, in 1923, the government of the Union of South Africa made it over to the city as common land on which recreational areas and sports facilities would be set up. Over the past decades, the area of common land has been whittled away, most of it no longer being accessible to the public, having been leased to private sports clubs and other organizations.

After careful political consideration, it was decided to locate the stadium so as to forge a link between the commercial center and Green Point Common, and reorganize the existing sports facilities. Fort Wynyard artillery fort, Green Point cricket ground and the golf club were integrated into the public park.

Together with the horizontal line of Table Mountain and the rounded top of Signal Hill, the curving contours of the stadium act as a kind of bottom note in a harmonious triad.

Lightweight in concept, the circular stadium comes across as unobtrusive and respectful of its surroundings. Its appearance varies greatly with the typical lighting conditions of the area. With its translucent external skin, it reacts to different weather and daylight conditions at different times of the day or seasons, and diverse lighting effects give it a sculptural look.

This design concept was combined with the purely functional requirements. For spectators, it provides a logical but sensory structure, and inside the stadium engenders a terrific atmosphere during soccer and rugby matches and concerts alike. The stadium provides seats for 68,000 spectators, arranged on three tiers, 2,400 of them for business and a further 2,500 in boxes.

Broad access promenades on Levels 2 and 6 form "lobbies" round the stadium arena, allowing visitors freedom of movement, a pleasant environment to linger in and ease of orientation round the stadium. The pitch is visible from the "lobby". The upper "lobby" at a height of 25m offers a panoramic view over Green Point Common, the city and the ocean.

The parabolic profile of the stands gives all spectators an optimal view of the pitch. The strong curving outline of the top tier contrasting with the more muted curves of the roof edge is a result of their functional geometry. During the 2010 soccer World Cup, temporary rows of seating will be installed on either side on the top tier, but these are due to be replaced later by events suites and clubrooms. That will reduce seating capacity from 68,000 to 55,000 but increase the number of rentable areas, so as contribute to the commercial viability of the stadium post World Cup.

One critical objection to the politically motivated location in a small-scale setting was the height of the stadium. Due to the rocky subsoil, the pitch and bottom tier could not be sunk into the ground. To reduce the apparent height of the stadium, therefore, we provided an elevated plateau as an artificial landscape feature that mediates between the surroundings and the stadium and lessens the perceived height of the stadium. Broad ramps and steps on three sides lead up to this plateau, under which is parking space for over 1,200 cars, a goods delivery area and access for fire engines and emergency services.

The need to weigh down the flat suspended roof against aerodynamic uplift and achieve rainwater runoff without pumps prompted us to come up with an innovative structural solution: a synthesis of a saddle-shaped, curved suspension roof and a trussÐgirder system, with heavy glass roofing to prevent wind suction upwards.

These steel truss girders on load-bearing cables form the core of a roof structure clad on both sides. The 36,000m² roof is made of laminated glass. The inner, 16 m wide ring consists of clear glass so that the pitch gets a lot of natural light, while the external glass areas are enameled, to reduce heat dissipation and cut the light intensity by about 80%. The underside of the roof structure is, like the façades, clad with a translucent membrane, which not only covers the technical installations but also provides sound insulation. The loudspeaker system, floodlighting and stand lighting systems were integrated into the roof. Despite the total glass weight of 4,500 tons, the roof is still a lightweight structure compared with roofs of similar size.

The façade was designed as a horizontally profiled membrane. Its undulating silhouette transforms the stadium into a largeÐscale, translucent sculpture. The membrane is a semi-transparent glass fabric with a silver coating, enveloping the load-bearing structure like a veil while allowing glimpses of the interior. In the highly changeable weather conditions in Cape Town, it offers frequently changing reflections—like the changing light conditions and moods of the day: white and light on bright summer days and shrouded in grey on stormy winter days. At sunset, the stadium is bathed in a reddish glow. At night, it gleams like a Chinese lantern, revealing its interior.

Cape Town's world-famous skyline has acquired a new architectural feature. The new stadium has unobtrusively taken its place in the impressive urban landscape of the Cape of Good Hope.