

## **Sustainable Urban Design**

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### **Abstract text**

Sustainable urban development which increases the quality of life and reduces health risks needs a new design methodology with a holistic focus.

### **CONCEPTUAL FRAMEWORK:**

Local social project: Reassessment of the territorial, natural, cultural, economical and social opportunities. This approach implies a modern and open form of perceiving oneself and sustainable development conditions. It is a form of interacting within a global world.

Specific Modernity: with regard to time and space. Including the three sustainability's dimensions: environmental, economic and social. It is the result of a common process of participating in and interpreting territorial conditions.

Sustainable design: Interpreting the relevant urban complexity and integrate new knowledge.

### **THEORETICAL MODEL**

It originates in a conceptual framework and empirical observation.

Size: Eco-neighbourhood

Hypothesis: We have one sustainable urban model with twelve sustainability dimensions are 120 elements that are susceptible to quantification and qualification.

**HOLISTIC DESIGN:** The specific design process is the tool for the incorporation of the new knowledge in the synthesis that generates the sustainable urban project.

Keywords: Holistic Focus, New Knowledge, Sustainable design.

## **From the norm to the Project**

Climate change and urban life conditions require a new proposal for urban sustainability; a proposal that takes into account not only environmental and social advantages but economic development as well. In order to move into this conception, we must start first, with a holistic interpretation of the social model we live in; and then move on to a new urban structure that represents the physical expression of the social model previously conceived.

Urban design is frequently developed from general notions and patterns, managing the use of the land and producing a new morphology. This way of designing is based on an abstraction that does not often match the actual vitality of the city. The result is a monotonous and arbitrary repetition of traits that instead of interpreting and emphasizing the particularities of the “places”, it weakens and produces a homogeneous quality in them.

Lack of perception of the conditioning aspects of certain places can clearly be observed in environmental and social areas, where many ideas offer standardized solutions to different contexts yet causing environmental damage and making urban inhabitants experience ways of life that could have been better. In order to change this situation we must include new ideas and intentions in the process of urban design, trying to meet the environmental, social and economic needs of each context. For example, some City Halls in northern Europe have already started to replace existing regulations by specific projects.

The new urban project relies upon methodology based on participation, involving all the agents related to the urban design. The necessary consent is reached when a design represents the needs of different levels of administration, companies, universities, consumer organizations and developers. Also, since different technical groups represent different interests, it is important that these groups are summoned and coordinated by a public authority formed by an interdisciplinary team.

It is a false paradigm to believe sustainable criteria means loss of competition. Most developed countries in Europe are also mostly developed as far as urban sustainability is concerned. Switzerland, Denmark and Germany have set strong objectives for environmental care throughout their nations. In these countries, there is such a social conscience that some cities have undertaken a sustainable development that goes beyond the quick benefits the market offers, and is more concerned about the natural and cultural environment. Since these administrations are

conscious of their new goals, they have developed strong technical structures that can, in time, produce urban redefinitions that respond to an interdisciplinary and holistic vision.

These technical structures are responsible for producing significant understanding to those groups in process of involvement and participation. At the same time, social actors interact to produce a community project and demand from their administrator's progress in urban sustainability. The result is a dialectical process, a positive synergy towards a more sustainable urban model. Citizens demand and their administration answers. It is frequent to find public activities focused on citizens' understanding, encouragement of participating organizations, environmental education, promotion of the creation of new knowledge and development of new technological resources.

The increase of urban intervention requires a joint effort of the administration which manages and coordinates the process, services companies related to technological change, private agents of urban development, scientific and educational structures and also citizens' participation through their representative organizations. New technologies in communication, clean energy and urban metabolism produce substantial improvement; yet, the true meaning of sustainable processes is not the mere fact of using new technologies. These technologies are a necessary condition but they are not enough if they do not go together with a consensual social project.

This social consent implies not only the interpretation of cultural values but also of the characteristics of the local social project. The project, as a response, concentrates both, a special modernity and a sense of belonging and identification of the citizens with their city. These concepts, applied to an urban structure generate changes that point too a new model of a city that can assure that competition will continue and that quality of life will improve, taking into account the values of a compact society, that expresses solidarity, is culturally developed and can recognize itself in its history, culture and environment.

### **Collective Project**

The best way to join the global world as a community is through the Local Collective Project, a project that recovers the local ambiance as the source of particular elements developed in a specific territory. The key to the development of the project is to interpret the local conditions and

opportunities, and it must be defined in a participating way trying to put together community and its developing conditions.

The city is one of the most complex and interesting developments of humanity, ready to show coincidences and disagreements, follow or disrespect the law, develop a public project, produce or manipulate conscience. It is here where most of the problems of our time are present – marginal groups, alienation and environmental destruction. That is why it is important to recover the relationship between nature and people immediately.

The global effect homogenizes cities, sweeping out their individualities and replacing them with standardized images and uses that lack local spirit. The more the homogenizing flow floods the city, the less particular attractions it can offer. Maintaining an own project implies a collective action of rediscovering and regaining particularities. This process has a component to be displayed from a time dimension (history, memory and projection to the future) and another one from a space dimension (built heritage, territory and natural environment).

The balancing and complementing conditions of a local project with the rest of the world will emerge from each territory. It is not a question of being isolated without means of subsistence, nor of opening up aimlessly (which would deprive the project of local individualities). It is rather a question of a balancing and strengthening local qualities and then, with a strong identity, interacting in the global world.

In the past few years, urban citizens have been undergoing a process of loss of identity in our communities, getting lost in the solitude of a global world. The development of a local project points at the recovery and the valuing of weak identities, enhancing the natural, architectural and social heritage through the respect of diversity and the participation of different social actors. This approach does not mean valuing obsolete realities, nor is against modernity and technology, but it means a strengthening of the latter adding an identity ingredient, balancing its hegemony as an absolute value which does not influence nor questions efficiency.

This transformation will lead to the reinterpretation of the place from a self defined point of view. An inhabitant, producer and consumer of the project is, at the same time, its creator, redefining and rediscovering himself, first. It is not a single person or group project; it is a collective project that results from a redefinition of the place. Environmental issues ignored by

urban models implanted by a global scheme find in the local aspects the importance they should carry.

### **Local collective project**

Collective agreement based on the re valuing of their own territory, used and customs in an open and modern perspective. It focuses on the insertion of the city in a larger context with long-lasting conditions of social, economic and environmental sustainability.

### **Specified Modernity**

Architecture is the transformation of a space that becomes inhabitable, humanized and sensible. Such meanings are produced by a dialogue between the object and its context, a relationship as particular as the different contexts and conditioning circumstances that may appear. This means that an architecture bearing significances and a response to a given society and geography is, thus, specific. This specificity qualifies and masters the design.

Designs can be made considering different contents, answering to clients demands, fashion and market, or just intending to build structures without connection to a set individuality. In fact, our cities many times are a repetition of given models in different latitudes, climates and cultures, lacking in connection to context and users. It will not be discussed here whether these constructions belong or not to the field of architecture, but they surely do not belong to the world of reason nor to the world of meaning, and do not provide spaces that ask to be inhabited, nor create human beings or societies either. Humanization of space must be recovered in our discipline, a discipline which has recently awakened from a self created commercial and media tale.

Which are the mechanisms to produce the urban spaces we want? It is not a question of recovering anachronistic or historical folklore. Particularities must be contemporary, modern, updated, they must belong to their times and add history from modernity. The idea is regain the “significance” of the connection architecture - city, paying attention to rooted values and needs. The project, as a whole, must go beyond the formal or scenic aspect to go further into customs, culture and the way of inhabiting in a determined climate. There is not an endless source of materials and energy,

and cities can either guide the change towards an adaptation to the natural environment, or they can be the biggest devastators of their own physical and social environments.

### **Specified modernity**

Architecture generates new meanings through innovation, yet not through any innovation but through that which feeds from the conditioning aspects that structure the society. In this way, the resulting architecture is specific in time and space, yet carrying the paradigm of sustainability. Urban design becomes sustainable as a response to its modern and individual conditioning aspects.

### **Dialogue and sustainability**

Sustainability is not only an environmental concept; it also implies satisfaction of the social and economic needs of a community. Like any social process, it involves many variables that relate and feedback, interacting in an illogical structure -close to disorder and chaos, yet typical for living creatures. An urban project involves all the social actors of a society, it is a dynamic process made from dialectical relations, where the members mutually influence and condition one another, entailing synergies that produce a higher whole: the adding of all its parts.

With this simple description we can understand the pointless expansion of our urban surroundings, an expansion that has paid no attention to environmental destruction and that has led to unqualified life conditions in the cities. The market, as a producer of consumer goods is only interested in its own growth, and it could be described as a powerful positive feedback. Our cities lack negative feedback, there is no halt, and our societies prefer development instead of conservation.

To become involved in a city, in order to improve it, complex relationships and their feedbacks -a trait of living creatures- must be taken into account. The complexity of these processes will push us to work bearing in mind a holistic approach with the participating attitude of different social actors. This integrating approach recovers and gives priority to the relationship with the natural environment, recovering for the city the dynamics of a

living creature as opposed to the static attitude of a useful object. However, it would be naive to believe that we could preserve natural resources by reducing the quality of life in industrialized countries or by giving up growth in developing countries. Assuming a sustainable attitude in a city is a participating process of dialectical relations and it must ensure the economic welfare of its inhabitants.

The following is just an example: Recycling implies a social attitude, and at the same time, an environmental technique and an economic profit. With this action we are at the same time diminishing pollution, providing jobs, reusing raw materials, producing energy, creating sense of belonging and many other circumstances that will call for further actions. We could list many more reactions that this sole action triggers, yet it cannot be detected which of the stages of the actions are more important, or prior in time. All actions take place at the same time and they are possible because interrelations strengthen them. They are a dialectical whole. The change of urban structures must be sought taking into consideration this perspective, a perspective in which economy and the preservation of natural resources must reconcile.

This example can be transferred to other levels and we shall see that the actions to be developed are simply starting points that turn into synergies and that are eventually mere sustainability. Urban projects that take this into account will keep an interaction with culture, economy and nature throughout the process of the design. If we do not pay attention to nature we are not paying attention to a part of ourselves and we know that lack of attention will compromise our own subsistence.

Natural environment in a planetary scale is the context in which we will insert our projects. Sustainability is the interaction with this context, yet closely considering each of the decisions taken in our own projects. It is important to destroy the effects of the processes of the last two centuries which have damaged the environmental heritage of the planet with, for example, the expanding growth of world population and technological development.

### **Dialectics and sustainability**

Every action in the field of sustainability is a dialogue of complementing features that feedback and even blend. Economic, environmental and social dimensions are present in any of these actions. We act as a whole from a holistic approach and with a dialectical attitude. The result is the triggering of a process rather than a direct effect.

## **Total design**

Thinking about and designing the physical structure of a city that could represent the local project of a society means to dive into the contents and generating forces of that same project. In close relationship with the project, the city is created and at the same time is a creating force. The design tries to organize a synthesis of the different aspects of the environment. The place that will connect inhabitants and space (territory) and also inhabitants and time (history) is generated. We are talking about the meaningful framework in which our lives will develop and that will represent our relationship with the environment.

We cannot design what we do not know and we will not be able to answer in the design those questions which were never asked. The city constitutes a whole and at the same a group of relations that characterize the creation. Each designer identifies first the conditioning aspects to include in the project, and then tries to include them in an artistic display as the materialization of those relations. When designing cities we flow in a sea of opposing forces and unique unity, within a meaningful and individual symbolic arena. Different projects have different conditioning aspects, which mean a group of specified opposing forces with their own relations and their own result.

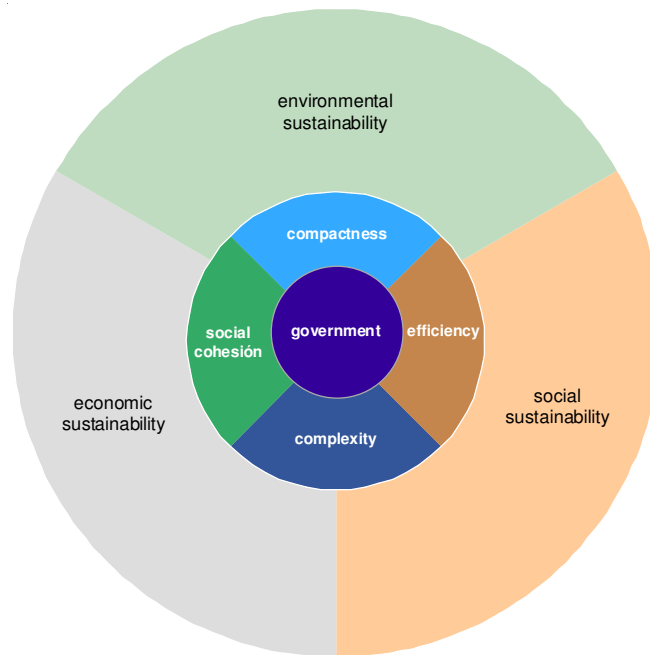
New knowledge from new disciplines derives in a complex program that integrates them providing a starting point for a new urban project that can incorporate the complex relationships of sustainability.

### **Architectural totality**

The urban concept derives from the physical materialization of complex interrelations and values that form a society. If the interpretation of those conditioning aspects is a complex one, then the social satisfaction with the project will be assured. The importance attached to environmental conditioning aspects previous to the project is one of the issues that have not been present in the design of many urban designs.

## Theoretical model of urban sustainability

The next picture shows three areas of sustainability with four basic rules of urban design, as defined by the Spanish Strategy on Urban Environment<sup>1</sup>, plus the basic role of the administration. There is not a clear division of the groups, and on the contrary, they are an important part of the others. Sustainability is a complex phenomenon that represents the simultaneous presence of those aspects.



The Spanish Strategy on Urban Environment showed one of the first intentions of concretion in the Special Plan of Indicators of Urban Sustainability of Seville<sup>2</sup>, which clearly displayed the concepts of the EEMAU. This specific plan developed a series of aspects to take into account for a sustainable urban design and sets a series of indicators of environmental sustainability. It poses the development of a City of Knowledge model, and contributes, at the same time, to a holistic approach, since it looks for the complete transformation of urban environments.

This document is composed by the following Dimensions of Urban Sustainability (*dUS*)

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<sup>1</sup>Spanish Strategy on Urban Environment. Spanish Government, Ministry of Environment, 2006

<sup>2</sup>Ecological Urban Agency of Barcelona, 2007

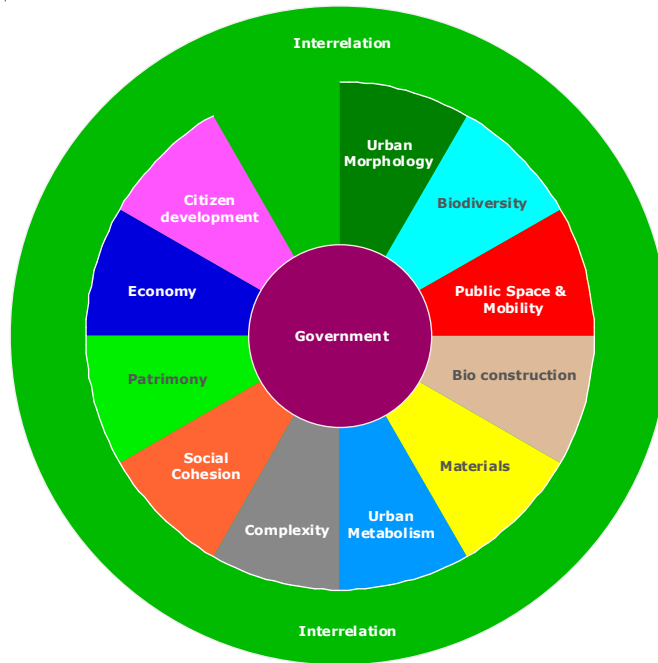
- **Urban Morphology**  
Objective: Pose a new morphology that meets the standards of sustainability allowing for the development of urban activities in better conditions and also for the simple act of inhabiting according to better life standards.
- **Public spaces and mobility**  
Objective: Offer a good public transport that does not damage the environment nor disturbs public spaces. Enhancing and increasing the latter and providing quality city scenarios to community life.
- **Complexity**  
Objective: Recover urban complexity by means of the addition of new knowledge and technologies, focusing on the model of a sustainable city of knowledge, as the way to recover urban importance.
- **Urban Metabolic System**  
Objective: Reinsert the city in nature and nature in the city. This implies a respectful attitude towards biological values not taken into account until now in current urban designs, considering the preservation and the recovery of biotypes in the urban area.
- **Social cohesion**  
Objective: Recover the role of the city as a meeting space where citizens can develop socially and individually. Produce integrating social and cultural structures and develop a sense of belonging and identity in its inhabitants.

These (*dUS*) listed in the Special Plan of Indicators of Urban Sustainability of Seville can be completed with others that emerge empirically from conceptual aspects. These new *dUS* that reinforce the scheme are:

- **Bio construction**  
Objective: Insert the bioclimatic design as a basic premise for urban planning and also for building projects.

- **Materials**  
Objective: develop urban projects of construction considering all the effects on sustainability that the use of the materials would imply, and also find processes to ensure standardized appropriate use.
- **Economy**  
Objective: Focus on the sustainable Project as a producer of economical opportunities in a global economy. At the same time, visualize the need of a change in economic values as a way towards an ecological economy that comprises the real value of natural environment in its calculations.
- **Inhabitants development**  
Objective: develop an infrastructure and an environmental quality that promote the social and personal development of its inhabitants.
- **Government**  
Objective: sustainability means that all dimensions are interrelated and the role of the administration is the starting point to reach this goal. It must be able to coordinate groups and teams, and have the necessary knowledge to summon participation and lead the process of sustainable urban transformation.

If we add these new dimensions to the preceding ones, we can summarize a theoretical Model of Urban Sustainability, represented in the following image.



All dimensions are interconnected through a feedback that makes them a whole. In order to visualize the Theoretical Model of Urban Sustainability, we must imagine a set of basic knowledge in each dimension: Elements of Urban Sustainability to consider when developing an urban design. Some quantitative ones could be considered as indicators, other qualitative ones will act from their mere presence.

### **Theoretical Model of Urban sustainability**

Inside each of the twelve Dimensions of Urban Sustainability (*dUS*) exposed in this theoretical model there are Elements of Urban Sustainability (*eUS*) that can be qualified and quantified either as indicators or as qualitative elements to be considered in the project. The idea is that long lists of these *eUS* (that will not be listed here) are taken into consideration when producing a holistic program where the urban design will originate from.

### **Synthesis of the design**

New *eUS*, contained in the *dUS* are included in the design process. This process can be summarized as follows:

- Integrate new knowledge that will allow a new program and new premises of broader and more

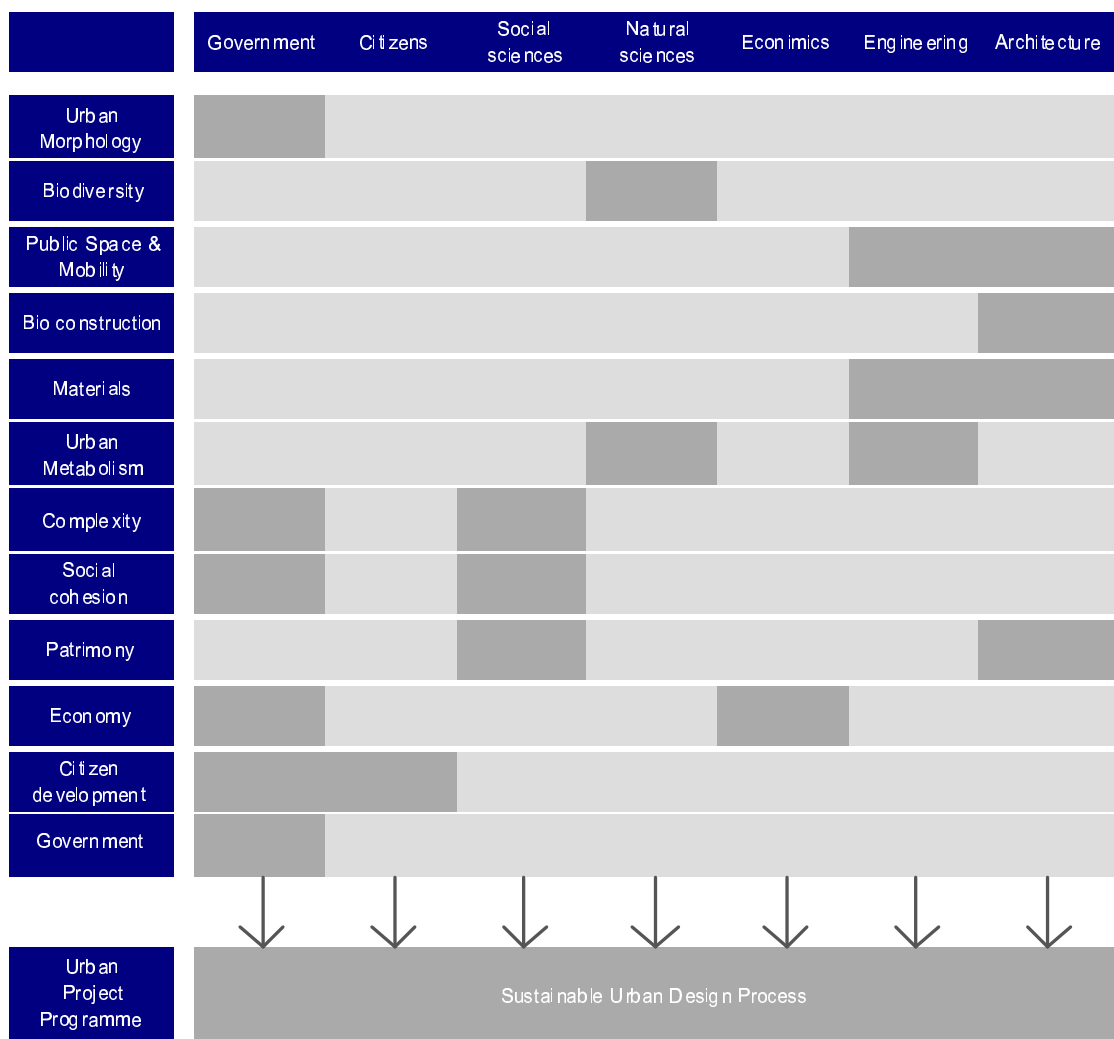
complex designs, including standards of environmental, economical and social sustainability.

- Develop an interdisciplinary team as the natural space to integrate concepts at the starting point of the acquisition of new knowledge derived from different disciplines.
- Enhance the design process as the tool that will produce the synthesis that will respond to all the requirements posed.

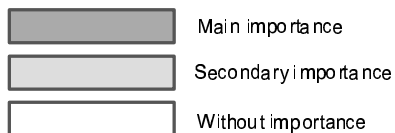
Urban developments imply the participation of different agents: administrations, users, developers and performers. At the same time, these agents require previous knowledge of the different scientific fields such as social Sciences, Natural Sciences, Economy, Engineering and Architecture.

If we match the *dUS* with the agents and the disciplines that are part of the urban design, visualizing interrelations, we will get an image, like the one in the following page. The picture shows that even though we can associate each dimension to a specific discipline, the rest of the disciplines are always, in one way or another, to the definition of the dimension. There is no “isolated” category.

In other words, all disciplines and agents are part of the production and use of a Sustainable Urban Project, and they influence the other dimensions of the project.



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One way of incorporating in the planning all the needs and conditioning aspects resulted from the interdisciplinary interaction is through the inclusion of qualitative and quantitative data enclosed in a complex program. Taking this complex program as the starting point of the design process will result in a synthesis that will respond to all demands.

Summarizing, we can point out briefly the most important aspects of the process.

- Sustainable development rescues man from his exile far away from nature, it generates meanings and produces the possibility of recognition and appropriation.
- Whenever new needs appear in a city, the design must result in a change of the way of planning them. Principles must give way to the project and this must emerge enriched by new knowledge.
- Sustainable Development rises from environmental, economic, historical and cultural conditions of a given society. Responses to each of these conditions are contained in an adequate assimilation of the conditions they generate.
- The project is innovating, thus, modern and current. Innovation must derive from the conditioning aspects of each project and not from alien models or stimuli. It must be specific in each place, giving way to a specific modernity.
- Sustainable Design is the process that integrates all the knowledge and disciplines that come from the interdisciplinary program, a result of a holistic vision of the problem. The result is single and simultaneous to all the conditioning aspects; it is an architectonic whole that provides meaning to the design.
- The planning process is a participating one; it involves the formation, instruction and consultation of the citizens. The project is a dialogue set in a certain time-space that contemplates other times (past and history) and spaces (the many ecosystems, the planet).
- In different contexts, the methodology of the project will be the same (specific modernity) but the result of the project will be different. The local project constitutes the best strategy of territory and society to produce a whole that considers their historical, social and physical conditions. The reinforcement of local aspects produces an identity that allows interaction with global aspects.
- Intangible values of architecture, its artistic quality, its symbolic value and the possibility of identification on the part of the users is a basis component of the project.

The synthesis that responds simultaneously to all these conditioning aspects of the complex program will result in a design process that will include, from the start, all the learning's on Urban Sustainability. Previous to the physical concretion of the urban project, it is important to clarify which is the collective Social Project the cited project will be responding to. This social project, modern and specific, will constitute the basis of a Sustainable Urban Project. An assertive approach will result in easy found complements in the urban arena. It is on this basis that social priorities and

the type of relationship that the society intends to have with the environment, are defined.

These types of definitions, in a dialectical and participating process, are the ones that will allow matching social attitudes to the decisions on uses and sustainable functioning that the Urban Project may propose. Environmental aspects to be met are thus naturally incorporated to the design, together with its economical conditions, as well as the social objectives proposed. The quality of life of the inhabitants of the new project, either in practical and tangible aspects or in more intangible dimensions, will find in this type of Urban Project a new proximity to the essence of the sense of inhabiting.

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