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School of Architecture

Architecture of *Scarcity*

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Degree of Doctor of Philosophy

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Abstract

At the beginning of the 21st century, the challenge of Mexican contemporary architecture is that it requires a different conceptualisation which is not reliant on Western design approaches. It is argued that the resources, values, capacities and priorities of the Global South are very different from those of the developed Global North, and yet many of the concepts of architecture and sustainability have been uncritically taken from one context to another. The result is that issues of sustainability in the architecture of countries such as Mexico remain under-theorised. The context of scarcity -in natural, human and economic resources of the majority of the population, multicultural diversity, rapid growth and change, and 'chaotic' organisation highlights the very different conditions that exist in the Global South and which demand a new architectonic and urban development based on an alternative model of sustainable design. This thesis proposes that this tension should be addressed in a way that is relevant to these unique local conditions. By defining an *Architecture of Scarcity*, this thesis aims to develop a potential methodological approach that attempts to address economic, social, environmental and technical issues in a sustainable way based on the idea of scarcity. *Architecture of Scarcity* is defined as architecture created by the idea of not having sufficient resources to fulfil basic needs. In other words rather than consider architecture from the perspective of commodity and abundant control of resources to produce a 'perfect' product, the thesis recognises the value of the features of production of architecture in a condition of limited in resources and open to 'imperfection'. The thesis first investigates three typical conditions of scarcity production within the Mexican context: the Vernacular, Informal Modernism and Semi-Informal Modernism. In the section *Issues of Scarcity* it is considered the development of design principles suited to an alternative view of Sustainability which differs from Western concepts. Next these principles are amalgamated as a set of possible *Design Tactics* and tools to support a revised architectural design process and revised role for the architect. Finally the dynamic nature of the process is captured through the development of a speculative *Architecture of Scarcity Game* whose aim is to reveal and to make sense of rich possibilities inherent in this design method.

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Chapter 1

Introduction to Architecture of *Scarcity*



“While individuals and their economies are necessarily governed by **scarcity** and efficiency that living matter in general is governed by the steady and luxurious flow of energy from the sun, which must be expended either in growth or in some form of luxury”.

George Bataille

Introduction to Architecture of *Scarcity*

Some of the main motivations that illuminate the present dissertation are inspired by reflections of previous experience in academia and practice in the field of architecture in the Mexican context. The thesis explores the tension between foreign architectural theory adopted in academia –i.e. Sustainability- and the present day challenges of architectural practice. This tension becomes more explicit in the face of a reality where global forces come into conflict with local values, priorities, and capacities, especially in some areas limited by the condition of scarcity. This statement begs the question: What does it really mean to be an architect in the Mexican context at the beginning of the 21st Century? The introductory point in this chapter will be to explain the tension created by the obsession with following foreign concepts from western countries in the field of architecture, in this study it is termed *Architectural Globalphilia*¹.

Architectural Globalphilia

New generations of Mexican architects are suffering the consequences of *Globalisation*. This phenomenon is forcing architectural practice and, by implication architectural education in Mexico to respond to an image of 'modernity' and technology. The Mexican architect Ricardo Legorreta argues that present day architects are obsessed with following this path under the slogan of *Globalisation*². In the words of the Dutch architect Rem Koolhaas "Like a hurricane, globalization is rearranging the features of architecture"³. Mexican architects, engineers, and developers are producing models adopting foreign tendencies such as *Pseudo Minimalism* as one example, without questioning the aims and processes of their development.⁴ This situation is leading to new high class lofts apartments, shopping malls, department stores, and even golf courses that do not fit in with the environmental, economical and cultural reality of whole population of Mexico. The new main sources of inspiration are the international architectural reviews and Internet web pages which present a set of designs mainly developed in Europe or North-America. Looking outside, but ignoring the backyard is becoming more and more frequent. Actually, the new foreign novelty is the concept of 'sustainability' and is this that is being increasingly copied and uncritically used⁵.

For instance, before the author came to England discussions within the architecture class of the University of Michoacán, in Morelia, Mexico expressed admiration over the new products of the western 'architecture's celebrities'. This was the work of Foster's, Hadid's, Ghety's were seen as inspirational. Then, as professionals, our first design proposals were

¹ This term has been translated from the Spanish word "Globalifilia" which means attraction or affection to follow Global tendencies mainly from developed countries. An attempt to translate it to English is between a composition of the world *Global* which mean involving the whole world and the Greek words *Philia* which means affection or *Philos* loving. *Philia* is a common combining form "denoting fondness, especially an abnormal love for or inclination towards something" Press. In this case *Globalifilia* or *Global-philia* is used to refer abnormal or obsessive attraction to uncritically adopt developed countries tendencies.

² Legorreta, R. (1988). Conferencia de Ricardo Legorreta a los estudiantes de arquitectura. Monterrey Mexico, Revista de Humanidades del ITESM

³ Koolhaas, R. (2004). "Case study of the African postcolonial city of Lagos."

⁴ It is very common to see within the Mexican reviews or State Agencies housing advertisements, projects with the slogan of "Se venden Casas Minimalistas" (Minimalist Housing for sale). They are commonly founded in the brand new luxury developments. The most interesting is that still when this term has been developed by specific conditions of Western countries it is used as a fashionable way to catch the attention of prospectus buyers. It will be the special difference that allocates buyers in a special status quo.

⁵ Sustainability is becoming today new foreign novelty in the building environment industry. It can be expected that like previous pseudo adoption of foreign concepts, the term of sustainability will be a successful slogan for attracting new buyers even when it could be used irrationally. It means that probably within not too long period of time it is predicted to see the new slogan "Se venden Casas Sustentables" (Sustainable Housing for sale).



Fig. 1.1 Flat in Morelia, Mexico which is strongly influenced by Globalization.



Fig. 1.2 Comparative between an author's previous design of a flat in Morelia, Mex. (left) and similar flat in Amsterdam Netherlands (right).

extremely influenced by these foreign approaches; project designs imitating the most radical forms; using sophisticated materials, and technological devices available around our own context were part of the proposals (Fig. 1.1 & Fig. 1.2) The desire to have one of our designs on the front cover of a magazine like one of the 'architecture celebrities' further showed portion of the 'egocentric' values adopted as part of the architectural tradition rather than a constructive one (Fig 1.3). The Dutch architect John Habraken explains further this condition in his book *Palladio's Children* in regard to the role of the contemporary architects. Habraken's argument describes the early beginning of architect profession in the times of the Italian renaissance and the subsequent dominance of this path as bases for successive generations. Habraken point out how the profession got drawn in providing every day solutions "without pausing to re-examine its goals and its role". He concludes arguing that present generations are still suffering from such historical tradition in a way that today they behave disoriented⁶. In terms of Habraken,

"Across the centuries, despite dramatic changes in artistic and stylistic preferences, we, as architects, still recognise ourselves in the image of Palladio..."⁷

Next, having the first opportunity to be part of the staff at the UMICH, University of Michoacán, in Morelia Mexico; the uncritical promotion of this ideology was part of my every day practice. Persuading students to have a look of the final 'pieces of art' of Mexican 'masters' and common 'heroes' of western architecture without questioning the aims and processes of their development was common.

Similar characteristics are also found in Brazil's architectural practice and education according to Dr. Renato De Souza active member of the Federal University of Minas Gerais in Brazil⁸. De Souza argues that, as well as in Mexico, since Brazilian's independence political elites were inspired by the western countries. He pointed out that the project of Brasilia is the best example of this obsession to adopt the western 'order', however, at the same time Brasilia shows the misunderstanding of local conditions. In actual globalisation era this conditions does not seem to change dramatically. In terms of De Souza "although our university is committed with criticism and can be considered one of the most critical schools in Latin America, the majority of actual students are even more confused. Consequently, they are still uncritically implementing forms or 'styles' of the 'master pieces' of American and Western architects"⁹.

What telling is that the Mexican story was not unique one; both scenarios, Mexican and Brazilian, suggest the strong obsession to copy or uncritically adopt foreign tendencies, mainly from the West. Additional comparable stories can be found in most of the other Latin American countries or other countries of the global south. In this study, it is the phenomenon referred to as *Architectural Globalifilia* or *Globalphilia*.

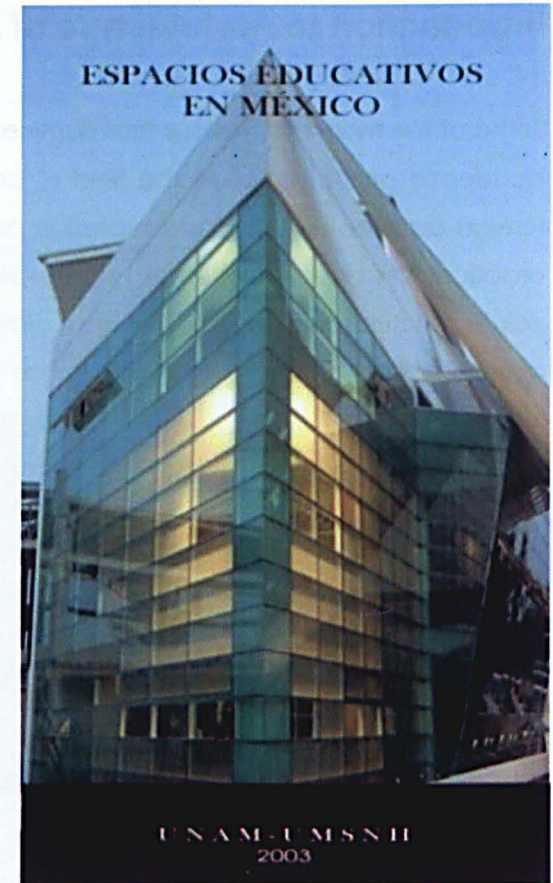


Fig. 1.3 First design appearing in the front cover of architecture review. The new school of architecture of the UMICH, Morelia, Mexico. Source: Coordinacion de proyectos y obras UMICH



Fig. 1.4 New sustainable offices building for Cinépolis located in Ciudad Tres Marias, Morelia, Mexico. Cinépolis is the 6th world's largest movies theatre company with more than 1000 screens over the country and other Latin American countries. Source: www. cinepolis.com

⁶ Habraken, N. J., Ed. (2005). *Palladio's Children Essays on Everyday Environment and the Architect*. New York, Taylor and Francis.

⁷ Ibid.pg. IX

⁸ De-Souza, R. (2007). *The Impact of Globalization in architectural education of Federal University of Minas Gerais in Brazil*. A. Becerra. Sheffield.

⁹ Ibid.

Architectural Globalphilia in practice

The main tension of the *Architectural Globalphilia* phenomenon became more evident in every day practice, in both the official or formal and the unofficial or informal. In the 'formal' version, architects attempt to develop new proposals which adopt foreign tendencies and by implication attempt to implement foreign techniques and materials. One example of architecture based on a western model is the new 'Mexican Sustainable buildings' of the brand new 2000 hectares development, *Ciudad Tres Marias*, in Morelia Mexico. This includes a new set of large company buildings inside the industrial quarter such as *Corporativo Cinepolis*, which are already badged as 'sustainable', even though there is technical evidence to support this claim according to the western standards (Fig. 1.4). The tension becomes evident throughout the local design and construction process. Although it is claimed to be as an 'environmentally friendly' building in conformity with western models, there are other local issues of its process and its connection to a wider socio-economical and environmental context that need to be addressed. For example employment chains, addition of superfluous use of raw materials for the construction, more use of energy and water in its performance, poor consideration of the local conditions (socially, and environmentally) just to mention a few of them; run counter to the simpler local logic of design and construction more difficult and unsustainable¹⁰.

In order to have a deeper understanding of such issues, it is first important to appreciate that *Architectural Globalphilia* is not only transforming the process of individual building design but it is already playing a key role in the transformation of the whole process of urban planning and building construction. It is assumed that alongside this phenomenon, there is also a complete shift in the whole process of construction to a more industrialised and machine based manufactured one. Nevertheless, what is clear is that the 'imperfect' non-industrialised skills are still present, and commonly camouflaged in the final 'perfect' products. When new highly industrialised materials and new techniques are introduced, these are often finally adopted in different ways and some of them are completely improvised. The common quality of control of western use materials and techniques in construction, finishes as a hybrid with a local improvised techniques due to the lack of specialised processes and professionals. In other words, it can be said that the foreign concept is *Mexicanised* by the local simplification and flexibility. In terms of the Colombian architecture critic Felipe Hernandez, practice in Latin America, has been suffering an "architectural hybridisation"¹¹.

For instance, the author practiced within the In-House Design and Construction Department of the UMICH in Morelia, Mexico before to begin this research. As part of this practical experience it can be argued that the use of non-industrialised local techniques and materials were part of the every day solutions in contemporary buildings (Fig. 1.5 & 1.6). As a consequence, some professionals and the regulations applied still allowed some level of flexibility to respond with local circumstances (Fig. 1.7). In other words, reality pointed out that all the 'perfection' of the final products and promoted visuals did not follow the same logic of design process that inspired them in western countries. Still while some of the designs such as the Institute of Chemical and Biological Research or the New School of Architecture of the UMICH as two examples could pass as a similar production adopting the foreign model, it may be observed that



Fig. 1.5 & 1.6 Above: Master builder developing cement rendering with a top part of a brush over the facade of the future Institute of Chemical and Biological Research of the UMICH in Morelia, Mexico. This rendering technique is a very well known local technique. Bottom: Final impressions of the facade before painting.



Fig. 1.7 Final impressions of the facade of the future Institute of Chemical and Biological Research of the UMICH after painting. It can be observed the camouflage of improvised techniques.

¹⁰ Shah, K. (4-6 July 2000). Global Urban 21 Conference. Berlin

, DoH (2000). Conference Report on African Solutions: Towards Sustainable Urban Development, Pretoria.

¹¹ Hernandez, F. (2002). "On the notion of architectural hybridisation in Latin America." *The Journal of Architecture* 7(1): 77-86.

cutting through the surface one reveal, evidence of the real process of design and construction, and this follows a different logic. This is a logic of 'imperfection and improvisation' created by a different conditions that is commonly camouflaged in the promoted visuals.

Tension on Informal and Semi-Informal practice

The tension within unofficial or 'informal' practice is slightly different. It is noticed that actual architects have too little to say and are disempowered to intervene in a huge amount of present day urban areas under the condition of scarcity. In a vast amount of them which could actually reach 55-65 per cent in some main cities like Mexico City. The individual citizen, for whom it is not economically viable to contract an architect, is the main player in his own housing construction¹² (Fig. 1.8.) Commonly, those who cannot afford a mortgage, will end up organising themselves in a very creative way; using communal strategies which allow them to have economical approaches in they prefer some kind of self or communal support rather than have any relationship with the bank. In other words, the condition of scarcity challenges citizens of informal settlements to deconstruct and reinvent design processes beyond the normative. These new approaches have to take advantage of group saving, community cohesion or other alternative socio-economic organisation. At the same time they are forced to consider the area's local topography; take advantage of local climate, improvise with the available materials and develop their dwelling in different stages, just to mention few examples. Usually this approach can be considered 'imperfect' by the conventional values of architecture. Ironically some of these features are transfer to formal processes by these citizens who are the main working force of the formal construction of the countries cities. According to the Indian architect Rahul Mehrotra the informal city "presents a compelling vision that potentially allows us to understand more clearly the blurred lines of contemporary urbanism in Latin America, Asia or Africa".¹³

Finally, other citizens that are allowed to obtain formally the basic structure of low income housing provided by the government, usually take advantage of them even so it is not probably the best solution to their specific family needs. However, such basic structures are upgraded through years according to changing circumstances such as: members of the family increase, additional economical sources, change of life style, etc.¹⁴(Fig 1.9). During the upgrading period owners prefer to use informal path as an strategy and leave legal issues for later. As a result the final dwelling can be considered semi-informal. This case could be the closest Mexican example of what Alvar Alto called "elastic standardisation, where things start off the same but all end up different to give them individuality"¹⁵.



Fig. 1.8 Dwellings developed by self- construction in the Col. Guadalupe, a suburban area of Morelia, Mex.



Fig. 1.9 Above: Low income housing of Villas de la Loma Morelia, Mex. extended on the top by traditional local techniques. Bottom: Comparative of two low- income housing modified in different ways giving little individuality to the owners. Villas de la Loma, Morelia, Mex.

¹² Burgess, R. (1982). *Self-Help Housing Advocacy: A Curious Form of Radicalism. A Critique of the work of John FC. Turner. Self Help Housing a Critique.* W. PM. Oxford, Alejandrine Press, Connolly, P. (2003). "The case of Mexico City, Mexico, ." UN-Habitat (2003) *Global Report on Human Settlements 2003, The Challenge of Slums Part IV: 'Summary of City Case Studies'*, Earthscan, London: pp195-228.

¹³ Mehrotra, R. (2009). Foreword. *Rethinking the Informal City: Critical Perspectives from Latin America.* P. K. a. L. K. A. Felipe Hernandez. New York- Oxford, Berghahn Books. Pg. xii

¹⁴ Till, J. and T. Schneider (2007.). *Flexible Housing Amsterdam* ; London Architectural Press, Elsevier.

¹⁵ Aalto, A. (1998). Interview with Alvar Aalto. *Alvar Aalto in his own words.* G. Schildt, Rizzoli International publications. 3: 232

The condition of scarcity as a theoretical model of architectural practice

This thesis argues that as example, previous features; the logic of improvisation already used in formal practice and the design process of 'imperfection' developed under the condition of scarcity in informal and semi-informal practice are not yet directly informing professional practice in Mexico, but could be theorised and productively accepted by architects as potential design tactics for future proposals. Such features of 'imperfect' design processes are actually neglected in order to imitate the products of Western architecture. However, this research suggests to understand such features and accept an interesting journey of 'transformation' and 'equilibration' of the relationship -Theory and Practice- which are assumed to be indivisible from each other. In other words, the thesis questions the obsession for camouflaging 'imperfect' architecture, when such features could be used as a renewed set of design procedures (design tactics) informing an alternative design process of architectural intervention. The main argument of the thesis focuses on the study of the *Condition of Scarcity* as a theoretical model of architectural practice, which promotes the validity of creative, effective and involuntary sustainable architectural design tactics, mainly used by many ordinary people in informal and semi-informal practice and although neglected, also adopted in the formal processes.

Additional reflections

Additional questions and reflections about previous years experience arose after some months in England at the beginning of this research such as: are the principles of western sustainable architecture an effective model solution for the new challenges of Mexican Society? What about the role of the architect in regard to the marginalised and scarce areas of the population? Is it adequate to use in actual formal buildings construction and its life an excessive amount of resources? Is sustainability still entrapped within an unsustainable model of production? How can genuine architectural principles be found which correspond to the real sustainable necessities of Mexican society?¹⁶

To figure out such questions, the first step was to recognise that the author was himself playing the game of *Architectural Globalophilia*, uncritically adopting a practice and promoting ideologies in academia without questioning and which did not respond completely to the main tensions and the unique necessities of the Mexican context. The Indian postcolonial theorist Homi Bhabha explains that, in order to objectify cultural meaning or in other terms, to relate meaning to an existing outside object, "there always has to be a process of alienation and secondariness in relation to itself"¹⁷. Consequently, this study will not reject *Globalisation*, but it is argued that one needs a critical understanding of it to make sense of local issues and challenges. In other words to confront this tension, this thesis suggests to understand this phenomenon using the word 'transformation or equilibration' rather than crisis. This refers to a critical assimilation of how foreign novelties are or should

¹⁶ More questions also were: These buildings look good, are real pieces of art, but for how long? Should architecture be assessed by the aesthetics of the final product or it should involve additional issues of the socio-economic dynamics produced by its process? How could architectural production be developed without aesthetic limits, dogmas, morality or fashion considered by actual model? Should architects be recognised as 'celebrities' able to control the entire proposal and take part in every stage of the architectural design process or it is necessary to recognise the effort of each citizen involved in it? Why is architecture an isolated area when it is one of the most interactive disciplines? Are some answers related to the actual 'values' of an architectural model production based on the idea of abundance and commodity production? And finally, where is what Octavio Paz defines as "goals of life"? "The happiest in this life, the understanding, the love which are the final goals that give sense to our life did not appear in the Modern Life". Paz, O. (1986). *Tiempo Nublado*. Barcelona Espana.

¹⁷ Bhabha, H. (1990). *The Third Space*. Interview with Homi Bhabha *Identity: Community, Culture Difference*. J. Rutherford. London, Lawrence and Wishart. Pg. 210

be absorbed into current structures of understanding design process and how local structures are or have to adjust to make sense of novelties and allocate them in a new particular way¹⁸.

Philosophy behind Architecture of *Scarcity*

In order to explain the previous argument of 'transformation and equilibration' further, it is important to clarify the philosophy behind the Architecture of Scarcity study. Theory from diverse schools of thought which are commonly labelled in the scopes of Post-colonialism, Sustainable Criticism, Vernacularism, Neo-Vernacular, Reflexive Modernity, Post structuralism, and others will support a critical framework which can be used as the basis for the analysis of the *Condition of Scarcity* as an alternative theoretical model of *Architectural of Scarcity* practice in Mexico. The intent is to place them into a holistic and wider comparative structure to learn and recognise organisational and strategic design principles rather than concentrating on the historiographical elements (fig. 1.10).

Firstly, the essential understanding of this phenomenon in this study could be explained through the scope of postcolonial theory. The Indian theorist Homi Bhabha has rethinking questions of knowledge transfer, ownership and power from western countries in relation to different stereotypes of local identities, social agencies and national affiliations of the global south. In doing so, he provides a theory of 'cultural translation' and by implication 'cultural hybridity' which goes beyond the conventional bipolar understanding (i.e. formal-informal, north-south).¹⁹ Bhabha "suggest that all forms of culture are in some ways related to each other"²⁰. He argues that by imitating -architectural foreign tendencies as example related to this study- the aims or priorities of the 'originary' are never finished or complete in itself in the 'translated' version. In Bhabha's words,

"The originary can be simulated, copied, transferred, and made into a simulacrum... The 'originary' is always open to translation so that it can never be said to have a totalised prior moment or being or meaning. What this really means is that all forms of cultures are continually in a process of hybridity...It is the 'third space' which enables other positions to emerge, which is inadequately understood through received wisdom. Hybridity gives rise to something different, something new and unrecognisable,"²¹

In other words Bhabha identifies the richness of a 'cultural hybridity' as a source of new knowledge and promotes the validity of this creative and effective new area of negotiation, meaning and representation. Gayatri Chakravorty Spivak recognizes the complexity of this project, in specific, how someone organises and presents the 'subaltern' voice as she defines the voice of marginalised masses. She suggests 'strategic essentialism' this mean speaking on behalf of a group while using a clear image of identity to fight resistance, is her solution to this tension.²² However, Frantz Fanon

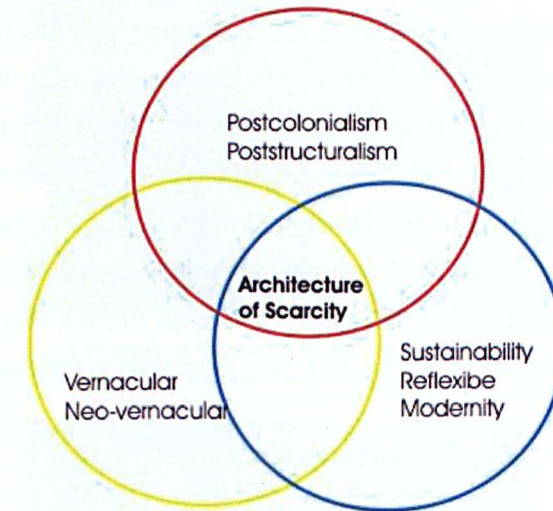


Fig. 1.10 Scope graphic

¹⁸ The critical assimilation of Globalphilia from physco-analytical perspective is inspired by the study of Piaget, J. (1972). "Intellectual development from adolescence to adult . Human Development." And Piaget, J. (1999). "An Exposition of Constructivism: Why Some Like it Radical."

¹⁹ Bhabha, H. (1990). The Third Space. Interview with Homi Bhabha Identity: Community, Culture Difference. J. Rutherford. London, Lawrence and Wishart.

²⁰ Ibid.Pg 210

²¹ Ibid.Pg 210

²² Gayatri Chakravorty Spivak 1990. Can the Subaltern Speak? Pg 62-63

offers a more radical and less optimistic prescription; he argues that 'subaltern' masses would remain hybrids with miserably schizophrenic identity unless they revolt against the opposition.²³

The postcolonial argument has been developed further in the field of architectural from different academics and practitioners of the global south in terms of 'strategic essentialism'. In words of the Indian architect Rahul Mehrotra,

"In order to make more substantial connection to understand and inform contemporary architecture and urbanism it is critical that the binaries that have to come to define the terms for this debate (formal and informal, rich and poor, third and first words) be dissolved. Instead the discussion should be positioned in different terms and include question about hybrid, simultaneity, coexistence and other ways of framing the issue".²⁴

Felipe Hernandez has discussed the Latin American phenomenon in terms of architectural hybridisation. Hernandez main concern is that often interpretations of the Latin American hybridity within architectural discourses have been related to external formal elements or aesthetic descriptions missing the main point. The key issue is to understand this phenomenon more critically; Hernandez argues that the new combinations of formal elements and materials in Latin American countries are the result of deeper expressions of a continuous permanent cultural process.²⁵ This understanding is very important during actual processes of globalisation.

The Mexican context it is not the exception; the obsession to follow foreign tendencies adopted with local empirical techniques and materials has created mixed elements of 'cultural hybridism' driving the contemporary built environment production. However, this condition is not a new phenomenon, after Mexican independence, the construction of the borning country was always inspired by western countries.²⁶ It is particularly this 'hybrid' condition that has provided with important design tactics to citizens and architects that has characterised the continuous construction of the cities in Mexico over the last two centuries. Bhabha argues that to revalorise such 'spaces of mixing' or 'space of hybridity' offers the most profound contemporary challenge for developing countries.²⁷ To revalorise such spaces in the Mexican context from the architectural perspective, in this study identified as spaces of architectural production developed under the condition of scarcity, is precisely one of the aims of this dissertation.

²³ Frantz Fanon 1961, *The Wretched of the Earth*

²⁴ Mehrotra, R. (2009). Foreword. *Rethinking the Informal City: Critical Perspectives from Latin America*. P. K. a. L. K. A. Felipe Hernandez. New York- Oxford, Berghahn Books. Pg. xiv

²⁵ Hernandez, F. (2002). "On the notion of architectural hybridisation in Latin America." *The Journal of Architecture* 7(1): 77-86.

²⁶ Gortazar, F. G. (1994). *La Arquitectura mexicana del siglo XX*. Mexico City CONACULTA.

²⁷ Bhabha, H. (1994). *The Location of Culture*. London, Routledge. Pg. 113

Revalorising spaces of architectural production developed under the condition of scarcity

It is argued that the resources and priorities in the global south are very different from those of the developed north, and yet as a result of *Globalphilia* phenomenon many of the concepts of architecture and sustainability have been uncritically taken from the western context to another. The result is that issues of sustainability in the architecture of the global south remain under-theorised. Increasingly critics like Voula Mega and Peter Marcuse argue that sustainability promoted by the west is in some ways questionable in such context²⁸. Additional critics like Kirtee Shah, Ambrose Adebayo and Bernardo Pedro Ferraz concur that "sustainability" promoted by the west conflicts and limits the values held by developing countries²⁹.

As an alternative to the western perspective, The Architecture of Scarcity approach is informed by the vernacular theory. A number of leading experts in the vernacular and neo-vernacular fields have revalorised spaces of architectural production developed under the condition of scarcity in the global south. In the vernacular field experts on theory, education and practice such as Paul Oliver, Amos Rapoport, Nezar Alsayyad have increased their interest in the empirical lessons of the vernacular as providing solutions for a more sustainable future³⁰. They suggest that the lessons from Vernacular could contribute to solving some of the challenges facing contemporary architecture in the global community today at the beginning of the 21st century³¹. Also additional critics in the Neo-Vernacular field of *Informal Modernism* suggest that the massive phenomenon of self-build housing in cities of developing countries emphasise the renaissance of the vernacular under different conditions to the tradition³². The outcome is an unrecognisable *hybrid* which challenges conventional structures of power; develop their own political initiatives mixing the traditional with the modern, the industrialised with the crafts made, the local and the global without any prejudices. Such features according to Rahul Mehrotra have to be reconsidered "not as a condition that need to be remade but rather as a contagious phenomenon that actually remakes and humanises cities".³³

Accordingly, this thesis sets out how the debate on the future of Mexican sustainable architecture can be enhanced by exploring and recognising one more time the importance of local-Vernacular spaces, both Traditional and Informal Modernism, from a slightly different perspective. Previous understanding of the vernacular in the Mexican context had attempted to understand the main issues from a romanticised perspective, regarding them as a folkloric sample of features that only inform a 'stylistic' approach rather than trying to understand the process' logic of the conditions of scarcity that create them. The clearest distinction of this argument is pointed out by Keith L Eggner who argues that for example, Luis Barragan's approach –the most well known approach of Contemporary Mexican architecture in the West which is assumed to be inspired by locally vernacular architecture- was romanticised by Western writers while" Barragan

²⁸ Mega, V. (1996). *Fragments of an urban discourse. Utopias and Realities of Urban Sustainable Development*. Turin, Barolo, Marcuse, P. (1998). *Sustainability is not enough. Environment and Urbanization, Division of Urban Planning, School of Architecture and Planning, Avery Hall, Columbia University*.

²⁹ Shah, K. (4-6 July 2000). *Global Urban 21 Conference*. Berlin

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³⁰ Alsayyad (2006). *Vernacular Architecture at the 21st Century*. London, Taylor and Francis.

³¹ Asquith, L. and M. Vellinga (2006). *Vernacular architecture in the Twenty-First Century*. London, Taylor and Francis.

³² Ribbeck, E. and S. Padilla (2002). *Informal Modernism Spontaneous Building in Mexico City*, Heidelberg.

³³ Mehrotra, R. (2009). *Foreword. Rethinking the Informal City: Critical Perspectives from Latin America*. P. K. a. L. K. A. Felipe Hernandez. New York- Oxford, Berghahn Books.

was promoting a romantic dream of the Mexican village as a private project"³⁴ (Fig. 1.10) As a consequence researchers into the Vernacular and Neo-Vernacular have begun to discuss these issues, however in this study, it is argued that in there are distinctive features of the architecture created under the conditions of scarcity such as, imperfection and the processes of improvisation as few examples, that may specifically be used as renewed design tactics. This means to go beyond an understanding of them as 'aesthetic', 'stylistic' or tectonic approaches only, and to see them as principles that may inform the design process. It is argued that cutting through the 'formalistic' surface of architecture, silent and underestimated issues will be exposed. In short, the key point of this thesis is motivated by a book of the Mexican author and politician Jesus Silva Herzog, called "The Stupidity of Perfection"³⁵. Consequently, this thesis suggests that an approach which does not look to the 'perfection' of the formal object or to prescribed processes of design may be a fruitful ground for the discussion of a sustainable architecture appropriate to the specific context of Mexico.

As a result, the *Architecture of Scarcity* study can be considered as part of a *Reflexive Modernity* or *Second Modernity* argued for by the German sociologist Ulrich Beck in the 90s and promoted from the architectural perspective by Ulrich Schwarz in the last decade. Schwarz argues that under to present conditions, society has lost and keeps losing certainty and direction³⁶. The English sociologist Anthony Giddens defines it as "unanchored" a term that points out the ambivalence of the project of Modernity, which accepts that it is not only a history of success, but it is also the origin of present crisis³⁷. In fact, since the 70s the Mexican Nobel literature laureate and critic of Modernity Octavio Paz strongly questioned the final aims of the project of Modernity, in specific the "So what" of a huge commodity production of developed countries and its relation to environmental degradation and developing countries dependence³⁸.

Under the concept of *Reflexive Modernity*, architecture is not simply a flourishing production of the built environment, but at the same time it recognizes its own weaknesses, accepting to be part of undesirable situations.³⁹ In other words architecture becomes self-critical or 'reflexive' and accepts that it has to change to make sense of the new challenges facing contemporary life such as climate change.

In conclusion, this thesis will attempt to understand in the *Mexican* context, how to develop what some critics call *Criticism by Design*⁴⁰ which by implication it is assumed to lead to a more *Critical Practice*⁴¹ or *Alternative Architectural Practice*. This means according to Jeremy Till and Tajana Schneider an architectural practice "that demands an engagement with the condition of its production in a critical way".⁴² In other words actual challenges in Mexico formulate the need to develop new models of architectural practice in order to address the changing social, economic and environmental conditions of mass urbanised cities. As a result, this thesis will not attempt to promote an aesthetic architectural 'style';

³⁴ Eggener, K. L. (2001). Luis Barragan's gardens of el Pedregal Princenton Architectural Press.pg

³⁵ Silva-Herzog, M. J. (2006). La idiotez de lo perfecto miradas a la política Mexico City, FCE.

³⁶ Schawarz, U. (2004). "Que es hoy "moderno"? La arquitectura de una sociedad radicalmente modernizada." Anales del Instituto de Investigaciones Esteticas, otono XXVI, Num 085: 75-83. pg.

³⁷ Giddens, A. (1996). Kosenquenzen der Moderne. Francfort del Meno.

³⁸ Paz, O. (1974). Alternating Current. London, Wildwood House.

³⁹ Schawarz, U. (2004). "Que es hoy "moderno"? La arquitectura de una sociedad radicalmente modernizada." Anales del Instituto de Investigaciones Esteticas, otono XXVI, Num 085: 75-83.

⁴⁰ Hill, J. (2005). "Criticism by design:drawing, wearing, weathering." The Journal of Architecture 10(3): 285-293.

⁴¹ Wigglesworth, S. Ibid."Critical Practice." 335-346.

⁴² Till, J. and T. Schneider. (2008). *Alternative Architectural Praxis*, The University of Sheffield. www.altpraxis.wordpress.com. Pg. 1

rather it will try to understand local processes of architecture's production under the condition of scarcity from a wider context or from a broader range of cultural issues. Consequently will use identified features or *Issues of Scarcity* to inform the design process. Michael de Certeau suggests using citizen's 'tactics' of the everyday practice developing their own dwellings and communities and link them with institutions of support.⁴³ In this sense, this thesis will argue that a unique or singular approach is not longer possible or appropriate; instead it will accept to be part of an impure hybridism of expressions⁴⁴. Contemporary architecture cannot longer be exclusive; it should recognise 'the other', the empirical knowledge founded within undervalued or marginalised areas of the population. At the same time in this context, it is necessary to acknowledge that architectural practice has to deal with additional 'contingent' architecture's economic, political and social factors.⁴⁵ In short, how strategic thinking of the architect can have alternative applications in non-prescribed design process which acknowledges citizens 'tactics'⁴⁶ and 'contingency'⁴⁷ of the informal everyday practice.

Finally, under this renewed perspective, the *Global-philic* phenomenon would perhaps not be understood as the adoption of similar features that homogenises cultures, rather it might be seen as opportunity to recognise the validity of heterogeneous local features from different parts of the world which should inform different design processes. In the words of the Italian architectural critic Emiliano Gandolfi, an alternative architectural practice "has to aim to define a different society that will be more equal and more permeable to different influences and cultures".⁴⁸ This position should not be seen as a result of resistance as commonly this discourse is understood, but a response to the local circumstances and at the same time as a parallel or alternative path to the contemporary architecture in the industrialised West.

Hypothesis of Architecture of Scarcity

The hypothesis suggests that solutions founded in spaces of architecture developed under condition of scarcity could serve as a sustainable model to face the challenges of Mexican industrialised cities or other similar cities in developing countries. As a consequence this thesis proposes that an alternative methodological approach for applying *Sustainability*⁴⁹ in the field of architecture in Mexico could be possible if one compares it with Western sustainable architecture. One of the main reasons of this proposal is that it is believed that there are many crucial ways in which an alternative approach to future Mexican architecture, could still take advantage of learning from the vernacular and neo-vernacular. One inspiring argument is Rem Koolhaas in his case study of the informal architecture of the African City of Lagos who suggests that more can be learnt from its anarchic-chaotic organisation, empirical logic and functionality than by its folkloric authenticity⁵⁰. However, one criticism of Koolhaas' theory is that it is not strongly reflected in his architectural practice yet. It is argued that it is necessary to explore methodologies which make clearer the non-western path of design process to create a stronger link to its practical application.

⁴³ Certeau, M. D. (1974). *The Practice of Everyday Life*. Berkeley, University of California Press.

⁴⁴ For Hybridisation see Hernandez, F. (2002). "On the notion of architectural hybridisation in Latin America." *The Journal of Architecture* 7(1): 77-86..pg.

⁴⁵ Idem also see Till, J. (2009). *Architecture Depends* Cambridge, MIT Press.

⁴⁶ Certeau, M. D. (1974). *The Practice of Everyday Life*. Berkeley, University of California Press.

⁴⁷ Till, J. (2009). *Architecture Depends* Cambridge, MIT Press.

⁴⁸ Gandolfi, E. (2009). "Spaces of Freedom." *Architectural Design*.

⁴⁹ The "sustainability concept" was known before, and had its origin in the document of "Development Limits" at Stockholm Conference (1972). BRUNDTLAND, Gro Harlem, *Our Common Future: From One Earth to One World*. New York, Oxford University Press 1987.

⁵⁰ Koolhaas, R. (2004). "Case study of the African postcolonial city of Lagos."

What is Architecture of *Scarcity*?

Architecture of Scarcity is a potential methodological approach that attempts to address the issues of economic, social technical and environmental sustainability in the context of Mexico based on the idea of scarcity. It is defined as architecture created by the idea of not having sufficient resources to fulfil unlimited **relative** needs.

Firstly, the *Architecture of Scarcity's* methodology identifies the *Issues of Scarcity* which are features of production of architecture in a condition of limited resources and open to 'imperfection' rather than considering architecture from the perspective of commodity and abundant control of resources to produce a 'perfect' product. According to the French philosopher Georges Bataille commodity production is the direct result in an 'unreserved surrender to things'⁵¹ in an attempt to climb the ladder of society through possession⁵². Russell W. Belk concurs that "in a democratic consumer society within a free market economy, the consumer is king"⁵³. Under this approach the main concern is its 'utilitarian' consideration of the environment which is still present on the principles of western sustainability⁵⁴.

Without too much idealisation, *Architecture of Scarcity* suggests that sustainable architecture in the Mexican context can be developed initially by exploring the existing local conditions rather than only adopting foreign models. It investigates as starting points three typical cases of architectural production challenged by the condition of scarcity within the Mexican context: the Vernacular⁵⁵, Informal Modernism⁵⁶ and Semi-Informal Modernism⁵⁷ practices which are already adapted in different ways to local conditions of limited human and natural resources. These approaches already consider the area's local topography; take advantage of local climate and have developed an alternative socio-economic organisation, just to mention a few examples, than modern structures built adopting western concepts.⁵⁸ *Architecture of Scarcity* is informed by these approaches identifying a set of features -*Issues of Scarcity*- which are involuntary sustainable and relevant to address present day challenges in mass urbanised cities of developing countries⁵⁹. In the words of the French philosopher George Bataille,

⁵¹ See pg. 82

⁵² Bataille, G., Ed. (1998). *George Bataille, Essential Writings* SAGE Publications.

⁵³ Belk, R. W. (1995). *Collecting in a Consumer Society*, Routledge. pg. 1

⁵⁴ See Luke, T. W. (2006). "The system of sustainable degradation." *Capitalism Nature Socialism* 17(1): 99-112.

⁵⁵ The term "Vernacular" architecture is commonly used to identify buildings developed by empirical knowledge or how was termed by Bernard Rudofsky in the book "Architecture without Architects" .New York, 1964.

⁵⁶ This term was pointed out by Professor Echart Ribbeck and Sergio Padilla in their study of "Informal Modernism" Spontaneous Building in Mexico City" 2002. Ribbeck and Padilla argue that the massive phenomenon of self-build housing shows that even in megacities the vernacular tradition of building is experiencing a major renaissance, rather than dying out- albeit under completely different circumstances to the traditional or rural context.

⁵⁷ The term Semi-Informal Modernism is used to identify buildings partially developed by a 'formal structure' commonly provided by the Mexican governmental low-income housing programmes such as: INFONAVIT, SOFOLES, ETC and the second part developed by 'irregular' self-build or self management tradition. It can be said that it is a hybrid building produced under a combination of 'formal' or official support and 'informal' or vernacular tradition. Such combination is not deliberately planned it is already happening according to present circumstances of these specific context which are different to the traditional or rural context and Informal Modernism. It can be said that it is the most 'legal' of the Vernacular.

⁵⁸ Lauber, W. (2005). *Tropical Architecture Sustainable and human Buildings in Africa, Latin America and South-East Asia* Munich Prestel.

⁵⁹ Rapoport, A. (1969). *House, Form and Culture*. Englewood Cliffs, NJ, Prentice-Hall, Oliver, P. (2003). *Dwellings: The Vernacular House* Word Wide. London, Phaidon, Alsayyad (2006). *Vernacular Architecture at the 21st Century*. London, Taylor and Francis.

"While individuals and their economies are necessarily governed by scarcity and efficiency that living matter in general is governed by the steady and luxurious flow of energy from the sun, which must be expended either in growth or in some form of luxury"⁶⁰.

In other words, Bataille argues for the condemnation of excessive waste of commodity production and recognises the creativity and effectiveness optimization developed by the challenge of the condition of scarcity. Melanie Dodd concurs that "when architectural needs are reduced to its absolute basic level the outcome challenges the conventionality of western architectural form".⁶¹

Secondly, *Architecture of Scarcity* suggests the use of *Issues of Scarcity* as a design tactics through a *Strategic Framework*. An Agency support programmes which use and supports founded basic and simple empirical principles – which are highly sustainable- developed over time by the ordinary citizens living with restricted access to all the 'modern' commodities considered essential in present contemporary life. In other words *Architecture of Scarcity* acts as an aid and support framework in the accomplishment of a common aim rather than a mechanised system that everybody should rigidly follow. This means that, *Architecture of Scarcity* does not pretend to force a set of recipe rules for the creation of a singular design style for a utopian place, community or city in the future. Whilst the examples will inevitably show certain aesthetical characteristics, the main purpose is to convey a methodological approach of working with alternative process of intervention towards a sustainable architecture production.

In this sense, *Architecture of Scarcity* firstly values the process and next the final product. This means that it recognises the participation of different actors in the production of architecture rather than a unique 'celebrity' architect. The clearest distinction of this statement is defined by the Mexican architect Teodoro Gonzalez who argues that Mexican architects are not clear enough, or do not want to be conscious, that the cities are not produced by architects alone, instead cities are produced by society⁶². Therefore, *Architecture of Scarcity* is interdisciplinary in its approach rather than isolated. *Architecture of Scarcity* is thus open to change technologically and socially over different periods of time and according to different local circumstances rather than frozen⁶³. In terms of the Dutch architect Rem Koolhaas architects are frozen due the love of frozen and static elements⁶⁴.

⁶⁰ Bataille, G. (March 31, 2005.). *Scarcity and excess*. Biology, Ecology and design.

⁶¹ Dodd, Melanie (2008), 'Oportunistic Urbanism', in Diego Ramirez Lovering (ed.), *Oportunistic Urbanism* (Melbourne: RMIT University Press), p 127.

⁶² Gonzalez, d. L., Teodoro (2008). *Medalla de Oro a Gonzalez de Leon*. F. Leal. Mexico City, El Universal.

⁶³ Also see Till, J. and T. Schneider (2007.). *Flexible Housing Amsterdam* ; London Architectural Press, Elsevier.

⁶⁴ Koolhaas, R. (2004). "Case study of the African postcolonial city of Lagos."

Aim of Architecture of *Scarcity* and research questions

The importance-aim of this study is to contribute to the debate on the future of Mexican architecture and to promote a critical understanding and realistic scheme for adopting a new path. It suggest for considering an *Architecture of Scarcity* as an alternative methodological approach of sustainability to face the challenges of mass urbanised cities in developing countries such as Mexico. The thesis addresses the broad question: *What is an appropriate/alternative design approach for future Mexican architecture?*

In particular, this study explores three typical cases of architectural production under the condition of scarcity within the Mexican context: the Vernacular, Informal Modernism and Semi-Informal Modernism practices in Mexico and its straightforward architecture produced as a result of not having sufficient resources to fulfil basic needs. The term *Scarcity* is used to refer all these undervalued areas of the population characterised by marginalisation. The overall thesis aims to examine the design features – *Issues of Scarcity* - of the challenge of creating buildings under the condition of scarcity. This means withstand the vagaries of inequity (limited resources of part of the population) multicultural diversity, globalization, migration and struggles of rapid growth and change (everyday solutions and chaotic organization)⁶⁵. Consequently, how the identified –*Issues of Scarcity*– can be used as a renewed set of design tactics to inform an architectural process. The starting research question is; **can one formulate a new approach to Mexican future architecture based on the idea of Scarcity?** In other words, the part 1 and 2 of the thesis (Chapters 1 till 5) develops and suggests the concept termed *Architecture of Scarcity*.

Next, the following research question is: what can be learnt from an understanding of existing features –*Issues of Scarcity*- of three typical cases of architectural production under the condition of scarcity within the Mexican context? Why even under the condition of scarcity there is a huge amount of architectural production. In other words, the part 3 of the thesis (Chapter 6) suggests a methodological approach to explore, identify and organise the lessons-*Issues of Scarcity*.

The final questions are: how such lessons –*Issues of Scarcity*- could be used as a new design tactics to challenge contemporary architectural design process production? This means how might the condition of scarcity inform the design process? Consequently, what can be the new role of the architect within this context? In other words the part 4 of the thesis (Chapter 7 and 8) develops and speculative approach entitled the *Architecture of Scarcity Game*. The game aims to be a media of further developing understanding of the conditions of scarcity and the application of *Architecture of Scarcity* approach testing the validity of the identified lessons –*Issues of Scarcity*- as a design tactics. Finally, Chapter 9 draws the conclusions. To stat figuring out the first research question, the following chapter will be focus in identifying the characteristics of the *Condition of Scarcity* as a theoretical model of the *Architecture of Scarcity* approach.

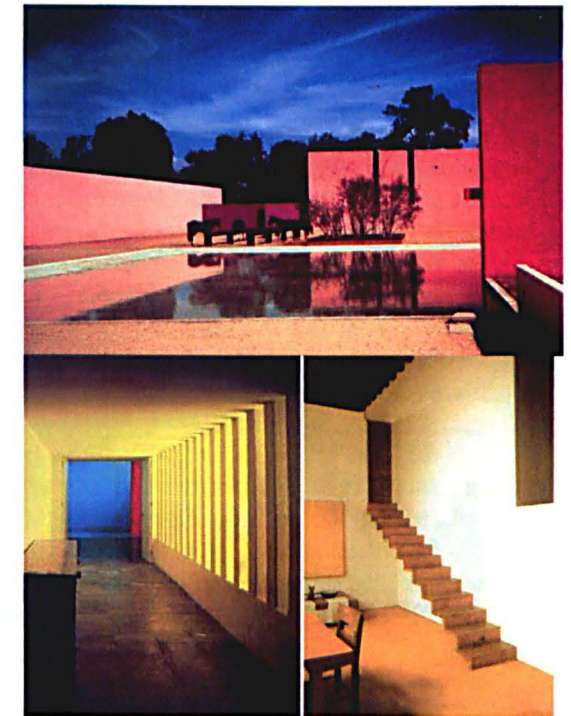


Fig. 1.11 Example of Luis Barragan approach considering features from the traditional vernacular of the Mexican villages to inform only the tectonics of his designs. Source: www.arquitectos.com.br, artfilm.com, www.arcspace.com

⁶⁵ Lauber, W. (2005). *Tropical Architecture Sustainable and human Buildings in Africa, Latin America and South-East Asia* Munich Prestel.

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"The actual economical model of 'globalization' is emphasizing the development and materialization of two extreme areas and huge division between its societies in many cities around the world; the mega project of glamour and the projects of marginalization".

Saskia Sassen

Chapter 2

The City of Paradoxes: The Conditions of Scarcity

At present, issues concerning sustainable architecture in Mexico are complex. There is not only an issue regarding architecture –architects, urbanism and city makers- but also in what links them together with society. It is particularly within cities of unequal economies and multicultural diversity, in this thesis referred as *Cities of Paradoxes*, that the issues become potentially contradictory. This chapter will investigate the different priorities that an architect might face in this context.

Mexico a country of contrast and dichotomy

Mexico is a country of contrast and dichotomy: while the conditions of the most privileged districts are as developed as in the developed world, the poor districts lack even the most basic services. Neighbourhoods of exclusive housing and air-conditioned skyscrapers are surrounded by communities developed under conditions of scarcity or low-income housing created on the periphery¹. Great prosperity can be found next to extreme poverty. The two oppositions 'abundance' and 'scarcity' can act together, or work without mixing. It is a place in which two different worlds can exist and interact without ever becoming one². As a result, it is a place where some of the world's richest, and probably some of the poorest citizens live together but not in an integrated way³ (Fig. 2.1 & 2.2.)

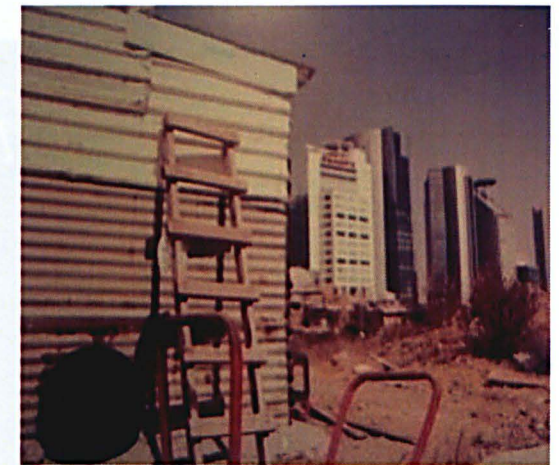


Fig.2.1. Informal housing with luxury background in the suburbs of Santa Fe, Mexico City.

Fig. 2.2 Bottom: A few kilometres from the luxurious zone of Santa Fe, Mexico City, around 400 families live in conditions of survival. It is an Urban squatter better known such as "Sección Hornos la Presa". It is once located at border of the extinct Becerra River within the urban district of "Delegación Alvaro Obregón". Dwellings of not more than 12 square meters are built with "rubbish" materials by its users who normally live extreme scarcity situation. Photographs by Carlos Ramos Mamahua



¹Ribbeck, E. and S. Padilla (2002). Informal Modernism Spontaneous Building in Mexico City, Heidelberg.

²Paz, O. (1970). Posdata. Mexico, Siglo XXI, Paz, O. (1986). Tiempo Nublado. Barcelona Espana.

³ On the one hand, according to the Forbes Farby, J. (2007). The world's richest people, All Headline News. Report of the world's richest people, the Mexican business man Carlos Slim Helu, "The world's third-richest man is \$19 billion richer this year and catching up with Americans Bill Gates and Warren Buffett". The journalist Cordova, C. A. (2007). Escandalosa iniquidad. Universal Mexico. in his essay "Escandalosa iniquidad" (scandalous inequity) pointed out that Slim's fortune is equivalent to the 7 % of the total GDP of Mexico. On the other hand according to United Nations Report of the Human Development Index (HDI) 2000, the village of Metlatónoc, Mex. has similar index to African countries such as Mali, Malawi or Angola (Metlatónoc .0389, Mali 0.386; Malawi 0.400 Angola 0.403.)

In addition, ancient pre-Columbian traditions still exist alongside contemporary westernised lifestyles, confusing people who move between the 'rational' and 'mystical', inside the "world of God"⁴ and the "world of Humans"⁵, connecting the 'modern' and the 'ancient' aspects of Mexico at the same time (Fig. 2.3.) It is a situation in which many 'paradoxes' can take place. As Octavio Paz notes, it is a place where the existence of two different societies is evident, two different words that are linked without ever growing to be one⁶. In other words, as his book "Posdata" Paz pointed out the survival of "the two Mexicos" the "developed" and the "developing" are physically evident.⁷ When Andre Breton visited Mexico in 1938, he argued that due these set of characteristic, Mexico can be considered one on the most surreal countries in the world. In terms of Breton, "Mexico keeps an open unfinished spectrum of feelings that can go from the most beautiful to the most horrifying"⁸. This reality seems that has not change in the last decades, instead it has exacerbated in contemporary times.

As one example, the political map of the last presidential elections provides evidence of a divided Mexico from a macro perspective (Fig. 2.4.) Last June 2006, during one of the most competitive presidential election in Mexico's history, the existence of these two worlds was ideologically accentuated, dividing the country into 'poor south' (yellow) and 'rich north' (blue), between 'left' (yellow) and 'right' (blue), between 'revoltosos' (revolutionaries) and 'pacificos' (pacifists) or between 'nacos' (chavs/commoners) and 'fresas'-(snobs/posh). These were directly reflected in the final results on the polls with 0.04 % difference for the winning candidate of the conservative party.⁹ Indeed, these divisions all identify the existence of two extreme areas of the population. It is important to emphasize that the richest elites, the right wing and the pacifists are commonly part of the same top 'influential' group. And vice versa; commoners and revolutionaries are part of the excluded group being denied their equal rights, according to the Mexican writer and politician Muñoz Ledo in his essay "El Nuevo oscurantismo" (the New obscurantism)¹⁰.

Essentially, economists and sociologists suggest to recognize and resolve the tension created between the polarization of the main 'two' Mexican societies as one of the most important challenges of the country at the beginning of the 21st century that calls to be addressed by appropriate understanding of the unique characteristics of this context.



Fig. 2.2 Luxury high scrapers in Santa Fe, Mexico City
Photograph by Carlos Ramos Mamahua



Fig. 2.3 Frida Kahlo expresses the existence of these two different worlds connecting the "modern" and the "ancient" in her painting "*between the two Mexicos.*" After 60 years of this painting, Mexican reality seems to have hardly changed.



Fig. 2.4 Mexican map of the political division of the country. After the Presidential Elections in 2006, the division of the country was expressed in two areas. The blue corresponds to the areas won by the right wing and the yellow areas correspond to the left wing.
IFE MAP

⁴ The term "World of God" is used to refer to areas of the population characterised by a strong emphasis on religious beliefs and high fanaticism. The emphasis of existence of certain areas is pointed out by Octavio Paz in his book "tiempo Nublado" Paz argues that as part of the Pre-Columbian beliefs transformed by Spanish colonization imposing one God as unique creator, Mexicans still suffer a high level of fanaticism present till today inside all aspects of the everyday life.

⁵ The term "World of Humans" is used to refer to areas of the population characterised by a strong emphasis on science and universal laws. The emphasis of existence of this area is pointed out by Octavio Paz in his book El Laberinto de la Soledad (The solitude labyrinth). Paz argues that as part of the Liberal French illustration adoption. A group of Mexicans Liberals intellectuals' leader by Benito Juarez introduced the "*Leyes de Reforma*" in 1859-1860 (The reform Laws). Such laws were for the first time limiting the Catholic Church power in Mexico and promoting the adoption of reason and universal laws across the society. The main aim of such laws were to separate the Catholic Church from Government.

⁶ Paz, O. (1986). *Tiempo Nublado*. Barcelona España.

⁷ Paz, O. (1970). *Posdata*. Mexico, Siglo XXI

⁸ Schwarzbeck, H. (2002). *Andre Breton in Mexico: una apostilla*. Letras Libres. H. Schwarzbeck. Mexico City, Vanguardia: 90-91.

⁹ Acnielsen (2006). *Elecciones Presidenciales 2006: Analisis estadístico de resultados*: 96.

¹⁰ Ledo, M. (05 de abril de 2007). *El Nuevo oscurantismo (The new obscurantism)*. El Universal. Mexico City.

Some explanations as to the reason for such division are pointed out from a global perspective by the sociologist Saskia Sassen. She argues that at present days the economic model of 'globalization' is emphasising the development and materialization of two extremities and creating a division between its societies in many cities around the world. On the one hand the "mega project of glamour" created by a wealthy side of the population, promoting bubbles of land speculation and high economic profit and on the other hand the "project of marginalization" in which all the service sector or in other words the strategic working force lives¹¹. However, Sassen argues that both models are strongly linked to each other due to its intrinsic dependence. The Nobel Laureate Joseph E. Stiglitz gives additional analysis to this phenomenon from the economic perspective. Stiglitz exposes how globalization is currently being managed by an "invisible hand"¹². He stresses the iniquities of the global economy, and the mechanism by which developed countries exert an excessive influence over developing nations. Stiglitz exposes the problem of how globalisation is currently camouflaged by "the vested interest behind many decisions"¹³. In other words he seeks to show that the consequences of these misguided policies have been unsuccessful, not just according to abstract statistical measures but in real human terms through the marginalisation of areas in the developing countries.¹⁴

From an architectural perspective the Guatemalan architect Teddy Cruz points out the materialization of two radically different approaches to face the same environmental conditions in his study of the border area of the Mexican city of Tijuana and the American city of San Isidro. Teddy Cruz argues,

"Rarely do we find two such radically different societies, cultures and economies in such proximity, entangled in the double desire to be united as well divided. Two kinds of urbanism emerge, one of homogeneity and conformity, one of contrast and difference. Two different attitudes toward constructing the city collide and overlap daily"¹⁵. R: Is this Q. accurate

Traditional understanding of such contrasting and dichotomous conditions are commonly polarized and understood as binary notions of constructing subjects within the play of power. This means how the creation of 'binary' opposition structures such as abundance-scarcity, developed-developing, rational-mystical, modern-ancient, north-south, etc. change the way we perceive others to justify dominance.¹⁶ In the field of architecture which is the main focus of this dissertation, the bipolar understanding is not the exception. According to Hernandez and Kellet the appreciation of creation of Latin American cities is traditionally explained through the bipolar tension of formal and informal.¹⁷ The formal is used to refer buildings or part of the cities that are designed or planned for architects and informal to refer the opposite; buildings and part of the city developed without architects' participation. In terms of Hernandez and Kellet "formal represents spatial abstraction created in order to disavow other forms of space and informal is a derogatory term to dismiss anything that escapes the realm and control of the architect".¹⁸ Their main concern with this perspective is that contrast and dichotomy in Latin American cities is mainly

¹¹ Saskia Sassen has pointed out this argument from a different perspective in different books such as: *Globalization and its Discontents* (New York, New Press, 1998); *Losing Control? Sovereignty in an Age of Globalization* (Columbia University Press, 1996) and *Cities in a World Economy* (California, Pine/Forge Sage, 1994). In Spanish *La Ciudad Global*, (Madrid, Ministerio de Trabajo de España, 1992)

¹² Stiglitz, J. (December 20th 2002). There is no invisible hand *The Guardian Comment*. London.

¹³ Stiglitz, J. E. (2006). *Making Globalization Work* Penguins Books. Pg. 35

¹⁴ Stiglitz, J. E. (2002). *Globalization and its Discontents*, W.W Norton & Company.

¹⁵ Cruz, T. (2004-2005). *Border Postcards: Chronicles from the Edge*. James Stirling Memorial Lectures on the City. Canadian Centre for Architecture, Montreal and London School of Economics. Pg. 7

¹⁶ See Bhabha, H. (1990). *The Third Space*. Interview with Homi Bhabha *Identity: Community, Culture Difference*. J. Rutherford. London, Lawrence and Wishart.

¹⁷ Hernandez, F. and P. Kellett (2009). *Introduction: Reimagining the Informal in Latin America. Rethinking the Informal City: Critical Perspectives from Latin America*. P. K. a. L. K. A. Felipe Hernandez. New York-Oxford, Berghahn Books. Pg. 1-2

¹⁸ *Ibid.* Pg. 2

reduced to a problem of aesthetics. This means that Latin American built environment is classified by physical forms (heterogeneity vs. homogeneity) of its buildings missing a deeper understanding of the processes and multiple forces that affect and conform it.

Rethinking the nature of this phenomenon from a wider perspective, and from outside the bipolar model Homi Bhabha has introduced a novel theory to describe the complex conditions that define 'multicultural' contexts in the global south. Bhabha's concepts of "ambivalence, multiculturalism and hybridity" have made clear that cultures are related to each other and must be understood as complex intersections of multiple places, historical temporalities and subject positions. Bhabha argues that in order to understand this terms, it is necessary to "avoid that very simplistic polarity, and any monolithic description of authoritative power based on that kind of binarism", he suggest "a model which emphasises the ambivalent nature of relationship, which understand the multi-dimensional forms of articulated constituencies". Bhabha considers this new model as the basis to have a more accurate reflection of what is actually happening in the world.¹⁹ In short, Bhabha calls for the recognition of cultural differences in every nation which is not singular or unified, but plural and broken.²⁰

Critics and theorist in the field of architecture influenced by Bhabha's theory have challenged to understand the built environment in the global south beyond the traditional aesthetic definitions of formal and informal. Hernandez and Kellett argue to explore "the superimposition of different urban logics and power structures exacerbating the collision between what is described in architecture as formal and informal".²¹ In other words they suggest to get involve with a rich variety of socio-political, economical and environmental factors beyond physical forms. In addition, Rahul Mehrotra suggest to put attention on issues of 'simultaneity and coexistence' to dissolve the traditional binaries and have clear understanding of new challenges facing cities in the global south.²² In this sense, a variety of thinkers from diverse backgrounds and methodologies have introduced various ways to understand this phenomenon.

In this sense it is necessary to go back to Homi Bhabha who not specifically related to space but concern with complex intersections of multiple places and temporalities he suggests the 'ambivalence' of every project of nation. Firstly, in his book *Narrating the Nation* he describes how historians and politicians are concern to develop a coherent and conscious narrative to explain the genesis of every nation, however the intrinsic 'cultural temporality' points out a 'transitional' reality²³. In other words every official narrative of historians and politicians is deconstructed and reinvented by its own society. Later in his book *The Location of Culture*, Bhabha gives the terms 'pedagogical' to the official projects of nations and 'performative' to the anti-official or transitional in order to explain further such ambivalence.²⁴ Additional terms directly focused on space that concur with the Bhabha's ambivalence are defined by Henry Lefebvre in his book *The Production of Space*. Lefebvre describes 'abstract space' to the instrumental for the authorities and 'social space' areas connected to the people.²⁵ Further terms are given by Deleuze and Guattari; 'striated space' is related to sedentary groups whilst 'smooth space' is associated to nomadic communities.²⁶ Even so, different terms are given by the aforementioned authors to describe a similar

¹⁹ Bhabha, H. (1990). *The Third Space*. Interview with Homi Bhabha *Identity: Community, Culture Difference*. J. Rutherford. London, Lawrence and Wishart. Pg. 221

²⁰ Bhabha, H. (1994). *The Location of Culture*. London, Routledge.

²¹ Hernandez, F. and P. Kellett (2009). Introduction: Reimagining the Informal in Latin America. *Rethinking the Informal City: Critical Perspectives from Latin America*. P. K. a. L. K. A. Felipe Hernandez. New York-Oxford, Berghahn Books. Pg. 2

²² Mehrotra, R. (2009). Foreword. *Rethinking the Informal City: Critical Perspectives from Latin America*. P. K. a. L. K. A. Felipe Hernandez. New York- Oxford, Berghahn Books. Also see

Mehrotra, R., S. Duvivedi, et al. (1995). *Bombay: The cities within*. Bombay, India Book House.

²³ Bhabha, H. (1990). *Narrating the Nation*. London, Routledge. Pg. 1-7

²⁴ Bhabha, H. (1994). *The Location of Culture*. London, Routledge.

²⁵ Lefebvre, H. (2003). *The Production of Space*. Oxford, Blackwell.

²⁶ Deleuze, G. and F. Guattari (1994). *Rizoma*. Mexico City, Ediciones Coyoacan.

phenomenon; all concur that 'ambivalence' point out the impossibility to create ideological instruments to impose total order and control in society to achieve an utopian perfection. In the Mexican context the critic and politician Jesus Silva Herzog defines this condition as "The stupidity of Perfection".²⁷

The Indian architect Rahul Mehrotra has developed previous argument further in the field of built environment. Mehrotra argues that in contemporary time different forms of urbanism coexist in the cities of the global south due to unequal levels of economic development of its societies. He point out that the physical manifestations are evident through the 'static' of formal city in contrast to the 'kinetic' or informal. He defines the static city such as more permanent "two dimensional entity" which depends on architecture for its planning and representation.²⁸ In contrast in his own words" the kinetic city is not perceived through its architecture, but through spaces which hold associative values and support lives".²⁹ Mehrotra argues to put special attention and have a more critical understanding on the 'kinetic' city. Again in Mehrotra words,

"It is not necessary only the city of the poor, as most images and discussions of the informal city might suggest; rather it is a temporal articulation and occupation of space which not only creates richer sensibility of spatial occupation, but also suggest how spatial limits are expanded to include formally unimagined uses in dense urban conditions".³⁰

Mehrotra concludes that the 'static' and 'kinetic' cities go beyond their evident physical dichotomy to a much complex intrinsic relationship which includes other socio-political, economical and environmental factors than their physical expression would suggest.

The City of Paradoxes: AbundanCity vs. ScarCity

For the aim of this thesis, the ambivalent model of the aforementioned phenomenon of a Mexican city, or indeed of any city around the world with similar characteristics of 'contradictory truths' will be referred as "*The City of Paradoxes*". This term refers to communities with a high level of contrast and dichotomy. The genesis of such contrast according to Sankia Sassen can take place based on socio-economic differences³¹. Secondly, it could be religious, political or intellectually based as Octavio Paz argues³². Finally according to Morwenna Griffiths', it could be ethnicity differences or the combination of different aspects such as economical, political and ethnic³³ (Fig. 2.5.) The approach of area of the population developed formally and characterised by privatization of land, high speculation and economical profit is referred to as the *City of Abundance* or *Abundan-City*. In other words it is the area which follows a western approach

²⁷ Silva-Herzog, M. J. (2006). *La idiotez de lo perfecto miradas a la política Mexico City*, FCE.

²⁸ Mehrotra, R. (2009). Foreword. *Rethinking the Informal City: Critical Perspectives from Latin America*. P. K. a. L. K. A. Felipe Hernandez. New York- Oxford, Berghahn Books. Pg.xii

²⁹ Ibid.Pg.xii

³⁰ Ibid.Pg.xii

³¹ Sassen, S. (1992). *La Ciudad Global*. Madrid, Ministerio de Trabajo de España.

³² Paz, O. (1999). *El laberinto de la soledad ; Postdata ; Vuelta a El laberinto de la soledad*. México, Fondo de Cultura Economica.

³³ Griffiths, M. (1995). *Feminisms and the Self-The web of Identity*. New York, Routledge.

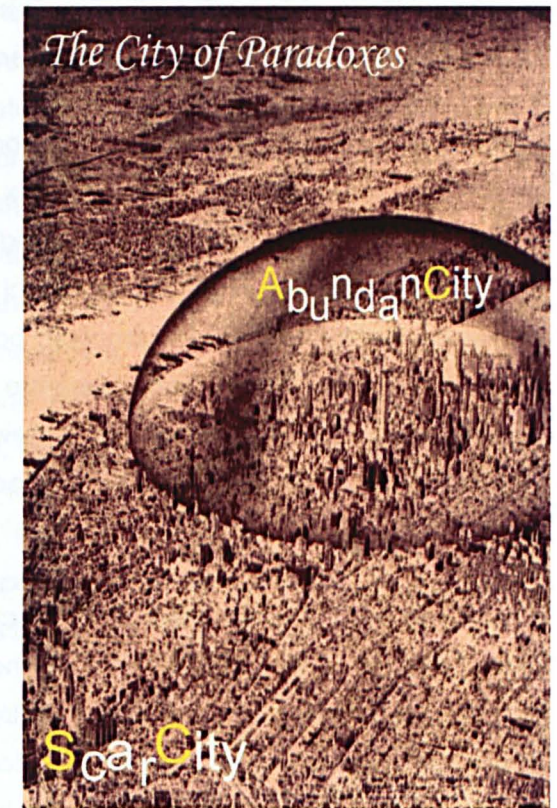


Fig.2.5 Conceptual understanding of The City of Paradoxes.

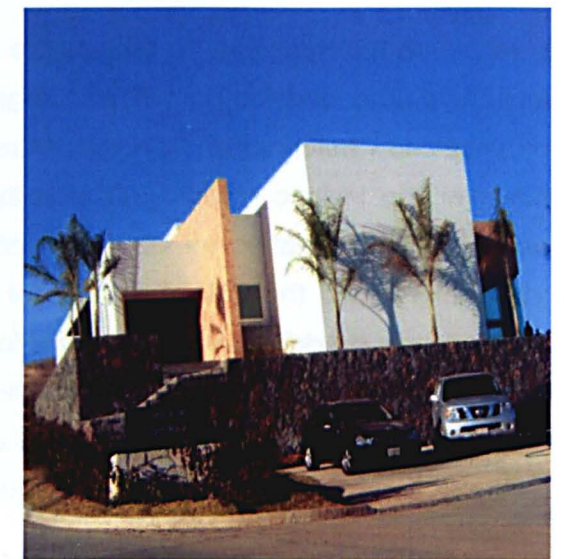


Fig. 2.6 Example of standard housing in the wealthy areas of the population (AbundanCity) in the development of Ciudad Tres Marias, Morelia, Mex.

and it is a model; which is based on the abundance use of resources and the commoditisation of production. Frequently, it is inside these areas where the wealthiest set of the population live (Fig. 2.6.) The opposite approach is termed the *City of Scarcity* or *Scar-City*; it is used to refer to undervalued areas of the population developed informally and characterised by marginalisation such as urban squatters and low-income housing developments. Its society commonly follows a pattern led by a condition of scarcity. It is not possible to generalise but frequently it is inside these areas where the less privileged side of the population (commonly the service sector of the city) live. It is also often includes the native or indigenous communities, who are highly marginalised.

The focus of this study will be to identify and explore how such different societies –the *AbundanCity* and the *ScarCity*– contained inside any Mexican *City of Paradoxes* provide evidence of a very different ethos when approaching the built environment (Fig. 2.7. & 2.8.) The thesis asks if they have opposite processes of using and consuming resources and by implication if they have a different understanding of the meaning of sustainability (Fig. 2.9.) Consequently the thesis mainly focuses its attention on the features of the design process of the development of *Scar-City* as a theoretical model of the *Architecture of Scarcity* approach. In other words, how the *Condition of Scarcity* can inform and alternative design process if one compare it to the conventional design procedure used in the industrialised west towards sustainability. In Mehrotra's terms, is within the informal city (kinetic city as he define it) where invention with strong constrain of vernacular resources as a survival approach that offers a sustainable strategy.³⁴

Additional Cities of Paradoxes in Latin America

This phenomenon is not only an exclusive feature of the Mexican context. Similar features to the Mexican *Cities of Paradoxes* are found in other Latin American countries. An example is the Venezuelan pavilion of the 10th Venice Biennale of Architecture 2006 which presented "La ciudad de los Otros" (The city of the others) as equivalent projects of marginalised settlements in Latin American countries³⁵. Denardin Urbina Co-commissioner of the exposition argues that "the city of the others does not represent the effort from a single architect but that of thousands of non-practitioners who have built unauthorized cities within the city" responding to the actual socio-economics³⁶. Alfredo Brillembourg director of the Urban Think Tank in Caracas, Venezuela concurs that this situation not only demonstrates an informal settlement condition in many Latin American cities, but also the "proactive resistance of people as users within them". In Brillembourg's terms the battle between 'the state' and the 'anti-state'³⁷. Brillemborug and his partner H. Klumpner have been concerned to analyse carefully the processes of 'anti-state' areas of Venezuela in order to offer fresh alternatives which initiate a change.

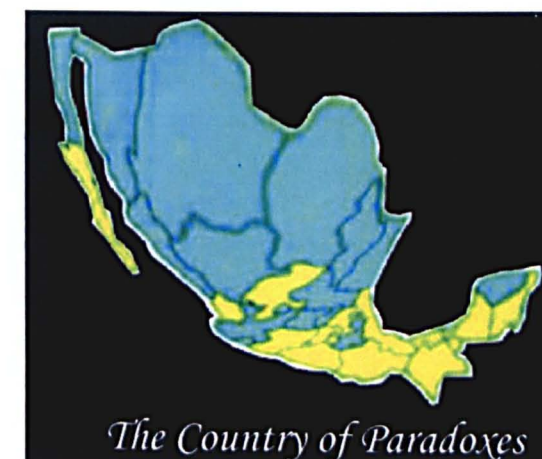


Fig. 2.7 Visual expression of Mexican map bigger resources spending per person in the northern part of Mexico (blue zone). It also evidences stronger influence of USA model of consumption based on abundance use of resources. Interesting relationship between the political division and this map exist.

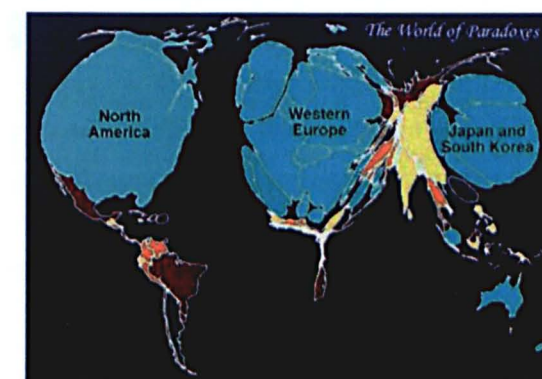


Fig. 2.8 World map of bigger resources spending per person in developed countries (blue zone). Source: Adapted from, Geography Departments maps of the University of Sheffield.

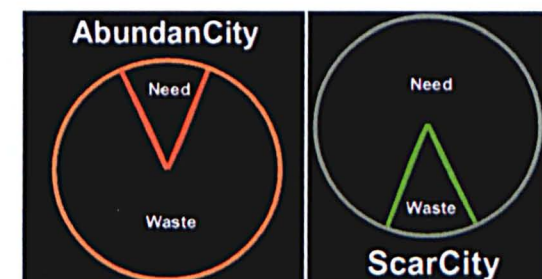


Fig. 2.9 Conceptual representation of the theoretical comparative of use of resources between the two extreme approaches.

³⁴ Mehrotra, R. (2009). Foreword. *Rethinking the Informal City: Critical Perspectives from Latin America*. P. K. a. L. K. A. Felipe Hernandez. New York- Oxford, Berghahn Books. Pg. xiii

³⁵ Denardin, U. (November 2006). *The city of the Others: Venezuelan pavilion brochure in the 10th International Architecture Biennale Venezia, Italy.*, 10th International Architecture Biennale

³⁶ Urbina Denardin, *The city of the Others, Venezuelan pavilion brochure in the 10th International Architecture Biennale, November 2006, Venezia, Italy.*

³⁷ Brillembourg, A. (2004). "The new slum urbanism." *Architectural Design* 74(2): 77-81.

The Brazilian writer Zuenir Carlos Ventura explains similar situation in Brazil in his book *Cidade Partida* (Brooken City). Ventura points out the composition of the main Brazilian cities such as Sao Paulo and Rio de Janeiro in terms of combination between segregated areas (favelas) and luxurious developments (i.e. the favela of Vidal next to the Sheraton Hotel)(Fig. 2.10.)³⁸ The *favelas* are the equivalent of a shanty town, which are generally found on the edge of the city. They have electricity, but often not formally legislated and not planed in the normal Western sense³⁹. *Favelas* are constructed from a variety of materials, ranging from bricks to garbage. Many *favelas* are very close and very cramped. They are plagued by sewage, crime and hygiene problems. Although the most infamous ones are located in Rio de Janeiro, there are *favelas* in almost every large Brazilian city. In Rio one in every four persons lives in a *favela*⁴⁰. As a general rule, Brazilian city authorities do not recognize the existence of *favelas* as a legal entity⁴¹. Ana Paula Baltazar and Silke Kapp founders of MOM (Morar du OTRAS Maneras) argue to learn from this phenomenon in their study *Learning from Favelas* in order to have more critical set of interventions.⁴² Already some interventins through the Favela-Barrio programmes leaded by local architects such as Jose Mario Jauregui, Jorge Fiori or Zeca Brandao have made interesting contributions.⁴³

Additional groups in other Latin American countries are getting involve to unveil the specific socio-political, economical and environmental conditions of their own marginalised areas such as: 'campamentos' in Chile, 'invasiones' in Ecuador, 'barrios' in Cuba and 'ghettos' in the Caribbean just to mention some others examples. Even so the variety of circumstances in their own countries majority concur that a new set of tools, methods of analysis and intervention are necessary in order to address the challenges facing the informal areas in mass urbanised cities of Latin America. In other words they claim a new role for the architect to intervene. Precedent studies in Latin America and also in other regions of the global south such as India where this debate is already very advanced are relevant to inform the theoretical basis and methods to analyse and recognise the value of ScarCity in the Mexican context.

The conditions of Scar-City: marginalised urban areas in Mexico.

Coming back to the Mexican case, the immense scale of Mexico City's housing poverty and the highly complex dynamic processes preclude definitions of slums comparable to the English word. Instead, the most common term for marginalised urban areas is *colonias populares* (commoners settlements/lower class neighbourhoods). Other small communal buildings integrated within the *colonias populares* or the inner city is also known such as *vecindades* (Inner-city rental slums)⁴⁴. Additional areas marginalised in different way are the new low income housing developments on the edges of the cities⁴⁵. It is important to mention that in rural areas 'native' or 'indigenous' communities are also highly



Fig. 2.10. Contrasting view of Favelas and luxury development in Sao Paulo.Brazil. Source : www.lavondyss.net



Figs. 2.11 **Above:** View of one street at Colonia Popular of El Durazno, Morelia, Mex. A footpath and electricity have been recently introduced. Additional services are planned to be introduced in the following 3 years.

Bottom: View of one housing in the same Colonia. In similar conditions to the whole settlement this housing is evolving little by little to fit all the requirements of the six member's family. Actually, all members live in the ground floor. The electricity supply mast in the right side is ready for connection in the short coming days.

³⁸ Ventura, Z. C. (1994). *Cidade Partida*. Sao Paulo, Companhia das Letras.

³⁹ Oliveira, N. d. S. (1996). "Favelas and Gettos: Race and Class in Rio de Janeiro and New York City." *Latin American Perspectives* 23(No. 4): 71-89.

⁴⁰ Foek, A. (Jul/Aug 2005). "Rio de Janeiro: Microcosm of the future. ." *65*(4): 31-34.

⁴¹ Neuwirth, R. (2004). *Shadow Cities: A Billion Squatters, A New Urban World*, Routledge.

⁴² Baltazar, A. P. and S. Kapp (2006). "Learning from Favelas: the poetics of users' autonomous production of space and non-ethics of architectural interventions."

⁴³ Fiori, J 2001 Why Favela Barrio? in Fiori and H. Hlsley (eds) *Transforming Cities: Design in the Favelas of Rio de Janeiro*. London: AA Publications, 8-12

⁴⁴ Connolly, P. (2003). "The case of Mexico City, Mexico." UN-Habitat (2003) *Global Report on Human Settlements 2003, The Challenge of Slums Part IV: 'Summary of City Case Studies'*, Earthscan, London: pp195-228.

⁴⁵ Boils, M. G. (Dec 2006). *Segregacion y modelo habitacional en grandes conjuntos de vivienda en Mexico*. Seminario Pobreza, Exclusion Social IIS/Facultad de Arquitectura UNAM, Mexico City, UNAM.

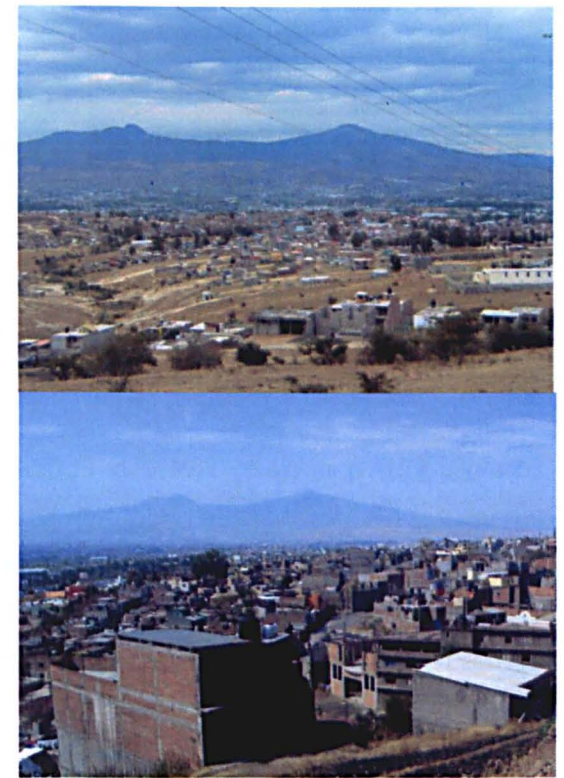
marginalised. In this study all these marginalised areas are integrated inside a broad definition of *Scar-City* which is going to be the main source of analysis, data and exploration of this dissertation.

Colonias Populares.

The most critical housing conditions are in the newer unconsolidated irregular settlements, or *colonias populares*, resulting from unauthorized land development and construction, with poor urban infrastructure, often in high-risk areas and with dubious property titles (Figs. 2.11.) Most settlements have been improved to varying degrees as property is regularized, infrastructure and services put in and houses better built (Figs. 2.12). Yet, the *colonias populares* never become completely formalised. Legalized properties become irregular again through inheritance, dilapidation or fiscal problems. In Mexico City irregular settlements constitute roughly half of the urbanized area and house more than 60 per cent of the population. In the inner city the *vecindades* comprise houses abandoned by the wealthy and converted into tenements for the poor, providing the model for purpose-built cheap rental housing. After the 1940s, the model of production of rented *vecindades* continued in the peripheral irregular settlements; but here, unlike in the inner city, the landlords are often slum dwellers themselves. About 10 per cent of all housing in Mexico City is in *vecindades*⁴⁶.

Mexico City is one of the best examples of urban segregation in the whole country according to Priscilla Connolly professor at the UAM Atzacapozalco. Historically, it was caused by topography and colonial land use, with the flood-prone areas to the east of the city being occupied by the lower classes. "Initially, highly crowded one- or two-roomed rented tenements, called *vecindades*, provided housing for the poor. With intensive industrialization and concurrent urbanization after 1940, peripherally located *colonias populares* – irregular settlements comprised of self-built and mainly owner occupied dwellings – emerged as the leading lower-middle and low-income housing option"⁴⁷.

The first attempt to explain this phenomenon was suggested by John Turner in the 1960's. Turner pointed out that the first *colonias populares* were formed by rural migrants who came flooding daily into the cities mainly Mexico City looking for a 'dream' job due the boom of industrialisation⁴⁸. After that, as other researchers such as Coulomb and Sanchez pointed out at their study of the peripheral neighbourhoods of Mexico City, for 3 decades the growing inhabitants were 41% new migrants who continued with the same tradition of informal process⁴⁹. At the broadest level, the latest research has noted that the occupants of informal housing are still economically challenged. Their condition of scarcity is evident due a low level of 2.5-3.5 times the minimum wages⁵⁰. This shows that owner's wages are insufficient to attain housing in the formal housing market, and so they are driven to informal production⁵¹. It can also



Figs. 2.12 Above: Panoramic view of Colonia Popular of El Durazno in process of consolidation. Bottom : Panoramic view of more consolidated Colonia Popular of Faldas Del Punhuato, Morelia, Mex.

⁴⁶ Connolly, P. (2003). "The case of Mexico City, Mexico, ." UN-Habitat (2003) Global Report on Human Settlements 2003, The Challenge of Slums Part IV: 'Summary of City Case Studies', Earthscan, London: pp195-228.

⁴⁷ Ibid. Pg. 14)

⁴⁸ Turner, J. (1968). "Housing Priorities, Settlements Patterns and Urban Development in Modernising Countries." Journal of the American Institute of Planners(34): 354-353.

⁴⁹ Coulomb B, R. a. C. S. M. (1991). Todos Propietarios? Vivienda de Alquiler y Sectores Populares en la Ciudad de Mexico. Mexico DF, CENVI.

⁵⁰ Walker, A. (2001). The social context of built form: the case of informal housing production in Mexico City. Department Planning Unit. London, University College London. PhD.

⁵¹ Ward, P. (1982). Self-Help Housing A Critique. Oxford, Alexandrine Press.

, Connolly, P. (1990). Housing and the State in Mexico. in: Housing Policies in Developing Countries. G. Shildo. London and New York, Routledge.

, Schteingart, M., Boltvinik et al. (1997). Condiciones de Vida y Salud en la Ciudad de Mexico. Mexico DF, Colegio de Mexico.

be explained in terms of government failure to provide social housing for the working force⁵². However, this fact does not represent a complete explanation of this phenomenon. Even if limited wages were their main motivation five decades ago, there are now other socio-economical and cultural issues of the web that encourage informal production of the built environment. In other words, it can be said that this different process of design and construction has proved to be a more practical way to satisfy shelter needs and to be more appropriate to their cultural traditions of self management and building.⁵³ The main difficulty today is that the cultural perception of this process is still related to the 'poorness' of the working class. It is probably the 'status' etiquette the main cause for neglecting it as part of the 'official' process of construction.

More recently a study by Professor Echart Ribbeck and Sergio Padilla of "*Spontaneous Building in Mexico City 2002*" defines this phenomenon as *Informal Modernism*. Ribbeck and Padilla argue that the massive phenomenon of self-build housing shows that even in megacities the vernacular tradition of building is experiencing a major renaissance rather than dying out, albeit under completely different circumstances to the traditional or rural context⁵⁴. This study will use this term *Informal Modernism* to reflect common usage in academic research in Mexico. *Architecture of Scarcity* will try to develop additional application of its lessons, and its potential opportunities. Deeper explanations of such lessons are to be found at the Part 2 titled: *Past, Present and Future implications of the Issues of Scarcity*. The importance of such studies are based on the fact that *Informal Modernism* represents today the biggest stock of the whole urban fabric, reaching until 55% of the housing stock, without any intervention of architects in some of the biggest cities such as Mexico City, Guadalajara, Monterrey or medium cities like Puebla, Toluca, Leon or Morelia.⁵⁵ It thus represents a wide fertile ground for *Alternative Architectural Praxis*⁵⁶ or intervention opportunity in developing countries such as Mexico.

Low Income Housing

In addition, other important areas which are marginalised in a different way are the massive new *low income housing*⁵⁷ developments located on cheap land on the edges of the cities (Fig. 2.13.) Its segregation exists due the special position of a vast majority of the population who can only afford a mortgage for this specific housing supported by the government⁵⁸. Although it is not probably the best designed housing according to their needs, it is the only option. As a consequence, immediately after occupation, dwellers will start their own interventions in order to modify and adapt it

⁵² Burgess, R. (1982). *Self-Help Housing Advocacy: A Curious Form of Radicalism. A Critique of the work of John FC. Turner. Self Help Housing a Critique*. W. PM. Oxford, Alejandrine Press.

⁵³ See Connolly, P. (1990). *Housing and the State in Mexico*. in: *Housing Policies in Developing Countries*. G. Shildo. London and New York, Routledge.

⁵⁴ Ribbeck, E. and S. Padilla (2002). *Informal Modernism Spontaneous Building in Mexico City*, Heidelberg.

⁵⁵ Ibid.

⁵⁶ *Alternative Architectural Praxis* is the web blog of research project being run by the School of Architecture. Till, J. and T. Schneider. (2008). *Alternative Architectural Praxis*, The University of Sheffield.

⁵⁷ The term "Low income housing" in Mexico is commonly used to identify buildings developed by the private sector but subsidised by the government to address the housing demand of the population with low income wages. The "Low income housing" or housing for social interest is commonly limited to a specific amount which is commonly very low and covers just the most basic amenities. The term is further explained by Meli, R at all. *Características estructurales de la Vivienda de Interés Social en México*, Revista Cuadernos de Investigación No. 17, Julio, 1994.

⁵⁸ Boils, M. G. (Dec 2006). *Segregación y modelo habitacional en grandes conjuntos de vivienda en Mexico*. Seminario Pobreza, Exclusion Social IIS/Facultad de Arquitectura UNAM, Mexico City, UNAM.

according to more specific requirements. This phenomenon could be termed *Semi-Informal Modernism* as an extension of *Informal Modernism*. It identifies buildings partially developed by an 'official structure', commonly provided by the Mexican governmental low-income housing programmes such as INFONAVIT and SOFOLES, and then developed by the 'unofficial' self-build or self-management tradition. It can be said that it is a hybrid building produced under a combination of 'formal' or official support and 'informal' or vernacular tradition while such combinations are not deliberately planned, they occur in these specific contexts which are different from the traditional or rural. The Semi-Informal developments reach approximate 18% the total housing stock in some cities like Mexico City, Guadalajara, Monterrey or Puebla⁵⁹. Finally, it is important to mention that in rural areas "native" or "indigenous" communities are also highly marginalised. These areas are referred such as the *Traditional Vernacular* which is estimated that can represent the 8% of the housing stock (Figs. 2.14.)⁶⁰ If one summarise the total housing stock produced by *Informal Modernism* (55%), *Semi-Informal Modernism* (18%) and *Traditional Vernacular* (8%) in some of the biggest cities in Mexico, it is possible to conclude that between 78-82% of them were developed fully or partially by a self-build intervention.

As a final point it is important to emphasize that the specific conditions of the aforementioned scenario –The tension between *AbundanCity* vs. *ScarCity*- identifies some of the driving forces, and define different priorities and divergences, of the Mexican context towards sustainability. In the field of architecture, diverse Interpretations of such contingent forces are materialised every day by the actors involved in different sides of the building process. Such divergences are creating a strong tension for adoption and understanding of sustainability within the *City of Paradoxes*. According to Aalvar Aalto architecture is a key technical tool in shaping the building environment⁶¹. In other words architecture is the best example of physical and spatial materialization and by implication a key factor of social definition including topics such as sustainability⁶².

The problem: Sustainability within the City of Paradoxes

It is within this context of *the Cities of Paradoxes* of any Mexican city, or probably any city around the world with similar characteristics of large levels of contrast or dichotomy, where the meaning of sustainability could be especially ambiguous according to the diverging priorities of two different worlds.

In the Mexico of abundance –*AbundanCity*- imported from the West and based on a strong emphasis on economic growth, material wealth and technology, sustainability could be seen as a debate for facing the challenges of energy supply and climate change leading architecture to 'evolve' into a new 'environmentally friendly stage' responding to "a new path of progress which allows us to satisfy the necessities and aspirations of the present without jeopardizing the

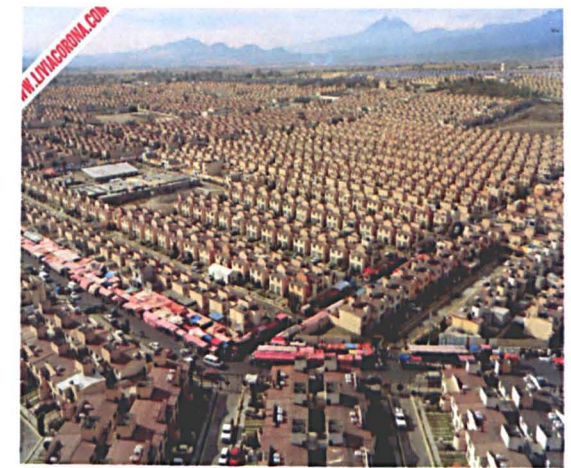


Fig. 2.13 Panoramic View of massive low income housing development at the edges of Mexico City. Source: WWW.LVIACORONA.COM



Figs. 2.14 Traditional vernacular housing of the indigenous Village of San Antonio, Michoacán, Mexico. This village is inhabited by the Pre-Columbian descendants of Tarascos. They were the third biggest empire in Mexico after Aztecs and Mayas.

⁵⁹ Meli, R. a. a. (1994.). Características estructurales de la Vivienda de Interés Social en México. Revista Cuadernos de Investigación.

⁶⁰ Source: INEGY, derived from 2005 census data

⁶¹ Spens, M., Ed. (1994). The Vipurii Library. London, Academy Editions.

⁶² Paz, O. (1999). El laberinto de la soledad ; Postdata ; Vuelta a El laberinto de la soledad. México, Fondo de Cultura Económica.

capacity of future generations to satisfy their own necessities"⁶³. On the other hand, through the Mexico of scarcity - ScarCity- with its 'chaos' and 'mysticism', sustainability could be seen as a fact of justice and dignity addressing human rights, being the path for survival of people only having the most basic amenities⁶⁴. According to Professor Óscar Aguilar Juárez, Chair of the Environmental Quality Centre in Guadalajara Mexico, in these conditions sustainability is a difficult task. For example, he points out that it is impossible to ask *Don Pancho* –a typical inhabitant of the rural community of Patzcuaro Mex.- to modify his present ways of managing the earth and start making better use of natural resources when he is living in survival circumstances. Aguilar also argues that to ask *Don Altano* –a typical inhabitant of the rural community of Tanhuato Mex.- to apply sustainable practice of agriculture when his present practice is based on recycling and limited use of resources and a life style that is already highly sustainable (if one compares him to an average use of resources of western person is somewhat paradoxical)⁶⁵ (Figs 2.15-2.16.)

Maturity is needed to understand the background of this phenomenon. Possibly some conciliation and unification of these two worlds is necessary for developing the principles of sustainability. Or maybe it is in accepting and understanding the divergences, contradictions, priorities and cultural diversity of them that an alternative model of sustainability can exist. Paz' main claim in his book "Posdata" suggest that the success of the contemporary Mexico's history depends on the solution of the tension between the polarization of both Mexicos ⁶⁶.

Additional drivers of change of the context

In order to conclude figuring out the conditions of this context, it is first necessary to understand additional forces defining such a built environment. A key issue has been a high-rapid urbanization process as a result of migration from rural areas. In 1940, the industrialization period in Mexico began and, at the same time, the population increased uncontrollably, causing a major impact in the urban context. In 1950 the country had 25 million inhabitants; by 1970 the population had doubled⁶⁷. Finally by double again the year 2000, the population had to around 100 million. Today it is over 110 million and it is predicted that the peak of 150 million people will be reached by 2050⁶⁸. In terms of the built environment field, it means another 40 years of increasing demands from the population.

As an example nowadays, Mexico City is already considered the second largest global metropolis after Tokyo with over 20 million people⁶⁹. The other two main cities Guadalajara in the centre and Monterrey in the north reach 10 million together (Fig. 2.15.) It is predicted that almost 80% of the population will live in a city by the year 2010 according to the

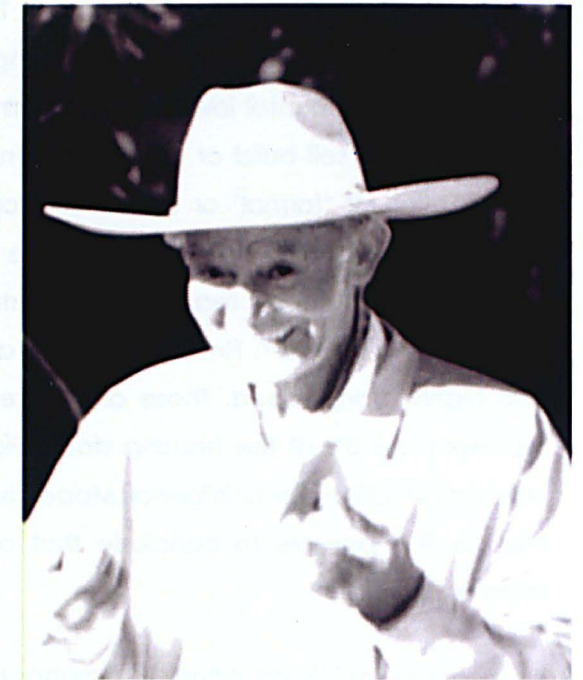


Fig. 2.15 El Altano, one example of involuntary sustainable citizens in rural Mexico due his traditional understanding of earth production. His approach is highly conscious of the cyclical life of the environment. This means that the waste that he produced is limited to the capacity of earth regeneration. Most of his waste is organic. He always says that the "waste" of his caws is the best food for his tomatoes.



Fig. 2.16 Map of Mexico showing the location of Mexico City, Monterrey in the North, Guadalajara and Morelia in the Centre. Map adapted by the Author

⁶³ Definition of Sustainability from World commissions on Environment and Development, Our Common Future, commonly Known as the Brundtland Report (WCED, Oxford: Oxford University press, 1987), p. 32.

⁶⁴ Marcuse, P. (1998). Sustainability is not enough. Environment and Urbanization, Division of Urban Planning, School of Architecture and Planning, Avery Hall, Columbia University,

⁶⁵ (Ojeda 2002)

⁶⁶ Paz, O. (1970). Posdata. Mexico, Siglo XXI

⁶⁷ Delgado, J. L. C. (2001). Reflexiones sobre el problema de la vivienda en México, Laberinto: 10.

⁶⁸ SEGOB (2008). Informe de Mexico: El cambio demografico, el envejecimiento y la migracion internacional en Mexico. Santo Domingo, Secretaria de Gobernacion: 16.

⁶⁹ 10th Biennale of Venetia 2006 and Philips, G., Ed. (2006). Times Atlas of The World, Oxford University press.

National Population Centre statistics. For the same year it is expected that in 80% of the cities there will be more than 100,000 inhabitants, eleven of them will have more than one million people⁷⁰.

This situation has led to the current massive housing and infrastructure demand. Accelerated growth also promotes the occupation of unsuitable land with unexpected consequences. For example, buildings developed on unsuitable areas could increase the landslide risk. Furthermore, the management of cities cannot provide the necessary infrastructure fast enough. A small part of these needs are filled by credits from governmental programmes for low income housing. These housing are developed by private sector that are just focused on quantity rather than quality. In addition the main concern is that not all the population can afford such programmes due their very low income. In order to qualify for the governmental programmes it is necessary to receive at least 3.5 times the minimum wage. This means another considerable part of the population, which lives on less than 3 times the minimum wage commonly won't meet the criteria. As a consequence they will fill such need by vernacular traditions of self management and self build. The percentage of Mexican population in this position already reaches 43%⁷¹. As a result some of the main cities in Mexico are suffering an explosion of fast urban fabric production through this 'informal' way.

As seen in the northern cities, especially Monterrey the best part of 40 hectares per day of new land are added to urban development⁷². Monterrey is expected to double its actual urban area by the year 2020, but one third of the urban area is not properly urbanized, demanding huge investment in infrastructure⁷³. Opening new land for urbanization signifies a loss of green areas covered by paving with asphalt or concrete, leading to loss of carbon storage and sequestration capacity. Furthermore, it means infiltration areas and aquifers are not recharged at the same rates. Sixty nine out of the most populated 113 cities will face water scarcity with already 40 of the main urban areas are over exploiting their aquifers⁷⁴.

Water scarcity is not the only concern that will be apparent in the decades to come. Due to current new urban development being situated at the boundaries of the cities, it usually promotes intensive car use. This is one of the main sources of increasing CO2 emissions and environmental degradation in Mexico, which are the main cause of climate change⁷⁵. Furthermore, there is an increase in CO2 production based on oil burning without any natural reserves. The Mexican chemist Nobel laureate Mario Molina argues that the Mexican government is not investing enough in alternative sources. Molina points out that the atmosphere could be seriously damaged before we finish all of the world's oil reserves or other raw materials such as natural gas or coal used by present life styles consumption⁷⁶.

⁷⁰ Gomes, P. (2004). Ten Trends in Mexican Housing. Panamerica Real State Investors: 16.

⁷¹ Source: INEGY, derived from 2005 census data

⁷² (SEDESOL 2001)

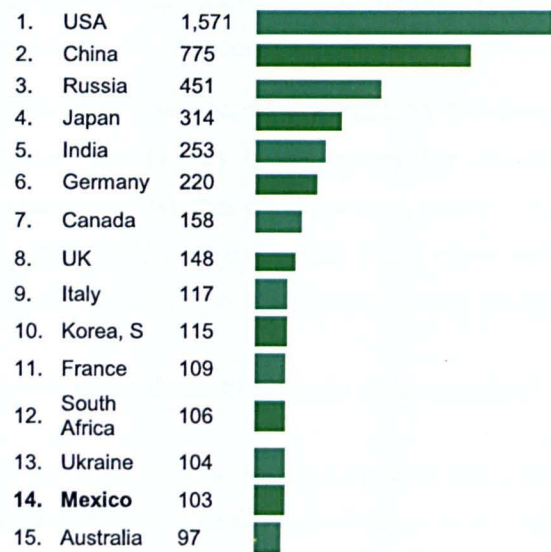
⁷³ Delgado, J. L. C. (2001). Reflexiones sobre el problema de la vivienda en México, Laberinto: 10.

⁷⁴ (CONAPO 2002)

⁷⁵ (World Watch Institute 2001) Smith, P. F. a. A. P. (1997). Building for the third millennium, London: Batsford.

⁷⁶ Molina, M. (May 2008). Mexican Integral Energy Reform, Mexico City, La Jornada.

In the last International Energy Report Mexico was placed fourteenth in an international page table CO2 total emissions and twentieth per capita ⁷⁷ (Fig. 2.17.) Mexico already contributes 2% of the world's total emissions. It has been estimated that if Mexico's development continues at the present rate, in 2050-2080 Mexico could be placed the between fourth or fifth in CO2 total per capita emissions following USA, China, India and Brazil.⁷⁸



As a result of the previously explained tension, when considering western sustainability in Mexico, the first step should be understand the limits offered by the conditions of scarcity for its straightforward application. The issues which comprise of the sustainable architectural practice debates in the West are focused primary on embodied energy issues and indoor artificial climate are so far down the list of main priorities of the global south.⁷⁹ It is argued that although technological innovation and knowledge are needed to achieve solutions from the Mexican perspective, working towards sustainability has to address social and economic issues at the same time. The main challenge for an applicable model of sustainability and the built environment in Mexico might be first to understand the

present limits for the adoption of foreign concepts. Indeed, maybe such limits are new opportunities for an alternative model of sustainability. Perhaps, understanding of "the Cities of Paradoxes" and specifically ScarCity, will allow to understand alternative ways to develop both technically and socio-economically which are viable for the Mexican context. According to an anonymous proverb written on the wall of the streets in the Italian island of Sardenia "progress can be founded exploring the unknown rather than only improving the existent".⁸⁰ In terms of Rahul Mehrotra "to reframe the debate about the informal it is necessary to sustain this innovative form of urbanism and its seamless integration into the discussion of contemporary urbanism".⁸¹

Fig. 2.17 Total Emissions Definition: Includes carbon dioxide emissions from the consumption of petroleum, natural gas, and coal, and the flaring of natural gas. Units thousand metric tonnes of CO2. Source: Natiomaster http://www.nationmaster.com/graph-T/env_co2_emi

⁷⁷ CO2 Emissions. U.S. Energy Information Administration, International Energy Annual, 2002, and International Energy Outlook, 2001 Natiomaster. http://www.nationmaster.com/graph-T/env_co2_emi accessed august 2008

⁷⁸ (International Energy Annual 2002)

⁷⁹ DoH (2000). Conference Report on African Solutions: Towards Sustainable Urban Development, Pretoria.

⁸⁰ From a field trip to Sardenia, Italy.

⁸¹ Mehrotra, R. (2009). Foreword. Rethinking the Informal City: Critical Perspectives from Latin America. P. K. a. L. K. A. Felipe Hernandez. New York- Oxford, Berghahn Books.

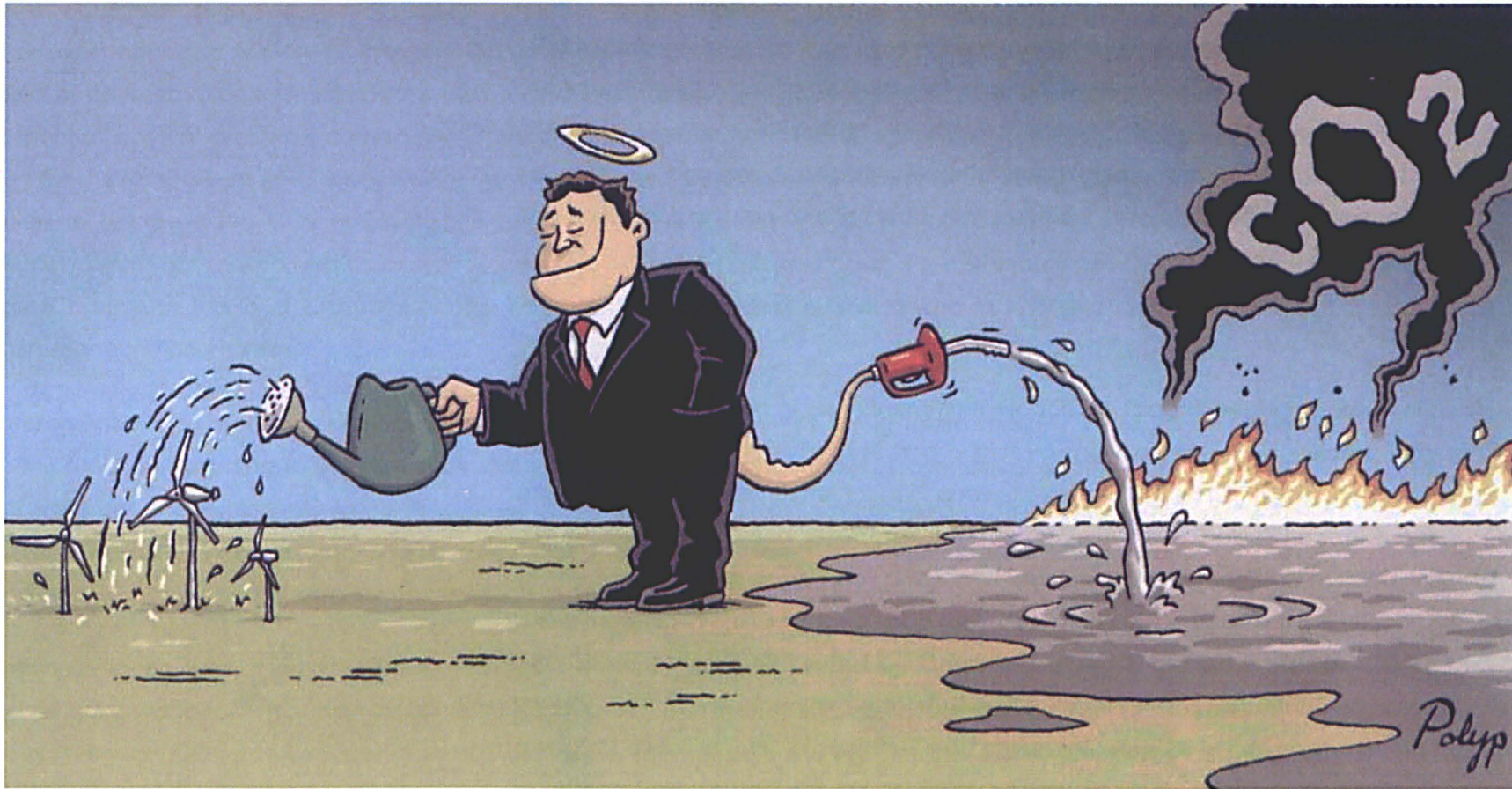
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Chapter 3

Scarcity and Sustainability



"Sustainability is not enough."

Peter Marcuse

"Modernity is an exclusively Western concept that has no equivalent in other civilizations."

Octavio Paz

Chapter 3

Scarcity and Sustainability

The previous chapter explained 'what' the conditions are and 'where' the tension is identified if one attempts to apply the principles of western sustainability indiscriminately inside the peculiar features of the Mexican *Cities of Paradoxes*. The different priorities of the population under the conditions of scarcity, *ScarCity*, were compared to the wealthier, *AbundanCity*, whose priorities are more sympathetic to the western values system and by implication to sustainability. This following chapter will return to explain further the 'whys' of the obsession to adopt the principles of western sustainability (*Globalphilia*) in this part of the population. Moreover, it will explore the limits towards western sustainability in the field of architecture in the Mexican context. At the same time this chapter will discuss that it is not possible to adopt the principles of western sustainability, if one attempts to apply them indistinctly to these two different societies. In specific, it will explain the different ethos of resources use in each of them. Finally, it explores whether an understanding of the limits of buildings developed under the condition of scarcity could offer a new opportunity for an alternative model.

Looking outside but ignoring the backyard

Concerns about the main challenges in Mexico and the impact of *Globalization* mentioned in previous chapters, has recently led to some new governmental policies to look for solutions by taking part in the *Sustainability* agenda. An example of this is *The Plan Nacional de Desarrollo 2007-2012*. This is a key Mexican Plan for future growth and it includes two main sections for the basis of future *Mexican Sustainable Development*. These are: tier one entitled *Sustainable Human Development* and tier four entitled *Environmental Sustainability*¹. As a consequence, supplementary governmental programmes take this Plan for granted as a basis to develop additional policies in different fields including the *Secretary of Built Environment* and the *Secretary of the Environment and Natural Resources* (SEMARNAT). A few examples in this field are the brand new *Sustainable Cities Initiative* (SCI), the *National Group GBC Mexico* (*Mexico Green Building Council*) and *The Hipoteca Verde* (*Green Mortgage*). *The Sustainable Cities Initiative (SCI)* was supported by the *Secretary of the Environment and Natural Resources* (SEMARNAT) Mexico and by the *Industry of Canada*; it is constituted of representatives of industry, government, academic institutions, financial institutions and some others. This group is looking to promote collaboration between Canadian and Mexican representatives interested in sustainable issues related to energy, management, water management, tourism, strategic urban planning, economic development, transport and housing². *The National Group GBC Mexico* was a recently created organization formed by members of the construction industry chamber. It is an official member of the *World Green Building Council* and is an affiliated member of the international initiative for a *Sustainable Built Environment*³. The *Green Mortgage* is a

¹ Presidencia De La Republica Gobierno De Los Estados Unidos Mexicanos, *Plan Nacional De Desarrollo 2007-2012* (Poder Ejecutivo Federal; Mexico City, 2007) pgs. 23-24 also see 232-39.

² Partnership for Sustainable Development, 'Sustainable Cities Initiative', (Government of Canada (Industry Canada) and Government of Mexico (SEMARNAT Secretary of Environment and Natural Resources), 2006).

³ De Schiller Silva, Vg D S, Gojberg, Norman and Trevino, Cesar, *Edificacion Sustentable: Consideraciones Para La Calificacion Del Habitat* (ASADES, 2003).

new policy introduced by the government in 2007 to apply for additional governmental credit through INFONAVIT. It has the aim to promote the introduction of 'green' housing devices such as solar heating, solar photovoltaic panels and low energy consumption lamps and furniture⁴.

Three other examples of wider general sustainable policies include the introduction of a national programme entitled *Programa Institucional de Compras Verdes (Institutional Programme for Green Supplies)*, the Mexican proposal for the creation of an *World Green Fund* and the *Mexico-USA Planes Estatales de Cambio Climatico en la Zona Fronteriza (Mexico and USA Plan of Climate Change at the Border Zone)*. The *Programa Institucional de Compras Verdes* is a new law which obligates all governmental secretaries to buy 'green' supplies, such as wood furniture and paper, from a certified well managed factory or through recycling⁵. The *World Green Fund* is a new initiative that promotes the creation of an International Organization which can support developing countries to adopt Sustainable Policies and assist them in case of problems caused by Climate Change⁶. The *Mexico and USA Plan of Climate Change at the Border Zone* promotes bilateral cooperation to create a "homogeneous environmental norm" between the two countries to decrease the CO₂ emissions in this area⁷. The introduction of some of these sustainable policies and additional actions has ranked Mexico as one of the world's leading nations in adopting sustainable policies for tackling Climate Change. In the 2008 Climate Change Performance Index Mexico was ranked in 4th world place just after Sweden, Germany and Iceland⁸.

The aforementioned scenario evidences that the issues of sustainability are being taken seriously. However, in some cases this situation is leading to use and overexploitation of the term sustainability irrationally. This term is becoming to refer to different economic, environmental and social issues indistinctively. In other words sustainability is becoming to be used uncritically. What exactly should sustainability mean according to the unique/complex features of the Mexican context and how it should be understood to solve the main issues, is still waiting to be addressed.

For example, in the field of architecture -which is the main object of this study-, it is not clear yet how sustainability should be adopted to face the main local challenges. The key issue is that Mexican policies, including the ones related to the built environment, have accepted the principles of western sustainability as the final 'truth', uncritically adopting it as a subset of *Sustainable Development*, a term introduced by western researchers based on the Brundtland report published in 1987⁹. In this sense *Sustainability* or *Sustentabilidad* (the Spanish translation) in Mexico is understood as "meeting the needs of the present without compromising the ability of future generations to meet their own needs"¹⁰.

⁴ Francisco Rosas, 'Llegan Las Hipotecas Verdes', El Universal.com.mx, Viernes 13 de Abril 2007, sec. Finanzas p. pg 35.

⁵ Veronica Garcia De Leon, 'México Quiere Proveedores Ecológicos', CnnExpansion.com, (2008).

⁶ Cecilia Tellez, 'Mexico Propone Fondo Mundial Contra Cambio Climatico', La Cronica de hoy, Sabado 17 de Mayo 2008.

⁷ Semarnap, 'Propone Mexico a E.U. Planes Estatales De Cambio Climatico Para La Zona Fronteriza Entre Ambas Naciones', Comunicado de prensa Num 159/08 (Hollywood California: SEMARNAP, 2008).

⁸ Cristoph Bals Jan Burck, Marisa Beck and Elisabeth Ruthlein 'Climate Change Performance Index 2008', in German Wath (ed.), (Bonn: German Federal Ministry for Economic Cooperation and Development, December 2007), pgs. 4,6,16 and 17.

⁹ At the World-wide Commission of the United Nations on Environment and Development, in Rio de Janeiro, Brazil, in 1992.

¹⁰ Gro Harlem Brundtland, 'Our Common Future, Report of the World Commission on Environmental Development', (World Commission on Environment and Development, 1987). This was a definition of "sustainable development", but has been widely adopted as a definition of sustainability.

Overall Results Climate Change

CCPI Rank	Country	Score*	Partial Score		
			Trend	Level	Policy
1	Sweden	65.6	█	█	█
2	Germany	64.5	█	█	█
3	Iceland	62.6	█	█	█
4	Mexico	62.5	█	█	█
5	India	62.4	█	█	█
6	Hungary	61.0	█	█	█
7	United Kingdom	59.2	█	█	█
8	Brazil	59.0	█	█	█
9	Switzerland	59.0	█	█	█
10	Argentina	58.5	█	█	█
11	Latvia	58.1	█	█	█
12	Belgium	57.9	█	█	█
13	Portugal	57.9	█	█	█
14	Malta	57.8	█	█	█
15	Indonesia	57.6	█	█	█
16	Norway	57.6	█	█	█
17	Denmark	57.3	█	█	█
18	France	56.8	█	█	█
19	Slovak Republic	56.5	█	█	█

Fig. 3.1 Overall Results of the top countries taking action to minimise the impact of Climate Change. It can be seen that Mexico is ranked 4th place in the past Climate Change Performance Index. Source: Germanwatch 2007

The main concern is that uncritical adoption of such policies is leading Mexican approaches of sustainability to respond to global and western concerns –mainly influenced by USA- at the expense of addressing the particular issues of the local context. As an example energy supply security¹¹ is treated as one of the key issues rather than responding to main local challenges such as inequality of the society, high housing demand and infrastructure, rapid change, etc. just to mention examples. An additional concern is that application of sustainability policies has usually been introduced only from the top to the bottom, issuing from the government to the population without considering different priorities and ignoring existing local conditions. Consequently, this scenario presents various limits and problems. Before exploring in depth the limits for adopting the principles of western sustainability, it is first necessary to understand further the reasons for looking outside (Globalphilia).

The genesis for looking outside: Globalphilia

The condition of looking outside but the ignoring one's backyard, or in other words *Globalphilia*, was noted recently by Loic Wacquant. The French sociologist and anthropologist, in his first visit to Mexico in 2006, stressed the impact of this phenomenon on politics. Wacquant argued that Mexican politicians are imitating politicians of developed countries:

"The Mexican politicians... imitate Blair, Clinton, Jospin or Bush, both of left side and of right hand. They resort to his political strategies, making use of the opinion polls, of marketing, appealing the experts, to the campaigns of means"¹²

Wacquant's comments in regard to politicians are equally applicable to architects. In fact in Mexico these two fields are strongly linked one to other. In the words of the Mexican writer Octavio Paz "Architecture is the strongest evidence of materialisation political models"¹³. The clearest indicative of this phenomenon is noted by the Mexican architect Ricardo Legorreta, who argues that Mexican architects are all too willing to solve problems under the same circumstances as developed countries. In the words of Legorreta,

"In Mexico we are willing to have the same roads, infrastructure and monuments of developed countries, even when we do not have the same economical resources, culture and life style; however the 'elite' of architects are obsessed in following such a path under the slogan of Globalization. Remember, the west architects that we all admire and respect are doing almost 'monuments', our priorities are different. In Mexico we have entire basis to develop our job properly, all the possibilities and still a lot of challenges to address"¹⁴.

However, it may be argued that by imitating European or American colleagues, Mexican architects are losing a connection with the local conditions and challenges. The main motivations and influences that permeate the west are

¹¹ For further arguments about this example see Kristin Bricker, 'The Battle for Pemex: A Mexican Oil Worker Explains Energy Reform', *The Narcosphere*, 4 th November 2006.

¹² Loic Wacquant, 'Loic Wacquant En Mexico', *La Jornada*, 2006 p. 35.

¹³ Octavio Paz, *El Laberinto De La Soledad* ; Postdata ; *Vuelta a El Laberinto De La Soledad* (México: Fondo de Cultura Economica, 1999). Pg 345

¹⁴ Ricardo Legorreta, 'Conferencia De Ricardo Legorreta a Los Estudiantes De Arquitectura', (Monterrey Mexico: Revista de Humanidades del ITESM 1988).

so far from the realities of the socio-economical and geographical reality of the majority of the Mexican population, especially the capacity of those under the conditions of Scar-City. As a consequence, the architectural sphere is evolving more and more in its own world, especially within wealthiest areas of the population, *AbundanCity*. Paz also argues that architecture could be the main physical evidence of political misunderstanding in response to local conditions¹⁵.

This situation is not an exclusive characteristic of contemporary Mexico. The British journalist Richard Gott, who has written extensively on Latin America, points out that is not a new behaviour; instead it is a common tradition. According to Gott, after independence Mexican's settler elites were obsessed with all things European. "They travelled to Europe in search of political models ignoring their own country and excluding the majority"¹⁶. Today this is not a different story, but specific conditions of contemporary Mexican life present some limits to the uncritical adoption foreign concepts such as western sustainability.

This study focuses on understanding how sustainability could be adopted in the field of architecture according to the unique features of the Mexican context. In other words it focuses in theorising that may raise form a study of local conditions.

Sustainability following the tradition of Globalphilia

As we have seen architects, urbanists, and construction companies with strong relations to the West are following the established tradition of uncritically adopting foreign concepts (Globalphilia). Recently, in a sustainable era, it is not the exemption. As a result, attempts to adopt principles of western sustainability model are becoming to be interpreted by Mexican architects as part of the new proposals. They are promoting 'sustainable buildings' as part of their new marketing slogan. One clear example is the case of the Canada-Mexico Partnership for "sustainable housing development" taking place in the northern city of Matamoros. In some cases this approach is suggesting the use of double or triple glazing, more efficient air-conditioning systems and computer controlled energy management¹⁷. It has similar expectations and parameters as an environmentally friendly building in Canada or other Western countries with their emphasis on energy efficiency according to the norms and standards developed for different climatic conditions, technology and economic sources¹⁸. However it may be argued that often these technical proposals are too complex and difficult to adopt in Mexico, where a simple solution would be more appropriate¹⁹.

The key issue is that under this perspective 'sustainable buildings' became adopting just technical solutions in the name of *Modernidad (spanish world of Modernity)*²⁰, but missing the holistic value system of sustainability. Commonly

¹⁵ Paz, *El Laberinto De La Soledad ; Postdata ; Vuelta a El Laberinto De La Soledad*. Pg 345

¹⁶ Richard Gott, 'Latin America as a White Settler Society', Third annual SLAS lecture (University of Essex: SLAS Newsletter Issue No. 84, 2006). Pg. 3

¹⁷ Government of Canada, 'Canada-Mexico Partnership', (Vancouver, British Columbia: Office of the Prime Minister, 2005).

¹⁸ *Ibid.*

¹⁹ Wolfgang Lauber, *Tropical Architecture Sustainable and Human Buildings in Africa, Latin America and South-East Asia* (Munich Prestel., 2005).

²⁰ Spanish translation of Modernity



Fig. 3.2 Traditional housing literally considered as obstacle to the new road. As a result of the new levels of the paving street which does not acknowledge natural topographic level, it was almost covered. It is located in the vernacular town of Jesus Del Monte already a suburban area of Morelia Mex, next to the brand new development Bosques de Altozano.



Fig. 3.3 Front: last remains of an adobe dwelling in Jesus Del Monte. Background: a new stylish housing development, part of Bosques de Altozano development.

approaches based in this approach misunderstand local conditions in terms of construction techniques, skills and materials. In addition other issues related to local socio-economic and environmental conditions are led to an adoption of 'universal' solutions which have been developed in other contexts.

For example the use of unfamiliar processes asking for highly qualified personnel, sophisticated forms and expensive materials, often manufactured and designed abroad for different climatological conditions, is promoted as a signal of progress²¹. Also architects are more frequently specifying technological devices that before were never necessary, for heating and cooling²². However these approaches are condemned to end as a hybrid. Often, foreign techniques and materials are mixed with local skills, interpretations and uses. The closest distinction of this phenomenon is pointed out by Felipe Hernandez who argues that hybridity "appear adequate to examine the nature and dynamics of the current situation of Latin American Architecture"²³. As it can be noticed Hernandez's main argument is about cultural hybridisation. Nevertheless hybridisation in techniques and material is a direct materialisation of cultural hybridity.

The main concern is that traditional methods from the Mexican vernacular aspects developed through the centuries in the context of heat, difficult topography, strong solar radiation, heavy rainfall, high levels of humidity, use of local materials and spaces that do not required mechanical cooling or heating systems, are today undervalued. Also other non-physical issues such as self-determination and organisation are being abandoned. Such traditional approaches are regarded as obstacles on the road to progress and are replaced by house types and living patterns that fit with western notions of needs but which sometimes are *adverse* to the wishes and values of part of the local culture²⁴ (Fig. 3.2 & 3.3.) In addition from the energy consumption viewpoint, buildings reflecting western values are heavy consumers, using up to six times more material for its construction and up to six times more energy consumption for its performance than traditional local ones²⁵ (Fig. 3.4).

Besides adoption of western building forms and construction methods, other socio cultural and economic aspects in terms of organizations such as family, religion, education, transport, art, economy, clothing and objects of daily use are suffering profound changes²⁶. In this sense, contemporary Mexican architectural practice is undervaluing the building tradition accumulated and evolved over the centuries of vernacular buildings and the neo-vernacular tactics which have a strong relationship to a specific place²⁷.

Furthermore, this scenario is exacerbated by the unique processes of cultural interaction between migrants coming back to Mexico mainly from North America²⁸. Mexican migrants with high economic power are commonly the first



Fig. 3.4 Brand new lofts apartments at Bosques de Altozano, Morelia, Mex. Some of the new features include cooling and heating systems, gym, swimming pool on the roof just to mention a few of them. Plans for developing over 20 more similar towers in this area are under planning permission progress.

²¹ Lauber Wolfgang, *Tropical Architecture Sustainable and Human Buildings in Africa, Latin America and South-East Asia* (Munich: Prestel, 2005).Pg. ??

²² Ibid.

²³ Felipe Hernandez, 'On the Notion of Architectural Hybridisation in Latin America', *The Journal of Architecture*, 7/1 (Spring 2002), 77-86.

²⁴ Oliver Paul, *Dwellings: The Vernacular House World Wide* (London: Phaidon Press, 2003), Wolfgang, *Tropical Architecture Sustainable and Human Buildings in Africa, Latin America and South-East Asia*.

²⁵ (Noriega 2003)

²⁶ Echart Ribbeck and Sergio Padilla, *Informal Modernism Spontaneous Building in Mexico City* (Heidelberg, 2002).

²⁷ Ibid.

²⁸ Jorge Durand, 'Mexico Pais De Emigrantes', *La Jornada*, 17 de Agosto 2008.

clients for adopting *American* life styles and housing. For example in the Mexican city of Morelia, which has a strong tradition of emigration, the Bazan family after 20 years of economic success in USA decided to develop a holiday house at their previous Mexican address. They completely knocked down their entire earlier house, which was developed under traditional conditions of self- construction. The aim was to create the space to develop a new 'American style' house. It was based on a similar layout and style of their housing in Virginia, California, where they live. Special emphasis was allocated to provide space for the Hummer pick-up H2 used as part of their new life style²⁹ (Fig. 3.5.) However, in practice only the front gates followed the 'American' specifications and standards. Other aspects of the construction process were mixed with local techniques and materials. Their 'American Housing Dream' was camouflaged behind a couple of *Californian Gates*. This is a one typical story not exclusive of Morelia, but similar stories can be found across the whole country.



Fig. 3.5 One of the new pick ups in front of the Bazan's house. A pseudo-Californian house

According to François Bourguignon, vice-president of the World Bank, Mexico was the country that had more migrants goes abroad in the last five years, even more than China, Pakistan and India. Between 2000 and 2005, two million Mexicans left the country looking for better opportunities³⁰ . For example, one million or 20% of the population in the state of Michoacán are migrants and another 20% have migrant relatives³¹. The state of Michoacán in the year 2006 received 1,685 millions of American dollars through *Remesas* (economic revenue send by migrants). This amount is comparable with annual budget that the state receives from the Federal Government³².

In summary, it may be seen that architectural production has strayed from its local circumstances, making it difficult to focus on the main challenges facing mass urbanised centres of Mexico at the beginning of the 21st century.

Sustainability is not enough³³: the limits of ScarCity

It has been pointed out how between unequal societies such as *ScarCity* and *AbundanCity*, it is unlikely to make priorities converge in the same direction towards sustainability. The main concern is that yet many of the concepts of architecture and sustainability have been uncritically and indistinctly taken from a developed context to another. Although adopting foreign models in Mexico has promoted important achievements and developments, ironically it had been often the same uncritical adoption of foreign concepts that is responsible for introducing 'unsustainable' construction in pre-sustainability years³⁴. The emphasis on energy efficiency linked to durability, continuity of excessive use of resources and the creation of speculative material wealth are questionable within the Mexican context.

²⁹ From the field trip to Morelia, Mexico. Family names and address have been changed due to confidentiality requirements.

³⁰ François Bourguignon, 'Indicadores Del Desarrollo Mundial', (Washington: Word Bank, 2007), Roberto Gonzalez-Amador, 'México El Mayor Expulsor De Migrantes Del Planeta Dice El Bm,' La Jornada, 15th april 2007

³¹ (INEGI 2005)

³² Emeterio Guevara Ramos, 'Pobreza, Migracion, Remesas Y Desarrollo Economico', in Eumed.Net (ed.), (Biblioteca virtual de derecho, economia y ciencias sociales, 2008).

³³ This phrase has been taken from Peter Marcuse's paper with the same name. Peter Marcuse, 'Sustainability Is Not Enough. Environment and Urbanization', (Division of Urban Planning, School of Architecture and Planning, Avery Hall, Columbia University,, 1998).

³⁴ Wolfgang, Tropical Architecture Sustainable and Human Buildings in Africa, Latin America and South-East Asia.

Increasingly critics like Peter Marcuse, Voula Mega, Kirtee Shah, Ambrose Adebayo and others who are detailed below, coincide and suggest that sustainability promoted by the west is in some ways a continuity of a high consumption of resources model. At the same time sustainability conflicts and limits the values and priorities held by developing countries³⁵.

Peter Marcuse, professor of Urban Planning at Columbia University, gives one of the clearest explanations of such conflicts and limits in developing countries. Marcuse argues that sustainability could be an 'ambiguous' concept according to the different countries priorities and aspirations. As Marcuse notes,

*"The promotion of sustainability may simply encourage the sustaining of the unjust status quo and how the attempt to suggest that everyone has common interest in sustainable urban development masks very real conflicts of interest"*³⁶.

Marcuse thus argues that sustainability still leaves the same social relations and power structures intact and there are responsible for a mechanical overexploitation of environmental resources. A similar argument is made by Christopher Spehr, who argues that,

*"Sustainability has become the favourite word of a new ecological 'bourgeois' conventionally. It usually refers to a careful management of natural resources, which will not itself undermine the natural prerequisites of the society through overexploitation and ecological damage"*³⁷.

Other critics have argued that Western models require questioning to ensure they reflect the specific requirements of the global south. The president of Habitat International Coalition, Kirtee Shah, and Professor Ambrose Adebayo pointed out that it is doubtful that sustainable human settlement will be possible in developing countries through the western model promoted by the United Nations Development Programme and World Bank³⁸. They argued that many of the present struggles are the result of following models originating from western values and based on consumerist growth and unlimited use of resources. This has increased inequity and caused cultural alienation, loss of cultural wisdom and environmental degradation³⁹. In the words of Bernardo Pedro Ferraz of the Environment Ministry of Mozambique:

³⁵ See Marcuse, 'Sustainability Is Not Enough. Environment and Urbanization', Voula Mega, 'Fragments of an Urban Discourse', *Utopias and Realities of Urban Sustainable Development* (Turin, Barolo, 1996). With more direct relationship to developing countries see Kirtee Shah, Ambrose Adebayo and Bernardo Pedro Ferraz in Doh, 'Conference Report on African Solutions: Towards Sustainable Urban Development', in Department of Housing (ed.), (Pretoria, 2000), Kirtee Shah, 'Global Urban 21 Conference', (Berlin 4-6 July 2000).

³⁶ Marcuse, 'Sustainability Is Not Enough. Environment and Urbanization'. Pg. 10

³⁷ Christoph Spehr, 'A More Effective Industrialism - a Critique of the Ideology of Sustainability', *Tusova: Pilot Issue*, (1999).

³⁸ During the forum of Global Urban 21 Conference in Berlin (4-6 July 2000),

³⁹ Doh, 'Conference Report on African Solutions: Towards Sustainable Urban Development'.

"Frequently we end up in a situation where we lose the initiative for the development of our own countries and where society is organised according to global development theories, rather than to local aspirations, needs and capacities. In other words we are alienated from our own development process"⁴⁰.

In this sense, it is important to notice how the principles of western sustainability are often inconsistent with widely shared values of the global south. In the words of Marcuse, under these conditions "sustainability is not enough"⁴¹. Marcuse makes clear that many undervalued systems which are already classified like "bad programmes by the west are in fact very just" and sustainable or vice versa saying others could be called sustainable but are unjust depending of the promotion and different circumstances⁴².

As one simple example of what Marcuse notes as an unvalued system, it is possible to refer to the village of San Antonio, Michoacán, Mexico (Fig. 3.6.) San Antonio is an indigenous community of *Pre-Columbian* natives called *Purepechas*, located in the central part of Mexico in the state of Michoacán. At San Antonio the use of wood stoves called *Patzary* designed by GIRA (an environmental research group) are considered more appropriate than western gas stoves due to the abundance of trees and vegetation in the region (Fig. 3.7.) Omar Masera chief of GIRA argues that this stove is a locally adapted fuel-efficient design that boasts up to 60% reduction in fuel wood use and 70% reduction in indoor air pollution and the final CO₂ emissions do not present any problem at all for a dense forest of the area⁴³. On the other hand, the use of natural gas represents a high cost due long distance of transportation and dependence upon speculative international market. San Antonio was declared the *Vernacular World Heritage Candidate Site* by ICOMOS in 2006 for "contemporary life improvement contribution to its population through reinterpreting the vernacular traditions"⁴⁴. GIRA, the research group who developed the *Patzary* stove was awarded the *International Ashden Award 2006* in London for its contribution to alternative sustainable energy approach and *Sustainable Agriculture and Rural Development Prize, 2000*⁴⁵. Future plans include the development of *Patzary* stoves for more rural areas in Mexico in other states. It is believed that wood is still used by 25 million people equals to 23-25% of the whole Mexican population⁴⁶. It is planned to develop 300, 000 *Patzary* stoves in other developing countries such as India, Sri Lanka, a scheme which will be supported by UNESCO⁴⁷.

On the other hand, as an example of 'overvalued' community, is the brand new development Bosques De Altozano (Fig. 3.8.) This is a new developed on the edges of the city of Morelia, Mexico. It is promoted as a new 'environmentally friendly' development, applying guidelines of a standard American sustainable community. It



Fig.3.6 Indigenous Village of San Antonio.



Fig 3.7 Patzary wood stove of traditional kitchen in the same village designed by GIRA winner of the "Ashden Award 2006" for alternative sustainable energy approach.



Fig. 3.8 View of the green of the golf course at Bosques de Altozano, Morelia , Mex. Photographs by Roy Yuang

⁴⁰ Ibid. pg. 6

⁴¹ Marcuse, 'Sustainability Is Not Enough. Environment and Urbanization'. Pg.103

⁴² Ibid. pg. 107

⁴³ At All Masera O., 'Impact of Patsari Improved Cookstoves on Indoor Air Quality in Michoacan, Mexico', The Journal of the International Energy Initiative, XI/No.2 (June 2007), 45-56. Also see Victor M. Berrueta Rufus D. Edwards and Omar R. Masera, 'Energy Performance of Wood-Burning Cookstoves in Michoacan, Mexico

', *Renewable Energy*, 33/5 (May 2008), 859-70.

⁴⁴ Armando Corza, 'San Antonio, Patrimonio Mundial De La Cultura Vernacula ', La Voz de Michoacan, 9 de Noviembre 2006, sec. Regional p. 6G and 7G.

⁴⁵ Gira, 'Awards', (2008).

⁴⁶ Omar Masera, 'Sustainable Energy Scenarios in Rural Mexico: An Integrated Evaluation Framework for Cooking Stoves', (University of California, 1990).

⁴⁷ Gira, 'Awards'.

includes a new set of policies which promote use of alternative energy supplies such as solar panels, rationalisation of water and extensive green areas. Moreover, the recycling of waste will be compulsory⁴⁸. The first 'environmentally friendly' building was developed under standards of a western 'sustainable' building. It uses a creative system of local stones walls and also recycles its own water and produces part of its energy (Fig 3.9.) Even so such 'positive achievements, such a development, is still based on the traditional model of master planning settlements within developed countries, which use a huge amount of resources for its development and consumption. The whole new 'environmentally friendly community' was developed on 450 hectares at the edges of the old city with a planned maximum density of 2 dwellings per hectare⁴⁹. As a consequence, all the inhabitants need private transport due the lack of public transport routes, long distances. At the same time the privatising of natural resources such as water and green areas is allowed due to a high investment from estate agents, who have control over the new water supply rather than the municipality. Also additional neighbourhoods around are now dependent on them. Although the word *Autosuficiente* (Self-sufficient) is used as a new slogan to catch the attention of prospective buyers, it is clear that this self-sufficiency comes at a high price⁵⁰.

In short, while *Bosques De Altozano* might be considered an 'environmentally friendly development' due to its large amount of green areas and additional 'sustainable' policies, the adopted western lifestyle is making this settlement spend much more on resources than the standard settlements.

The key issue is that the principles of western model of sustainability are still based on 'sustaining' the status quo in terms of lifestyles and models of consumption. As the Finnish economists Eva Heiskanen and the Mika Pantzar note,

*"Consumption is the reason why anything gets produced, and consumption and production together are the source of all man-made stress on the natural environment"*⁵¹.

They argue that 'sustainable' issues such as the recycling of soda bottles, citizens prepared to pay for 'greener goods', application of household energy conservation measures and solar panels are interesting individual efforts, but are insufficient. These do not provide much basis for drastically reducing the excessive resource consumption of Western lifestyles. Instead these issues are the acceptance of a new set of 'sustainable services'⁵². The main dilemma is that economic values are being assigned to these services for the first time in human history. According to Timothy Luke the commercialisation of such services such as emission credits is the first step to 'ecocommercialisation'. Luke points out that, sustainability addresses,

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⁴⁸ Mary Paz Quinzanos, 'Bosque Altozano', (Morelia, Mex, 2007).

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ Eva Heiskanen and Mika Pantzar, 'Toward Sustainable Consumption: Two Perspectives', *Journal of Consumer Policy*, /20 (1997), 409-42.

⁵² Ibid. (Also see Mika Pantzar, 'The Growth of Product Variety- a Myth?' *Journal of Consumer Studies and Home Economics*, 16/No. 4 (1992), 345-62. And Mika Paintzar, 'Consumption as Work, Play and Art - Representation of Future Scenarios', *Design Issues*, 16:3 (2000).

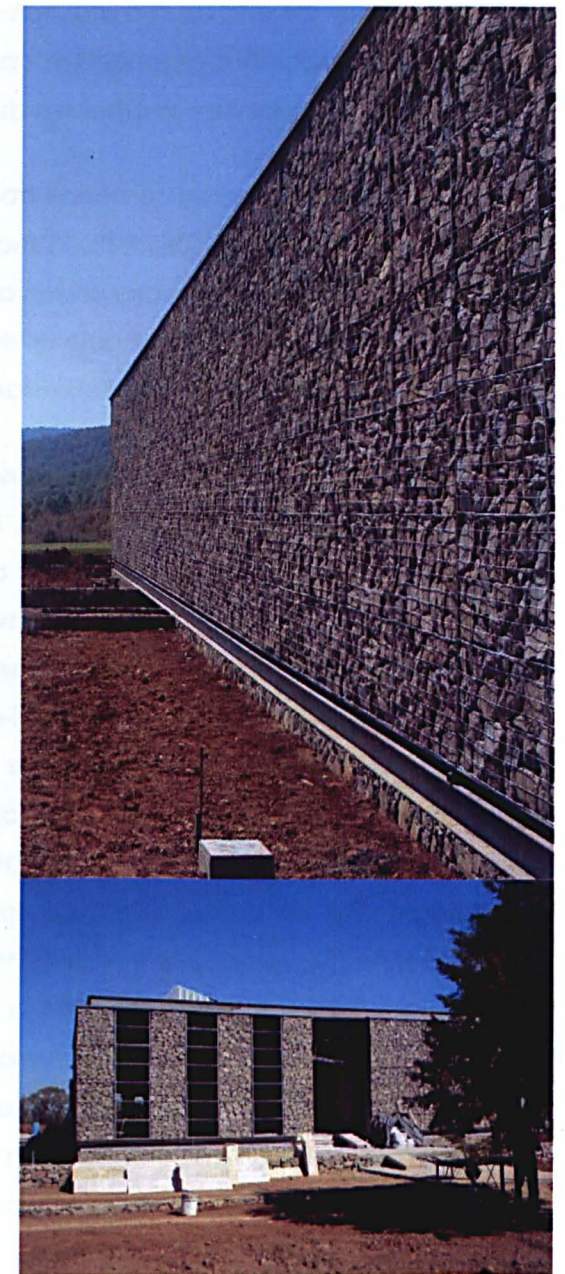


Fig.3.10 Lateral and Front View of the Restaurant's building "Hoyo 19" based in an 'environmentally friendly' standards.

*"Economic solutions to preserve the earth and pump up the profits", but "environmental degradation is not halted; it is instead measured, monitored, and manipulated within certain tolerances". Therefore under these conditions "environmental degradation perversely acquires its own degradation"*⁵³.

Luke's radical redefinition is, "sustainable degradation". Despite undoubted advances through sustainability, "the existing socioeconomics and social ecological inequality of commodity production and consumption remains unaddressed"⁵⁴. In these conditions sustainability could be a complicated concept especially for the global south with a completely different agenda to address. In summary, in the words of the Berlin Institute for Critical Theory forum,

*"To think that their present circumstances and their present societal arrangements might be sustained- that is an unsustainable thought for the majority of the world's people"*⁵⁵.

From a, diverse methodological ideologies, all the aforementioned critics suggest that more critical questions are necessary for adopting the principles of western 'sustainability' model. In the field of architecture which is the main object of this thesis the same critical questions can be applicable if one is considering such principles as the basis for new architectural practice in Mexico. The key point is recognizing that the western concept of sustainability predicated is still on a model based on the idea of protection of abundant resources consumption and production. Under this perspective Voula Mega argues that sustainability may be a "camouflaged trap". Mega notes that,

*"Sustainability is both an honourable goal for carefully defined purposes and camouflaged trap for the well-intentioned unwary"*⁵⁶.

In summary, it is important to understand that western society has its particular values and goals according to its own history which are very different to those of the global south. In order to have a deeper understanding of such difference it is first necessary to explain how the conditions and evolution of West conditions has developed different attitude towards nature and different ethos of use of resources. According to the Mexican writer Octavio Paz, one of the main explanations of such difference is attributed to a dissimilar contemporary understanding of 'time' due to different challenges and all the implications that this involves⁵⁷. The next point of this chapter is to understand such differences and identify its expression on the field of the built environment. This hopefully, will entail understanding the main features of the design and construction process of buildings developed under the condition of scarcity as the prospectus basis for an alternative approach to the western model.

⁵³ Timothy W Luke, 'The System of Sustainable Degradation', *Capitalism Nature Socialism*, 17/1 (March 2006), 99-112. pg 100

⁵⁴ Ibid. (pg 101)

⁵⁵ Doh, 'Conference Report on African Solutions: Towards Sustainable Urban Development'.

⁵⁶ Mega, 'Fragments of an Urban Discourse'. Pg. 66

⁵⁷ Octavio Paz, *The Children of Mire: Modern Poetry from Romanticism to the Avant-Garde* (Cambridge: Harvard University Press, 1974) p 23.

Lineal vs. Cyclical: A different understanding of time, by implication a different attitude towards nature and its resources.

Octavio Paz argues that there are specific features and values of the Western societies that do not have an equivalent substitution. Paz notes that the consequence is that if someone attempts to uncritically adopt foreign concepts in the global south unilaterally, they are condemned to uncertainty and ambiguity. Paz's clearest distinction of this argument specifically refers to the concept of 'Modernity'. Paz argues that "Modernity is an exclusively Western concept that has no equivalent in other civilizations"⁵⁸.

Paz's explanation to this statement is attributed to the difference of contemporary perception and consideration of time and all its implications. Whilst in old Mexican civilizations time was based on a static concept or 'cyclical' models, in Western countries according to its particular history it was replaced by a "lineal, irreversible and progressive model" that considered "every age as unique and unrepeatable and as an advance of achievements of preceding periods"⁵⁹. In the words of the Belgian architectural critic Hilde Heynen 'cyclical' approach is typical of non-modern condition,

"The timeless time of primitive civilization, for whom the past was the archetype of time and the model for the present and the future – or a cyclical one- such as that of classical antiquity by which the distant past represented an ideal that would return at some time in the future"⁶⁰.

The result of the 'cyclical' understanding of time in old Mexican civilizations was expressed through the attitude to nature and its resources in a way of equilibrium. The key issue is that societies under conditions of scarcity were forced to use only the necessary resources for one 'cyclical' period, respecting nature's capacity for its regeneration. By cyclical period means that societies developed a model which was limited to use only necessary resources and limited to waste assimilation. Nature and its resources were seen as condition that transcends human existence. Both were integrated in a totality of interconnected and interdependent elements. In short the word 'limit' was accepted as a common condition and also as starting point for creative solutions with the resources available.

By contrast, as a consequence of the adoption of the 'lineal' model within western society, it is believed that every period of time is an opportunity to improve preceding periods, and the path to reach 'perfection'. Consequently, it is assumed that through this path the possibilities to achieve happiness exist. Nicholas Xenos a political science academic concurs with Paz arguing that this model "appears to be a distinctive cultural construct of the West that appeared in the eighteenth century along with mercantile commerce and that continues to code our present behaviour"⁶¹. As a result of this behaviour, the attitude towards nature and its resources use are seen as a function of human effort and are perceived as a source for providing human services in consumer society. In other words within this model exists an emulative desire for 'needs' and 'hyperconsumption' which does not accept limitation⁶². Xenos notes that,

⁵⁸ Ibid.

⁵⁹ Ibid.

⁶⁰ Hilde Haynen, *Architecture and Modernity : A Critique* (London: MIT Press, 1999). Pg. 9

⁶¹ Nicholas Xenos, *Scarcity and Modernity* (New York: Routledge, 1989) 122. Pg 7

⁶² Ibid.

*"Material wealth confers happiness ... because this illusion has the useful by product stimulation the production of wealth"*⁶³.

The key issue is that 'lineal' understanding is expressed through a model based on high consumption and by implication it requires excessive use of natural resources. In the words of Russell W. Belk this model expresses the general belief of western societies,

*"Given sufficient resources, any of us can now have our most regal material wishes fulfilled. The belief that such unbridled access to things should lead to unbridled happiness is the central premise of a consumer society"*⁶⁴.

It is important to mention that, human beings have modified the natural environment for at least 2 million years. M. G K Menon, President of the International Council of Scientific Unions argues that "during the major part of this period human influence on the natural environment has been of local scale and of small magnitude" keeping equilibrium between both nature and humans. The difference in the last century is the fact that the western model has proved to be capable of modifying the natural environment at a global scale⁶⁵. This means that the premise condition of equilibrium has been replaced by one of 'lineal' imbalance, with nature now seen as a condition to be exploited. The power accumulated during the last century of the modern industrialised era and its massive capacity to affect and manipulate the environment has caused a growing concern among many critics of the principles on which 'modernity's based, such as technological and scientific development⁶⁶. As a result critics of the western model of lineal 'modernity' have pointed out that the main concern is its 'utilitarianism' understanding of nature and its resources.

In the field of built environment the assumption of an excessive use of resources for the design, construction of a 'perfect' building design as part of an utopian society were acceptable inside a specific context where such values were developed according to explicit circumstances, but they are questionable for facing the main challenges of contemporary life such as climate change and the prediction of limited resources in the future for all the global community.⁶⁷ In the words of the environmentalist Jane Lubchenco "all of our basic resources, such as land, water, energy, and biota, are inherently limited"⁶⁸. In the near future the high consumption of resources of actual developed nations will not be longer possible. The actual environmental problems emphasize the urgent need for restriction⁶⁹. It is important to point out that it could be an opportunity to begin the preparation for a more limited future or in other

⁶³ Ibid. Pg 8

⁶⁴ Russell W. Belk, *Collecting in a Consumer Society* (Routledge, 1995) pg.1.

⁶⁵ M.G. K. Menon, 'Opening Adress', (1993). Pg 60

⁶⁶ H. Jonas, 'Technology as a Subject of Ethics', *Social Research*, 49:4 (Winter 1982), 893-94.

⁶⁷ See Habraken, N. J., Ed. (2005). *Palladio's Children Essays on Everyday Environment and the Architect*. New York, Taylor and Francis.

⁶⁸ J. Lubchenco, 'Entering the Century of the Environment : A New Social Contract for Science', *Science*, 1279 (1998), 491-97.

⁶⁹ J.E. Cohen, *How Many People Can the Earth Support?* (New York: Rockefeller University, 1995). Also see G Hardin, *Living Withing Limits: Ecology, Economics and Population Taboos* (New York: University Press, 1993).

words a future of scarcity. In the words of David Pimentel, "humans should voluntarily limit their numbers, rather than letting natural forces control their numbers for them"⁷⁰.

Lineal vs. Cyclical = Abundance vs. Scarcity

Reflexive Modernity recognises *Modernity* as the main cause of contemporary struggles⁷¹. Subsequently, sustainability could be considered as a part of the proposals to tackle undesirable situations caused by *Modernity*. However the two concepts are still sharing common 'lineal' foundations. It means that sustainability is trying to come up with solutions that incorporate ideas that are part of the same problem. It may be argued adopting Paz's argument again to the term of sustainability that it is also an "exclusively Western concept that has no direct equivalent in other civilizations"⁷².

In different words of Annie Leonard an expert in sustainability and environmental health issues, she argues that can not be possible to operate a 'lineal' model within a finite planet indefinitely. She argues that a model that is designed to waste natural and human resources is unacceptable, instead a model with a 'closed loop' or cyclical is necessary⁷³.

Against the universal values of the 'lineal' modernity, and the way that these have informed-received versions of sustainability, this thesis looks at 'cyclical' model developed by the conditions of scarcity as a way of formulating an alternative model. It is necessary to understand that contradictions between –scarcity, poverty, underdevelopment or political deprivation- and –abundance, wealth or opulence- stand in a 'casual' relationship with environmental degradation⁷⁴. The misunderstanding of such difference has been expressed as tension through different times.

In the field of built environment, Juan Pedro Posadi curator of the Venezuelan pavilion at the 10th Venezia Biennale exposition called *La Ciudad de los Otros* (the city of the others) argued that at present it is necessary to create a new set of values for architectural practice in developing countries instead of only adopting foreign ones. To do so Posadi calls first to understand the nature of Latin American cities:

"Our cities are born from different society, we cannot imitate them, ours (the third word) is different, it has different roots and other fates, your recipes, which are the recipes, of entertainment, are useless to us, let us mendour errors our way, and the consequences of your outrage. Do not judge us without understanding us, in the future; we may even be able to teach you something"⁷⁵.

⁷⁰ At All Pimentel, 'Will Limits of the Earth's Resources Control Human Numbers', Cornell University, (25th February 1999), p. 1.

⁷¹ Ullrich Schawarz, 'Que Es Hoy "Moderno"? La Arquitectura De Una Sociedad Radicalmente Modernizada', *Anales del Instituto de Investigaciones Esteticas*, otono XXVI, Num 085 (2004), 75-83.

⁷² Paz, *The Children of Mire: Modern Poetry from Romanticism to the Avant-Garde*

⁷³ Annie Leonard, *The Story of Stuff, Economies for life*, /Fall (2002).

⁷⁴ P Raskin, 'Sustentabilidad Y Equidad', *El Centro para Nuestro Futuro Comun*, (September 1993).

⁷⁵ Juan Pedro Posadi, *La Ciudad De Los Otros: Venezuelan Pavilion at the 10th Mostra Internazionale Di Architettura*, (Venezia, Italy, 2007).

A similar argument is made by Edward Cullinan in regard to the global south, he notes, for architects the key issue is "learning from their simplicity... it's the first time that developed nations need something from the developing ones!" Learning the benefits of living within pressing limits, shatters the romance a little"⁷⁶.

Looking for alternative sustainable principles: The Issues of Scarcity

In summary, the key point is to understand that the principles of western sustainability model based on high use of resources for consumption are not fully applicable to all parts of the population of the global south, especially those areas under conditions of scarcity in Mexico. The focus of sustainability is often on the technical aspects of the building as object missing additional important issues of the process. However under conditions of scarcity such technically determined solution may be either irrelevant or inappropriate. Instead this particular context calls for some kind of resolution that can recognize the main local features. The key point lies on understanding the challenge of limits. This means understanding the characteristics of design and construction process under conditions such as rapid change, chaotic organization, and limited to local use of resources as some examples. As a consequence, in the definition of the sustainable principles of the *Architecture of Scarcity* methodological approach, local environmental, social, economical and technical circumstances should be undertaken in a way that is relevant to the unique Mexican context involved as an alternative to western concepts. For instance features in this thesis entitled *Issues of Scarcity* such as cultural divergences, hybridism, different priorities, taboos, multicultural diversity, etc. will be recognised as part of the alternative model⁷⁷. The main concern in a 'sustainable era' is that if values and goals are not the same as 'developed' societies, these societies can be still viewed as primitive and underdeveloped.

This thesis proposes challenging this statement, where from the Mexican perspective an 'alternative' way of addressing sustainability issues might be possible. In this sense the implementation of the sustainable principles of *Architecture of Scarcity* could be 'radically' different. Even when in principle it could be viewed the 'antithesis' of the western sustainable model, it can still fit under a more globally recognised ethical framework. According to Paul Durbin,

*"In principle, there may be a general framework for ethical sustainability, but in practice there are only local democratic attempts to bring about some approximation of it"*⁷⁸

The writer Cesar Cuello Nieto of the *Fundacion Neotropica of Costa Rica* also suggests understanding sustainability as a holistic framework rather than systematic rules that should be compulsory followed⁷⁹. Cuello's sustainable framework is defined as,

⁷⁶Robin Nicholson, 'The Challenge of Climate Change', (Luncheon, House of Lords). Pg. 52

⁷⁷ If in meantime one is able to understand such complex tension between unequal societies and by implication capable to negotiate their different priorities, it can be said that in the future time it can be also useful example to address global divergences between developed and developing countries towards a common framework for sustainability.

⁷⁸ Paul T Durbin, 'Can There Be a Best Ethic of Sustainability', *Phil & Tech*, 2/2 (Winter 1997 1997), 49-58. Quoted pg 58

⁷⁹ Cesar Cuello, 'Sustainable Development in Theory and Practice: A Costa Rican Case Study', (University of Delaware, 1997b).

"Integrated, holistic conceptions of sustainability capable of incorporating within a single vision all of the social relations, the human-to nature relationships, and the entire axiological and ideological supra-structure that supports such vision"⁸⁰. R: Exit this further definitions and models of sustainability based on cyclical models that could be explored in this chapter to negotiate the questions of the core western conceptualisation.

Cuello Nieto points out that the main challenge to achieve this holistic vision "implies fundamental changes at all levels of social, economic, political and cultural structures; that is, it requires a fundamental restructuring of present day society"⁸¹. In other words, paraphrasing Albert Einstein, "The significant problems we face cannot be solved by the same level of thinking we used when we created them"⁸². In the field of architecture facing some of the main challenges of contemporary life requires looking at the same phenomenon from a different angle.

In this sense, this thesis will adopt Durbin and Cuello's approach looking for local *Issues of Scarcity* to conform a holistic and *ethical Sustainable Strategic Framework* for action. This means that the main challenge will be to identify the local opportunities of the *Mexican Cities of Paradoxes*. Although some features of the western approach such as technological innovation and energy efficiency are needed to achieve this, facing the challenges of the society under the condition of scarcity can only be tackled in a sustainable manner if other socio-economical issues are simultaneously addressed. Nevertheless, before start looking for the *Issues of Scarcity* the next part will be identifying how such principles had been considered to inform the design process through the past, present and future implications. The starting point will be to review the understanding of vernacular within actual structures of Mexican architecture due its importance as one of the best examples of issues of scarcity process.

⁸⁰ Cesar Cuello, 'Towards a Holistic Approach to the Ideal of Sustainability', *Phil & Tech*, 2:2 (Winter 1997a).

⁸¹ Ibid. (pg 57-58)

⁸² Albert Einstein Online www.westegg.com/einstein/ access sep. 2007.

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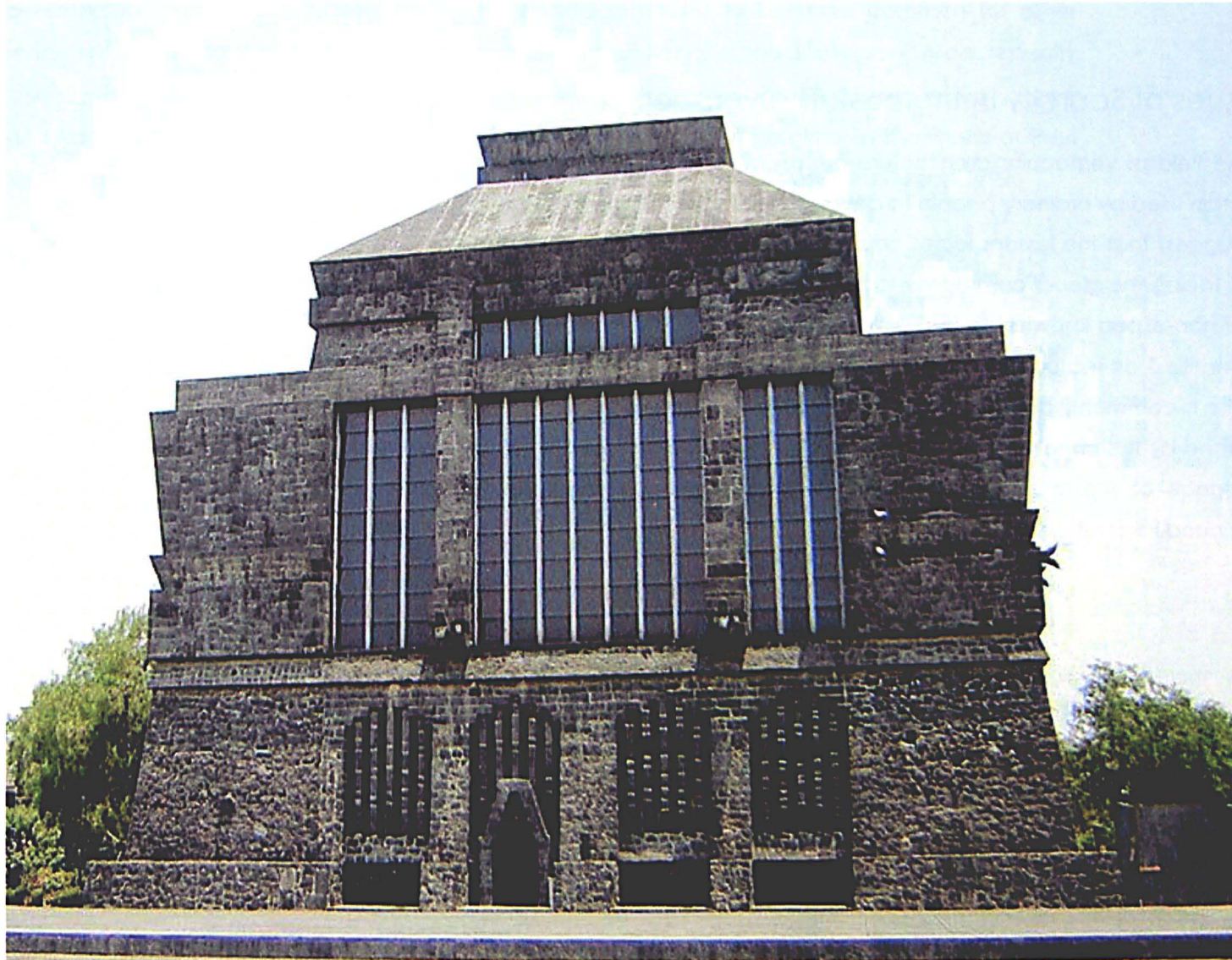
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Part 2

THE ISSUES OF SCARCITY: PAST, PRESENT AND FUTURE IMPLICATIONS

Chapter 4

Importance of the Issues of Scarcity in the past: The vernacular revival



"It is not a matter of using the most available local materials" or using "some simple forms of construction that our ancestors used, for want of anything better" instead "those do not merely utilize the soil but reflect the current conditions of culture in the region"

Lewis Mumford

Part 2

THE ISSUES OF SCARCITY: PAST, PRESENT AND FUTURE IMPLICATIONS

The first two chapters explained the 'what' and 'where' of the issues of scarcity, then the next chapters explained the 'why's of its limits towards sustainability, this following two chapters will explore the 'when' and 'how' of such issues through the past, present and future.

Chapter 4

Importance of the Issues of Scarcity in the past: The vernacular revival

Leading experts mainly in the field of vernacular architecture are recovering their interest in the lessons of the design process and construction used by ordinary people to develop buildings in scarce areas of the population of developing countries. They suggest that the lessons learnt could help to formulate solutions to the environmental crisis and housing challenges facing the global community today¹. Understanding of the main issues of this design process, such as empirical or non-expert knowledge, self-building tradition, intuition, use of local techniques and materials, etc. had been identified as features of the vernacular. However, one of the main reasons of such features is that, the vernacular is commonly developed under the conditions of locally available resources. As a result, if the vernacular is shaped by this condition, 'imperfect' or 'improvised' strategies are the only options. This thesis recognises the importance of the 'imperfect' features of the design process of the vernacular as a consequence of the scarcity condition pattern.

The vernacular

From the end of the 1950's, Bernard Rudofsky was questioning some of the normative values of the design process of western architecture, arguing for more attention to be paid to architecture developed under different conditions in non-western countries. Rudofsky term this approach "Architecture without Architects", to identify buildings developed by empirical knowledge in different limited areas around the world which offered a strong integration to their environment and a depth of response to their culture. In other words, Rodofsky pointed out the valuable lessons of the vernacular in the book of the same name published in 1961, a very influential book at the time². Rudofsky argues that,

*"Vernacular Architecture does not go through fashion cycles. It is nearly immutable, indeed, unimprovable, since it serves its purpose to perfection"*³.

¹ L. Asquith and M. Vellinga, *Vernacular Architecture in the Twenty-First Century*. (London: Taylor and Francis, 2006).

² Bernard Rudofsky, *Architecture without Architects* (New York: Doubleday & Co., 1964).

³ Ibid. Pg. 34

The main argument of Rudofsky was to understand the simplicity, cyclical equilibrium, and strong response to local conditions of vernacular architecture. As a result, the meaning of the vernacular was consolidated, and can now be seen as the starting point for the use of vernacular in a more developed way. Rudofsky also used other terms such as: "anonymous, spontaneous, indigenous or rural", according to his different case studies⁴.

Previous use of the word vernacular is described by Paul Oliver in his book "Shelter and Society". Oliver shows that in 1838 George Gilbert Scott used the term "domestic vernacular home". The term became more popular when J.L. Petit wrote about "simple vernacular constructions". Next the term vernacular, began to be more common for other architects to describe the work that manifested the traditions and characteristics of a specific region⁵. More recently the studies of Paul Oliver and Amos Rapoport have explored more deeply the lessons of the process of vernacular architecture. Oliver and Rapoport concur that interest in such knowledge is still rather marginal. In the words of Paul Oliver, in his lecture about "Vernacular Architecture in the Twenty First Century" at Prince of Wales Institute in 1999,

*"Vernacular Architecture is still associated with the past, backward, underdevelopment and poverty, and there seems to be little interest among planners, architects and politicians in the achievements, experience and skills of the vernacular builders or the environmentally and culturally appropriate qualities of the buildings they produce"*⁶.

In this sense, Paul Oliver argues for more attention to the way in which the lessons of the vernacular might contribute to the creation of the future built environment. Oliver points out the valuable logic of the vernacular design process, explicitly stressing the point that this process may play in the provision of more sustainable settlements and buildings for the future⁷. Additional critics such as Amos Rapoport had pointed out the richness of this process of building developed under limited conditions⁸. Before getting discussing these arguments, which will be deeply explored in the next chapter 5, it is first necessary to have a brief look at how the vernacular has already been understood in the Mexican context. In particular, two examples related to the idea of an architecture specific to Mexico are revisited, Juan O'Gorman's and Luis Barragan's. These examples are often classified in Mexico as different interpretations of the adoption of aspects of vernacular as a source of inspiration for contemporary Mexican architecture. However this chapter will argue that their understanding of the vernacular was limited to features that informed only the tectonics of their proposals. In other words, the vernacular was interpreted as a style rather than as a process.

⁴ Ibid.

⁵ Paul Oliver, *Shelter and Society* (London: Barrie & Rockliff, 1969).

⁶ Paul Oliver, 'Vernacular Architecture in the Twenty-First Century', Hepworth Lecture (London: Price of Wales Institute, 1999).

⁷ Paul Oliver, *Dwellings: The House across the World* (Oxford: Phaidon, 1987).

⁸ Amos Rapoport, *House, Form and Culture* (Englewood Cliffs, NJ: Prentice Hall, 1969).

The use of the vernacular aspects within Contemporary Mexican Architecture 1940-1970

The discussion of 'empirical knowledge'⁹ of vernacular aspects within contemporary architecture in Mexico is not a new issue. Before the revolution of 1910-1920 The "Academia de San Carlos" which was the main school of arts and architecture (1880-1940) was based on similar programmes developed by the Ecole des Beaux Arts in Paris up until 1920's¹⁰. The pre-revolution architectural production was never considered as important as the original models in Europe. For this reason post-revolution architecture after 1920s based on particular geographical, historical and cultural circumstances of Mexico was the answer. This position could be compared with the reinterpretation of Gothic in Europe at the beginning of the 19th century¹¹.

Following the revolution, after the beginning of the 1920's, artists, writers, and intellectual groups were worried about the country's reconstruction and developed the foundations of contemporary Mexico. As a result of this new ideology, based on local conditions, the promotion of 'Mexico Moderno' was supported by the idea of an 'identity', represented in those days by the Pre-Columbian culture¹² (Fig. 4.1). However, at the same time western architectural "Rationalism" was adopted. Some students of architecture at the Academia de San Carlos were learning the new western approach and, in particular, had studied Le Corbusier. Nevertheless, this was mixed with Pre-Columbian and regional concepts¹³. What resulted was "the fusion of the mix of two cultures, the European and the American", according to Juan O Gorman, one of the most radical architects at the time¹⁴. The same fusion was recognized in the west by Paul Valery who notes the successful juxtaposition of Western aesthetics with the Mexican landscape and autochthonous art¹⁵. Since then the hybridism of Mexican architecture has been a common feature (Fig. 4.2).

This adoption of vernacular aspects that engaged with the particular geographical and cultural circumstances, but at the same time accepted western rationalism as part of contemporary architecture, was at first called "Regionalismo Moderno" (Modern Regionalism) in 1940 by Jose Villagran Garcia and Enrique Del Moral¹⁶. The main issue is that although in theory Villagran Garcia and Del Moral established the foundations of *La Nueva Escuela Mexicana* (The New Mexican school) by promoting the adoption of vernacular principles through reflecting particular geographical and cultural circumstances as the basis of Mexico Moderno, it may be argued that vernacular principles in practice were still seen as nostalgic and a historical revival of the past. The example of Mexican architects Luis Barragan and Juan O Gorman show two different interpretations of the idea of adopting

⁹ It is important to point out that in the western eyes Mexican Pre-Columbian could be seen as non-expert knowledge or as B.Rudofsky and other experts called it "Architecture without Architects", but anthropological studies shown that in some scenarios such as Mayan, Tarascan or Aztec architecture the term "Vernacular" could be not applicable. In other words although the figure of the western 'vitruvian architect' as a promoter and developer of "expert knowledge" in the field of architecture does not exist in the Mexican context, it was substituted by other experts in different fields such as astronomers, mathematicians, priests or expert builders which were playing an interesting interdisciplinary practice in similar circumstances to its contemporary "vitruvian architects" in Europe.

¹⁰ Arias, 'Una Nueva Escuela Mexicana', (San Luis Potosi, Mexico: Universidad Autonoma de San Luis Potosi, 2002).

¹¹ Victor Jimenez, 'Arquitecturas Mexicanas', *Mexico desconocido*, 18 (mayo-junio 1997).

¹² Arias, 'Una Nueva Escuela Mexicana'.

¹³ Fernando Gozalez Gortazar, *La Arquitectura Mexicana Del Siglo Xx* (CONACULTA, 1994).

¹⁴ Ibid.

¹⁵ Paul Valery, 'Arquitecturas Mexicanas(Mexican Architecture)', in Victor Jimenez (ed.), *Mexico Desconocido* (Mexico, 1930).

¹⁶ Arias, 'Una Nueva Escuela Mexicana'.

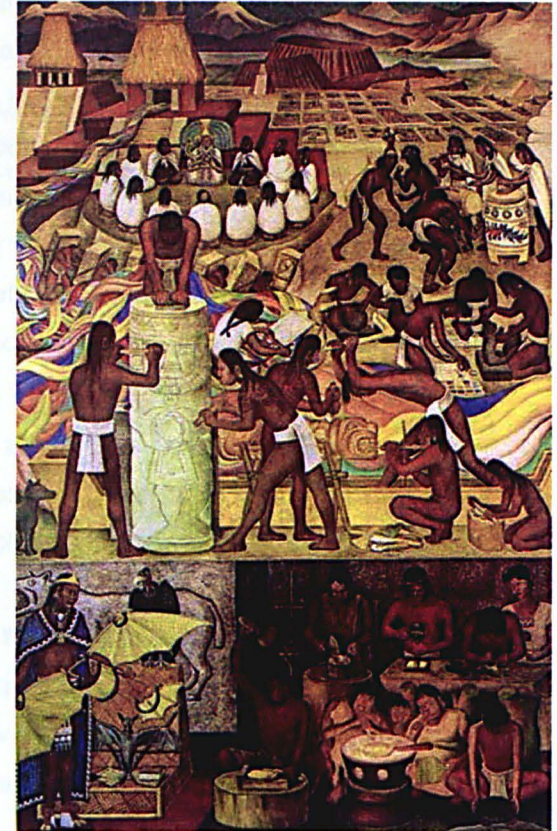


Fig. 4.1 Reinterpretation of Mexican Pre- Columbian culture through painting. By Diego Rivera



Fig. 4.2 Cortes and Malinche by Jose Clemente Orozco 1926. This painting expresses the socio- cultural hybridism since the first days of Spanish invasion. On the left Hernan Cortez the Spanish conqueror protecting on the right to "La Malinche" her indigenous companion. They are considered the first couple getting born to the new Mexican race, the Meztiso.

Source of both images : www.tlaxcala.es/images/artiste

aspects of vernacular in their built proposals according to their own understanding of the past. In the words of the American architectural historian Keith Eggener those are "contrasting images of Mexican identity"¹⁷. Even though both examples were inspired by Mexican vernacular architecture; both at in end concur using the vernacular as a visual source that informed two different 'stylistic' approaches. Maybe part of the reason was their values were still embedded in western architecture. The result is that vernacular principles were seen as folkloric features that informed the aesthetics of architecture, rather than understanding the logic of its design process and construction under conditions of limited resources as a valuable lesson that might have informed a new process of design for Mexican architecture in those days.

The vernacular as a style

The architectural proposals of the Mexican architects Juan O Gorman and Luis Barragan are two of the most well known examples in western world (fig. 4.3 & 4.4). Baragan's approach has been considered for some critics such Kennet Framtom to include local vernacular regional aspects within his proposal¹⁸. In the Mexican context both approaches are assumed in addressing issues of cultural 'identity', and serving local constituency and political interest as part of their approach to contemporary Mexican architecture¹⁹. However, Keith Eggener has questioned the contrasting interpretations of the local issues of both approaches²⁰. In this sense, what are the key vernacular elements that represented cultural regional or national identity? How should they be represented and who decides the answers to these questions?²¹ Did they identify the features of a vernacular process commonly developed under conditions of scarcity or instead some of those features only informed the aesthetics of their proposals? Both architects had contrasting personal perceptions of Mexican identity, since their interest and methodological foundations were based on completely different arguments; in addition their clients' briefs were from opposite backgrounds. It can be said, that according to the terms used in this study, Barragan's work was focused on clients from AbundanCity and O' Gorman's proposals were involved in governmental programmes aimed at filling the growing gaps of ScarCity. It is possible to notice the huge division and polarization between social classes in Mexico since the 1940s represented by the materialization of these two architects' ideologies which was of course, a response to the real situation in those days. Socially concerned architecture represented by Juan O Gorman and privately concern architecture represented by Luis Barragan. Even though they were addressing different constituencies, their use of the vernacular has some level of similarities mainly understanding the vernacular as a style. In present days common understanding does not seems to be very different, traditional analyses have seen such Regionalisms as a historic or romantic revival.



Fig. 4.3 View of the Rectoria Building at University City, Mexico DF by Juan O Gorman, Juan Martínez de Velasco and Gustavo Saavedra. Source Unam.edu

¹⁷ Keith Eggener, 'Contrasting Images of Identity in Post-War Mexican Architecture of Luis Barragan and Juan O' Gorman', *Journal of Latin American Cultural Studies*, 9/1 (2000), 27-45.

¹⁸ Kennet H Frampton, 'Prospects for a Critical Regionalism', *Perspecta* (Vol. 20: MIT Press, 1983a), 147-62 (152)

¹⁹ Gortazar, *La Arquitectura Mexicana Del Siglo Xx*.

²⁰ Eggener, 'Contrasting Images of Identity in Post-War Mexican Architecture of Luis Barragan and Juan O' Gorman', (

²¹ Lawrence J. Vale, *Architecture, Power, and National Identity* (New Haven, Ct: Yale University Press, 1992) 54.

In order to understand this point further, the following deeper analysis of Barragan approach is presented. It focuses on evaluating the degree to which the adoption of the vernacular aspects acted within a nostalgic embrace of the past as aesthetic style and whether it was also able to critically understand its process as a response to inform the needs of that time. In the words of Harwell Hamilton Harris in regard to regionalisms it is important "to understand better the richness of internal, local discourses in their full range of complexity"²².

Luis Barragan

Nowadays, contemporary Mexican architecture is internationally known through Luis Barragan's approach as a case of *Regionalismo Moderno*. The Mexican historian Anibal Figueroa defines Barragan's architecture as an "authentic expression of his culture devoid of both the artifice of intentional fashion and 'folkloric' quaintness". In the words of Jorge Alberto Manrique Barragan's work,

*"Does not have revivals of traditional forms, neither of the utilization of characteristic materials nor of their inclusion of forms or symbols that transmit a vague prehispanic past (...) There is instead the idea that to create architecture, is to create an ambience, an atmosphere (...) The architecture of Barragan, without nationalistic program, is the clearly the most Mexican architecture"*²³.

However, writing about Barragan, Octavio Paz in his book "The Uses of Tradition" argues that Barragan only "employed the vernacular Mexican tradition with intelligence"²⁴. Fernando Prieto pointed out that Barragán was strongly influenced by Le Corbusier's ideas of architecture, specifically romantic suggestions of architecture's purpose such as "architecture is the combination of magnificent volumes under light"²⁵ (fig 4.4). According to Eggener, Barragan's approach was far removed from the main concerns of Mexico, following more international tendencies in its scope. As a result, it was less autochthonous and influenced by national culture (natural cultural emphasised) than is generally supposed²⁶. Eggener argues in regard to Barragan's architecture that,

*"Formally and conceptually, it was directly informed by the work of Le Corbusier, Richard Neutra, Frank Lloyd Wright, and other Europeans and North Americans, as much or more than it was Mexican vernacular examples. Economically, a project such as El Pedregal was tightly bound, through its elaborate financing and extensive international web of capital even before a house was built, El Pedregal was promoted to potential clients in the United States..."*²⁷

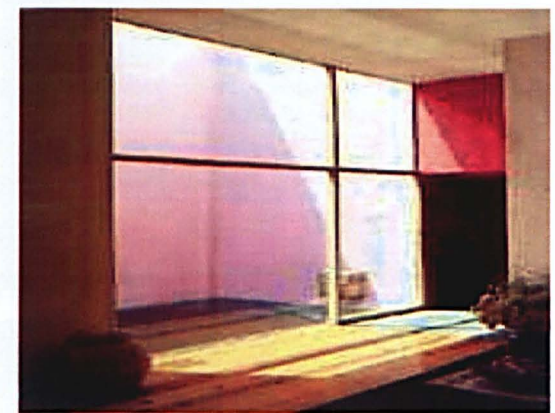


Fig. 4.4 Interior features of one of the Barragan's housing designs. Source: classes.uleth.ca

²² Harris Harwell Hamilton, 'Regionalism and Nacionalism in Architecture', The Texas Quartely, /1 (1958): 116.

²³ Jorge Alberto Manrique, Luis Barragan , Arquitecure Nacionalista?, ed. La Semana De Bellas Artes (Mexico City, July 6 1980) 6-7.

²⁴ Octavio Paz, The Uses of Tradition (Artes De Mexico 23; Mexico city, 1994) 92. pg. 92

²⁵ Fernando Prieto, 'Luis Barragán: La Poética De La Esencialidad', La Jornada, Agosto 2001, sec. La Jornada Semanal.

²⁶ Keith L. Eggener, Luis Barragan's Gardens of El Pedregal (Princeton Architectural Press, 2001).

²⁷ Keith Eggener, 'Placing Resistance: A Critique of Critical Regionalism', Journal of Architectural Education, 55/4 (May 2002), 228-37. Pg..234

It is important to mention that inside Mexico Barragan's work was unknown until 1970, but outside of Mexico it was promoted as the new image of contemporary Mexican architecture. In 1976 the Argentinean architect Emilio Ambasz promoted an exhibition of Barragan's postwar architecture at the Museum of Modern Art in New York²⁸, and in 1980 Barragan was awarded the Pritzker Prize, in Washington DC²⁹. According to Curtis, the single Barragan's perception of "regional style" was implied or imposed, from outside like the general reinterpretation of Mexican vernacular aspects within contemporary architecture³⁰. In other words the understanding of the vernacular was still embedded in the western traditions of architecture. Whilst Mexican contemporaries such as Juan O Gorman, Jose Villagran Garcia, Mario Pani and others, were working on the main social concerns of the population, related to low-cost housing, utilitarian schools, hospitals, offices and factories that the majority of the Mexican population was demanding³¹. Barragan's designs were limited to a few parts of the most privileged class in Mexican society³². It can be seen that his designs never involved low-income housing designs or housing for the masses. Curtis concurs that Barragan was far away from socially oriented concerns, "promoting solutions for its elitist and idiosyncratic capitalist group"³³. While Juan O Gorman and his contemporaries were promoting architecture's active role in economic, political and cultural issues, Barragan was promoting developments which allowed him to reminisce about the lost nostalgic Spanish Colonial convents and haciendas represented by new brilliant saturated colours, textured walls and decoration³⁴. In this sense, how much of the ideas behind Barragan's projects were generated by local concerns and conditions, and how much of this was simple marketing of his projects to possible clients in North America?

In short, Curtis mentions Barragan's "sense of ancient values"³⁵ Ambasz mentions its "animistic feeling for matter"³⁶ and Frampton emphasized Barragan as "sensual"³⁷, but according to Keith L. Eggener, Barragan was romanticised by West and North American writers while Barragan was promoting a romantic dream of the Mexican village³⁸. Juan O Gorman described Barragan's work as "exactly what Mexican Architecture should not be."³⁹ In addition, Israel Katzman, historian and author of the landmark book "La Arquitectura Contemporanea Mexicana", argues that Barragan fell to the charge of scenography, and found his designs, aesthetically challenging though they were, lacking in functional and economic justification⁴⁰.

²⁸ Emilio Ambasz, *Architecture of Luis Barragan* (New York: Museum of Art, 1976).

²⁹ Pritzker Prize, 'About Luis Barragan', <www.pritzkerprize.com/barragan.htm>, accessed 06 May 2006.

³⁰ Curtis, 'Modern Architecture since 1900', (333.)

³¹ Arias, 'Una Nueva Escuela Mexicana'.

³² Saito, Y. (1994). Interview with Francisco Gilardi about Luis Barragan. *Mexican Journal*. Rodman. Mexico, Noriega editors.

³³ Curtis, 'Modern Architecture since 1900', (333.)

³⁴ Yukata Saito, 'Interview with Francisco Gilardi About Luis Barragan', in Rodman (ed.), *Mexican Journal* (Mexico: Noriega Editores, 1994).

³⁵ Curtis, 'Modern Architecture since 1900', (

³⁶ Ambasz, *Architecture of Luis Barragan*.

³⁷ Kenneth Frampton, 'Toward a Critical Regionalism: Six Points for an Architecture of Resistance', (16.

³⁸ Eggener, *Luis Barragan's Gardens of El Pedregal*.

³⁹ Arias, 'Una Nueva Escuela Mexicana'.

⁴⁰ Guillermo Rosell and Lorenzo Carrasco, eds., *Guia de Arquitectura Mexicana Contemporanea* (Mexico: editorial Espacios, 1952), n.p.; and *El Pedregal* ad in *Espacios* 18 (January 1954), back cover.

At this stage, it can be pointed out the existence of discrepancies of the concept of Mexican 'identity' and the adoption of vernacular aspects within contemporary architecture of Barragan's approach. It shows the subjectivity of personal interpretation and different priorities of the actors involved. The main observation with 'regionalisms' which assume the understanding of the local vernacular aspects as a source of features that can inform contemporary architecture is the possible temptation to misunderstand the main issues and only understand it as a historical revival of the past. Consequently, nostalgia must be strictly avoided in order to assess such lessons objectively.

Nostalgia

According to the Mexican architect critic Johanna Lozoya, the main problem about nostalgia of regional or local images is that this can be just a series of mental constructions that a human group has elaborated itself, next are these nostalgic 'images' that with which the group attempts to construct reality. In this sense, the architecture is an image and it is reflected in what the 'reader' recognises, and if he or she recognises it, it is because there is a connection between the construction of images and the construction of reality.⁴¹ Lozoya argues that within the vernacular study, the past does not exist, what exists is the appearance of all the multiple phenomena and events that happened to determine our own present. In addition, it could have fragments that allude to a reality that is more a product of questions than a reconstruction; it is not an objective reality, but a cultural product. Harwell Hamilton Harris concurs that regionalism can be only a 'state of mind'⁴². In this sense the challenges that the regional cultural identities have in a globalised world are a complex phenomenon, and for that reason it is a complicated paradox, according to David Held⁴³.

Luis Barragan and Juan O Gorman Influences in Mexico

Barragan and Juan O Gorman had strongly influenced the following generations of Mexican architects. As a result understanding of the Issues of Scarcity of the vernacular had been established as features that inform the tectonics of architecture. For instance due Barragan's work is more internationally known having been widely promoted in the USA and Europe. The work of Ricardo Legorreta, whose is one of the most evidently influenced by Barragan's approach, is one of the best-known Mexican architects alive today⁴⁴. Such stylistic features can be recognised worldwide. On the other hand Juan O Gorman, inspired by Pre-Columbian features, had influenced a greater number of Mexican architects within the country including Teodoro Gonzalez and Agustin Hernandez, but these approaches are less familiar outside Mexico.⁴⁵ After 1970s, the pike of the state Mexican Oil Company PEMEX and the abundance of new oil reservoirs made energy cheap, fuelling development. Being concerned about the impact of CO2 emissions on global change was not an issue. As a result the influence of 'modernity' contributed to ending the debate of some of

⁴¹ M. Johanna Lozaya, 'Contruccion De Imaginarios Colectivos O Historiografia Moderna De La Arquitectura.' in Centro De Investigacione Y Estudios De Posgrado Facultad De Arquitectura Unam (ed.), (VI Seminario nacional de Teoria de la Arquitectura. Lo local y lo Global. escuelas regionales de Mexico. mesa: La historia y La critica., 2002).

⁴² Harris Harwell Hamilton, A Collection of His Writings and Buildings (North Carolina State College. School of Design: Student publications, 1965).

⁴³ David Held, 'Globalization after September 11th', Diario El Pais, 8 julio 2002.

⁴⁴ James Steele, 'Interview: Ricardo Legorreta', Miramar: Architecture in Development (june 1992), 62.

⁴⁵ Gortazar, La Arquitectura Mexicana Del Siglo Xx.

the vernacular processes principles already adopted in contemporary architecture, because those were seen as synonymous of underdevelopment. As a result some of answers have been found uncritically adopting foreign concepts mainly stressed today by *Globalization*.

Critical Regionalism

Similar approaches to the Mexican *Regionalismo Moderno* of 1940s were defined and promoted forty years later in the West as *Critical Regionalism* by Alexander Tzonis, Liane Lefaivre in 1980⁴⁶, and *Modern Regionalism* by Curtis which was essentially the same phenomenon⁴⁷. In 1983, Kenneth Frampton redefined *Critical Regionalism* as "architecture of resistance" seeking "to mediate the impact of universal civilization such as universal standards, practices, forms, and technological and economical conditions with elements derived indirectly from the peculiarities of a particular place"⁴⁸. Frampton included Barragan's work as an example of *Critical Regionalism* within a set of international examples such as Tadao Ando in Japan, Oscar Niemeyer in Brazil, Jorn Utzon in Denmark, Alvaro Siza in Portugal and many more⁴⁹. Frampton argues that their products were "border line manifestations" between "freedom and locally infected manifestations of world culture"⁵⁰. However, it may be argued that even when *Critical Regionalism* concurs with the Mexican approach in so much that it reflects particular geographical and cultural circumstances, the *Regionalismo Moderno* had very different aims. The main difference is that whilst Frampton retrospectively observed *Critical Regionalism* as "architecture of resistance", for Mexicans architects in 1940s the goal was to build the basis of contemporary Mexican architecture as a component of Mexico Moderno. In other words Mexican architecture of regionalist character was not primarily a reaction to the Western countries in the form of total resistance, but was a response to local circumstances, and at the same time willing to be part of an international Modernism. In the words of Marina Waisman "it should not be seen as a marginal practice, but as a development parallel to contemporary architecture in the industrialized West"⁵¹. According to Jane M. Jacobs, *Critical Regionalism* is a postcolonial tendency that could only be possible as a result of colonialism. At the same time that *Critical Regionalism* reflects local expressions; it is a concept that is frequently promoted outside Mexico⁵². Keith Eggener in his essay *Placing Resistance: critique of Critical Regionalism* explains further the most problematic statement, implication and effects of this term. In words of Eggener "critical regionalism has been an influential architectural concept whose application remains widespread. Yet as an intellectual construct it can be highly problematic"⁵³.

⁴⁶ Alexander Tzonis and Liane Lefaivre, *The Grid and the Pathway* (1981) 164-78.

⁴⁷ Curtis, *Toward an Authentic Regionalism* (1986) 24-31.

⁴⁸ Kenneth Frampton, 'The Anti-Aesthetics: Essays on Post-Modern Culture', in Hal Foster (ed.), *Towards a Critical Regionalism: Six Points for an Architecture of Resistance* (Seattle: Bay Press, 1983b), 21.

⁴⁹ Kenneth Frampton, *Modern Architecture a Critical History* (World of Art) (Fourth edn.; London: Thames and Hudson, 2007) pgs. 314-27.

⁵⁰ *Ibid.* pg 315

⁵¹ Marina Waisman, 'Cuestion De Divergencia: Sobre El Regionalismo Critico', *Arquitectura Viva*, (May-Jun 1990), 43.

⁵² Jane M. Jacobs, *Edge of Empire: Postcolonialism and the City* (London:Routledge, 1996) 14.

⁵³ Eggener, 'Placing Resistance: A Critique of Critical Regionalism', (

Following the temptation of understanding the vernacular as a style

The importance of the lessons of the vernacular aspects by the Mexican *Regionalistas Modernos*, Del Moral and Villagran has been discussed. Yet, the review of the built works of Barragan and Juan O Gormman whilst identifying different personal interpretations of the same issue showed that both approaches were unable to resist the temptation to use the vernacular aspects as a set of features that mainly informed a stylistic approach rather than a new process of architectural production. Similar concepts in the west years later such as *Modern Regionalism and Critical Regionalism* put on the agenda again the importance of making people aware of "the loss of place and community"⁵⁴ and revalue the lessons of regional-local empirical knowledge rather than the imposition of a global one. For Frampton *Critical Regionalism* was the answer to the "pure stenography" to which postmodernist Architecture had reduced itself. In words of Frampton,

"The so called postmodern architects are merely feeding the media -society with gratuitous, quietist images rather than offering, as they claim, a creative rappel a order after the supposedly, proven bank-ruptcy of the liberative modern project"⁵⁵.

However, even when Frampton's *Critical Regionalisms* had the good intention to reconsider the introduction of some lessons of the vernacular aspects as a source of inspiration of contemporary architecture; the main concern is that it revolves around a central paradox understanding one more time the vernacular as features that mainly inform the tectonics of architecture. In words of the French philosopher Ricoeur "how to become modern and to return to sources; how to revive an old dormant civilization and take part in universal civilization"⁵⁶. In this sense it may be argue that *Critical Regionalism* at the end is clearly not that critical. Also Antony King considers that "whoever produces or adopts global theories from one particular place, from one point of authority, from one particular social and cultural position needs to be sure that he or she is not promoting a new intellectual imperialism"⁵⁷. In addition, Jacobs considers that *Critical Regionalism* can make a struggle out of nothing; it means that it can be "a revisionary form of imperialist nostalgia". Finally Lewis Mumford argues that *Critical Regionalism* could be used "as a fashionable formula", even though its label and sophistication may not help, but rather return to a relatively easy and misleading mechanism"⁵⁸. Mumford points out that the main issue with such regionalisms "is not a matter of using the most available local materials" or using "some simple forms of construction that our ancestors used, for want of anything better" instead "those do not merely utilize the soil but reflect the current conditions of culture in the region"⁵⁹. In other words Mumford notes the temptation for revivalist pastiche and romantic nostalgia.

⁵⁴ Alexander Tzonis and Liane Lefaivre, *Critical Regionalism* (Amourgis, 1990) 3,20-21.

⁵⁵ Kenneth Frampton: *Towards critical Regionalism: Six points for an Architecture of Resistance*. In *Postmodern Culture* edited by Hal Foster (1985) London, Pluto press pg.19

⁵⁶ Ricoeur, 'Universal Civilization and National Cultures', (271,77.)

⁵⁷ Antony King, 'Vernacular Transnational, Post-Colonial', (71.)

⁵⁸ *Architectural Review*, 'Regionalism as the Salvation of Modern Architecture?' *Architectural Review*, /176 (Oct 1984): 23.

⁵⁹ Lewis Mumford, *The South in Architecture* (New York: Harcourt, Brace and Company, 1941) pg. 30.

If one is looking to the vernacular aspects as a source of lessons to face some challenges of contemporary architecture, the first step is to acknowledge the attraction to see it as romantic revival of the past and misunderstand its main lessons. Hamilton argues for more attention should be placed to identify between traditions, personal interpretations or and a more general set of principles. The main mistake can be considering only romantic "particular states of mind" for building within particular cultures. In this approach commonly the richness, complexity and full range of local issues are missed. In other words the main features of the creative process of design and construction limited to the use resources available can be ignored.

Consequently, this thesis will consider also understanding the *Issues of Scarcity* of the vernacular aspects in its different manifestations such as *Traditional Vernacular, Informal Modernism of Semi-informal Modernism in Mexico*, as a source of principles that can inform alternative design tactics of Architecture of Scarcity. It is hoped that such methodological approach can help to address challenges of the built environment in marginalised areas of the Mexican context in a sustainable way. To assess them objectively avoiding nostalgia it is necessary analysing exactly the cultural, social, economical conditions that are implicit in the vernacular product, this means the process of production, rather than the object, itself.

The aim of the following chapter entitled *The vernacular recapturing the attention of architects: Present and future implications of the issues of scarcity*, will be to discuss the importance of the vernacular studies now and throughout the twenty-first century, not as a study of past traditions, but as a contribution to new processes, methods, solutions and achievements for the future built environment, in terms of sustainable principles.

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Chapter 5

The Issues of Scarcity as a design tactics: Present and future implications



"The vernacular is not dead, and has not ended. What has ended, or should end, is the conception of it as the container of specific determined cultural meaning, as a static legacy of a past. What should emerge is a vernacular as a political project a project whose principal mission is the dynamic interpretation and reinterpretation of this past in light of an ever-changing present."

Nezar Alsayyad

"The challenge of those issues secondary to the project of beautification, as a shifting socio-economic and cultural dynamics of the inner city point out".

Teddy Cruz

Chapter 5

The Issues of Scarcity as a design tactics: Present and future implications

The vernacular recapturing the attention of architects

After decades of absence from the main spheres of architectural discourse, the vernacular is recapturing attention of architects. Phenomena such as Vernacular¹ and Informal Modernism-Vernacular Modernism² as a site for research and experimentation are beginning to be reconsidered again from a renewed perspective.³ Certain practices and leading critics in contemporary architecture and urbanism are influencing the re-evaluation of this phenomenon, looking for sustainable solutions to the main challenges of contemporary life facing cities in developing, and even developed, countries. This renewed perspective is giving the socio-cultural, political, philosophical and economic forces the possibility to redefine the operational processes of architecture itself.⁴ At the same time it is challenging the role of architects in the context of city development, mainly in marginalised areas of the population in the global south. Researchers into Vernacular and Informal Modernism studies stress the point that vernacular architectural tradition may play a part in the provision of more sustainable settlements and buildings in the future.⁵ This trend is reinforced by a revival of locality and a sense of place in contemporary architectural and urban discourses.⁶

According to Amos Rapoport there are four ways of considering the vernacular according to present values of architecture: firstly the vernacular could be completely denied. Secondly, it could be possible to admit the existence of the vernacular, but what you can learn from it is undervalued. Thirdly, the vernacular could be catalogued as past traditions and studied as nostalgia and then copied in its entirety in all of its details without any rationality. And fourthly, the vernacular could also be studied with nostalgia, some concepts accepted and learnt and then romantically reinterpreted within contemporary architecture.⁷ None of these approaches are accepted in this paper. It is important to highlight that this last conception of the vernacular is the most common interpretation of the vernacular in the context of Mexico, due to adoption of normative values of architecture in formal practice. Under this perspective the vernacular is understood as a set of features of a particular place that could be abstracted and then indistinctly replicated. In the words of Huppauf and Umbach this perception "entails a nostalgic idealization of a past that never

¹ The term "Vernacular" architecture is commonly used to identify buildings developed by empirical knowledge or how was termed by Bernard Rudofsky in the book "Architecture without Architects" .New York, 1964.

² This term was pointed out by Professor Echart Ribbeck and Sergio Padilla in their study of "Informal Modernism" Spontaneous Building in Mexico City" 2002. Ribbeck and Padilla argue that the massive phenomenon of self-build housing shows that even in megacities the vernacular tradition of building is experiencing a major renaissance, rather than dying out- albeit under completely different circumstances to the traditional or rural context.

³ For the Vernacular see Asquith, L. and M. Vellinga (2006). Vernacular architecture in the Twenty-First Century. London, Taylor and Francis. For the Vernacular Modernism see Umbach, B. H. a. M. (2005). Vernacular Modernism Stanford, California, Stanford University Press. Also see Ribbeck, E. and S. Padilla (2002). Informal Modernism Spontaneous Building in Mexico City, Heidelberg.

⁴ Cruz, T. (2004-2005). Border Postcards: Cronicles from the Edge. James Stirling Memorial Lectures on the City. Canadian Centre for Architecture, Montreal and London School of Economics.

⁵ Oliver, P. (1990). Introduction. Dwellings: The House across the World. U. o. T. Press. Austin: 7-15. Rapoport, A. (1969). House, Form and Culture. Englewood Cliffs, NJ, Prentice-Hall.

⁶ McDonald, B. E. a. F., Ed. (2007). Learning from Place I. London, RIBA publishing.

⁷ Rapoport, A. (1969). House, Form and Culture. Englewood Cliffs, NJ, Prentice-Hall.

actually existed".⁸ Consequently, conceiving the vernacular within this perspective in a contemporary era traps it within uncertainty and ambiguity.

The new perspective suggests that it is possible to consider the principles of the vernacular from a wider perspective which are also highly sustainable.⁹ It is important to understand each element of the vernacular process which involves physical, environmental, economic, social, political, technical aspects. All integrated in a holistic approach which production of architecture depends.¹⁰ In other words it is necessary to recover a sense of the vernacular as praxis beyond its nostalgic instrumentation. Huppaufl and Umbach argue that, the vernacular, "as a category and concrete experience" can reveal some answers for contemporary era. They suggest that,

"It is not the discovery of the vernacular per se, we contend, that makes it interesting. It is, rather, the negotiation between, and the interdependence of, the regional and the global, concrete locality and border-devouring abstraction, that can generate a new and more complex narrative of the modern".¹¹

This thesis is focused on the Vernacular and Informal Modernism processes of Mexican architecture within this renewed perspective of vernacular as praxis. The main focus is to identify what is defined as Issues of Scarcity. This refers to a set of design features developed under the challenge imposed by the conditions of scarcity of Vernacular and Informal Modernism practices. In other words, these practices are developed under the challenge of limited resources -natural, human and economic by the majority of the population-. In addition multicultural diversity, rapid growth and change, and chaotic organisation highlights the very different conditions that exist in countries of the Global South such as Mexico and which demand a new architectonic and urban development based on an alternative model of western sustainable design.

The starting point of this thesis is inspired by the book of the Mexican author and politician Jesus Silva Herzog, called The Stupidity of Perfection which highlights the impossibility to create instruments to impose total order and control in Mexican society due to its multicultural and hybrid nature¹². From a wider perspective Homi Bhabha concurs recognising the plurality of every nation. Babha argues that 'cultural differences' span the illusory-utopian communities of every nation.¹³ This thesis argues that an approach which does not look to the perfection of the formal objects or to prescribed design processes of order and control maybe a fruitful ground for the discussion of a sustainable architecture appropriate to the specific plural context of Mexico. In other words the Issues of Scarcity may also inform an alternative approach to western sustainability. Before exploring this idea in depth, it is first necessary to understand further additional arguments concerning the vernacular.

⁸ Umbach, B. H. a. M. (2005). Vernacular Modernism Stanford, California, Stanford University Press. Pg. 1

⁹ Asquith, L. and M. Vellinga (2006). Vernacular architecture in the Twenty-First Century. London, Taylor and Francis. Also see Alsayyad (2006). Vernacular Architecture at the 21st Century. London, Taylor and Francis.

¹⁰ Rapoport, A. (2003). Culture, Architecture and Design.

¹¹ Umbach, B. H. a. M. (2005). Vernacular Modernism Stanford, California, Stanford University Press. Pg. 2

¹² My translation of the title of Silva-Herzog, M. J. (2006). La idiotez de lo perfecto miradas a la política Mexico City, FCE.

¹³ Bhabha, H. (1994). The Location of Culture. London, Routledge. Pg. 140

The vernacular at the beginning of the 21st Century

Paul Oliver is one of the leading figures bringing back the importance of vernacular for the sustainable era to architectural discourse. Oliver argues that the vernacular and popular dwellings built by their owners using locally available resources and technologies (according to processes and forms that have been handed down and adapted to circumstances through local traditions) present lessons to high consumption western societies¹⁴. Oliver points out that all the buildings developed under these conditions presently constitutes about 90 % of the world's total housing stock¹⁵. He argues that there is no such thing as a traditional building, but rather that buildings embody certain vernacular traditions. He urges us to focus our attention on the everyday citizen's practice as a way of understanding vernacular processes and maintaining this tradition¹⁶. The main difference today, is that the practice and growth of the vernacular have changed considerably in a technologically advanced era. Asquith and Vellinga concur that at present the vernacular cannot be considered as a study of past traditions, but rather as a valuable contribution of new methods, solutions and achievements for an alternative architectural model¹⁷. In the words of Nezar Alsayyad in his paper about Vernacular architecture in the 21st century, vernacular architecture could be considered as "the most modern of the modern". Alsayyad points out, that the vernacular is no longer something of the past but relevant to the future. Alsayyad argues that,

*"The vernacular is not dead, and has not ended. What has ended, or should end, is the conception of it as the only harbinger of authenticity, as the container of specific determined cultural meaning, as a static legacy of a past. What should emerge is a vernacular as a political project a project whose principal mission is the dynamic interpretation and reinterpretation of this past in light of an ever-changing present"*¹⁸.

In this sense, Huppauf and Umbach also suggest that, "in spite of its virtual absence from theories of the modern, the vernacular lived on as a strong sub current of modern praxis¹⁹". In other words they argue that the vernacular always has been there. They also suggest that the vernacular "opens up a repository of alternatives for dealing with the challenges of modernity in the age of globalization", and so, as we have seen it redefined as an Informal Modernism or Vernacular Modernism²⁰.

¹⁴ Oliver, P. (2003). *Dwellings: The Vernacular House Word Wide*. London, Phaidon. Pg. 15

¹⁵ *Ibid.* Pg. 15

¹⁶ Oliver, P. (1999). *The vernacular architecture in the 21st century* Hepworth lecture, London: Prince of Wales Institute. Also see the IASTE conference)

¹⁷ Oliver, P. (2003). *Dwellings: The Vernacular House Word Wide*. London, Phaidon, Asquith, L. and M. Vellinga (2006). *Vernacular architecture in the Twenty-First Century*. London, Taylor and Francis.

¹⁸ Alsayyad (2006). *Vernacular Architecture at the 21st Century*. London, Taylor and Francis. Pg. xviii

¹⁹ Umbach, B. H. a. M. (2005). *Vernacular Modernism* Stanford, California, Stanford University Press. P. 1

²⁰ *Ibid.*

Informal Modernism

This thesis is inspired by the study of Professor Echart Ribbeck and Sergio Padilla called Informal Modernism Spontaneous Building in Mexico City²¹. Ribbeck and Padilla argue that,

*"The massive phenomenon of self-build housing shows that even in mega cities the vernacular tradition of building is experiencing a major renaissance. Rather than dying out, it is flourishing; albeit under completely different circumstances to the traditional or rural context"*²².

Ribbeck and Padilla point out that more than 10 million people live in the second largest metropolis of the world, Mexico City. They live in dwellings developed under self-building traditions. In one of the case studies that was undertaken, that of Ciudad Nezahualcoyotl where more than 3 million people live, informality is the only option. This is as a result of their condition of scarcity. At one time it was probably the largest irregular settlement in the world. The main difference, if one compares this phenomenon to rural contexts, is that such practices are not preserved as part of the traditions that are passed down from generation to generation, but is the only answer for survival in the hostile urban context. This condition is exacerbated by a lack of economic opportunities in this urban mass²³.

The Mexican urbanist Jose Castillo argues that informality is not an exclusive phenomenon of the past century or of underdeveloped countries. Castillo discusses that there has always been urban development outside the 'legal' framework. Castillo points out that

*"What is remarkable is that informality became the dominant mode of city making in the twenty century. This means that in Mexico City over half of all urban housing stock had to be provided through 'unofficial channels' such as squats, illegal, land subdivisions, land invasions and other alternative schemes of appropriation"*²⁴.

The main concern according to Castillo is not the existence of such alternative schemes, but that after Fifty years of massive informal production in Mexico City for example, its effectiveness remains officially unacceptable. Instead professionals still face the same issues and urban and housing policies have continued to be unchanged²⁵.

The same argument is put forward by Priscilla Connolly in her study of Mexico City²⁶. Similarity can be found in other Latin American countries such as Brazil in different studies of the Favelas²⁷, Venezuela²⁸, and Chile²⁹ to mention a few

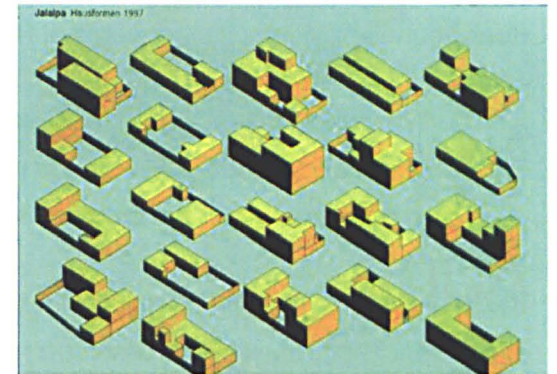


Fig.5.1. Above: View of the typological approach by Ribbeck and Padilla.

²¹ Ribbeck, E. and S. Padilla (2002). Informal Modernism Spontaneous Building in Mexico City, Heidelberg.

²² Ibid. Pg. 229

²³ Ibid.

²⁴ Castillo, J. (2002). "Urbanism of the Informal in Mexico City: Projects from the Megacity

" PRAXIS (2). Pg.3

²⁵ Ibid.

²⁶ See Connolly, P. (2003). "The case of Mexico City, Mexico, ." UN-Habitat (2003) Global Report on Human Settlements 2003, The Challenge of Slums Part IV: 'Summary of City Case Studies', Earthscan, London: pp195-228.

²⁷ See Baltazar, A. P. and S. Kapp (2006). "Learning from Favelas: the poetics of users' autonomous production of space and non-ethics of architectural interventions." Also see Fernando Luiz Lara 2006 Brazilian Popular Modernism: Analysing the Dissemination of Architectural Vocabulary, Journal of Architectural and Planning Research 23(2): 91-112.

examples. Also, other countries of the global south such as India's Rahul Mehrotra have contributed to this very important discourse.³⁰

Common understanding of the Informal Modernism phenomenon

Turning now to how this phenomenon is considered inside the architectural discourse, Ribbeck and Padilla suggest that the spontaneous and improvised lessons of Informal Modernism of marginalised areas of the population –in this paper entitled Issues of ScarCity- can be a promising solution to address bigger issues of mass urban cities in Mexico or other countries with similar conditions³¹. However the main disappointment with regard to these studies is that they classified the main lessons typologically (fig.5.1) Their main understanding of the lessons were thus seen as a set of features that inform a vast amount of different architectural forms rather than a set of principles that may inform an alternative process of design and intervention. The main problem with a typological approach is that it excludes the social and dynamic forces of the process that finally shape the forms. Such an understanding has similarities with previous understandings of the vernacular in the Mexican context; as a set of features that can mainly inform a 'stylistic' approach. It means that Ribbeck and Padilla's understanding of the neo-vernacular lessons are similarly still embedded within the normative/prescriptive values of architecture, which is largely driven by formal concerns.

According to the Colombian architectural historian Felipe Hernandez, a common way of making sense of this informal phenomenon of mass urban cities in developing countries is through Homi Bhabha's hybridism. The main concern is that too often interpretations of hybridity within architectural discourses have been related to external formal elements or aesthetic descriptions. In other words, hybridity is understood as the combination of different forms and materials from different cultures for the creation of a new form³², even so, Homi Bhabhas argues for a deeper understanding. In the words of Hernandez,

*"Hybridisation is reduced to a problem of aesthetics: that is, the combination of forms, materials, textures and discourses that fuse in one single building, a problem of syncretism which is exactly what hybridisation, as a permanent cultural process, is not"*³³

The key issue is that the combination of formal elements and materials are sometimes understood as deeper expressions, which are then combined together for the creation of a new 'stylistic' approach. An interesting example of such 'formalistic' understanding of the hybridity of Informal Modernism in the western world is the Dutch Studio Evanderfeesten, who studied with, and was inspired by, the Brazilian Favelas. Their study is called "Confection for the masses in a parametric design of a modular favela structure". This method is used to develop a new set of proposals

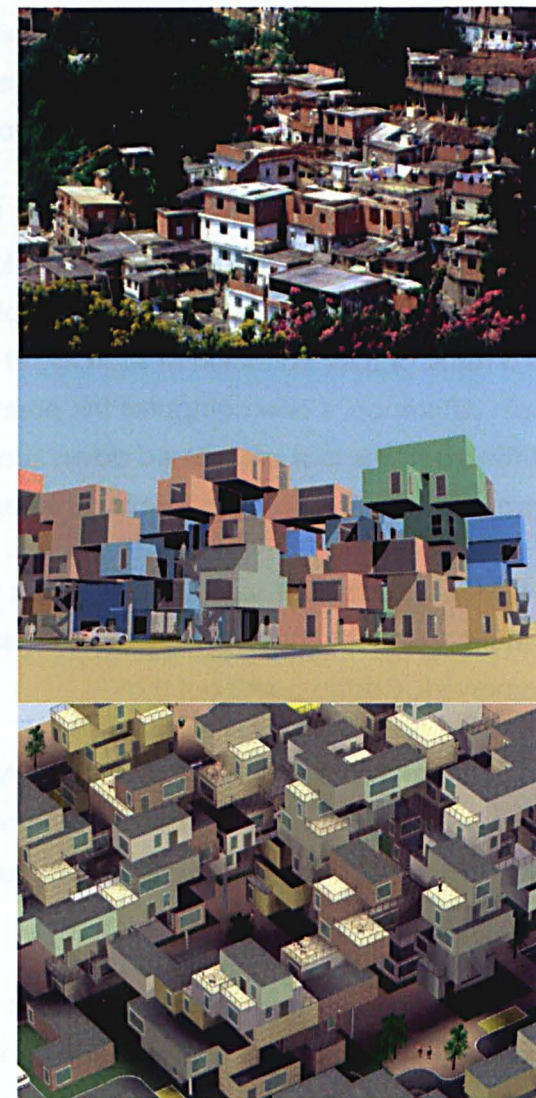


Fig. 5.2. Above: View of the favelas in Sao Paulo, Brazil. Bottom two: formalistic interpretation of the favelas by Evanderfeesten . Source: Confection for the masses in a parametric design of a modular favela structure

²⁸ See. Brillembourg, A. (2004). "The new slum urbanism." Architectural Design 74(2): 77-81.

²⁹ See Paola Jiron, (2009) The Evolution of Informal Settlements in Chile: Improving Housing Conditions in Cities, in Hernandez, F. and P. Kellett (2009). Introduction: Reimagining the Informal in Latin America. Rethinking the Informal City:Critical Perspectives from Latin America. P. K. a. L. K. A. Felipe Hernandez. New York-Oxford, Berghahn Books.Pg. 71-90

³⁰ Mehrotra, R., S. Dwivedi, et al. (1995). Bombay: The cities within. Bombay, India Book House.

³¹ Ribbeck, E. and S. Padilla (2002). Informal Modernism Spontaneous Building in Mexico City, Heidelberg.

³² Hernandez, F. (2002). "On the notion of architectural hybridisation in Latin America." The Journal of Architecture 7(1): 77-86.

³³ Ibid.p 78)

for social housing of masses in Eindhoven, Netherlands ³⁴(fig. 5.2). However, as it can be seen in the set of housing produced by Informal Modernism in Mexico City or in the Favelas of Brazil, homes are not built as a complete product. Rather, the housing stock is developed during several stages due to scarcity which does not allow development of the house in one go. Their forms change over time according to different circumstances and interventions. For this reason the description of the physical forms of Informal Modernism cannot be explained purely in terms of the dwelling as a final product, but part of the process as a whole (figs.5.3).

In this sense Bhabha's concept of *hybridity* understood from the perspective of traditional architecture, could result in abstract forms rather than something with a more dynamic social meaning and implication. As in the case of Mexico City, the social dynamics is one in which the inhabitants of the informal settlements are integrated socially and culturally into a broader urban society. The understanding of *hybridity* as physical forms could thus be a camouflage trap which appears to address local needs, but in fact ignores socio-economic conditions. This is only a figurative answer which misses the links with the wider web of a full range of contingent forces of a system that can finally give rise to hybrid forms³⁵. In the metaphorical words of Antony Giddens "We should have to understand that social systems are like buildings reconstructed by the very bricks that compose it"³⁶. In other words, these settlements are redefined by their citizens from the bottom to the top, rather than vice versa by urbanisms of architects.

A renewed understanding of the phenomenon of Informal Modernism: the neo-vernacular as a process:

Under a renewed perspective every form of Informal Modernism is the result of social processes interacting in a specific place at specific time. Amos Rapoport argues that components of culture are more important than function and form³⁷. He suggests breaking culture down into a components and working from there³⁸. Consequently, it can be suggested that every particular form has a set of meanings directly linked to the location (space) motivated by a particular need (use) in a specific moment (time). It is a three-dimensional result which transcends form and function. Another metaphor that explains this is, Homi Bhabha's argument with regard to symbols,

"Every sign gains its meaning in a particular language system; sign[s] have to be read in a given social context. You can not subscribe universal meaning and values to a sign. You have to understand the burden of interpretation and the burden of representation of that specific text"³⁹.

In the field of the built environment, Murray Fraser and Joe Kerr argue for the need to understand further the meaning behind hybrid signs. They suggest that we see them "as a response to new forms of culture and power" created by

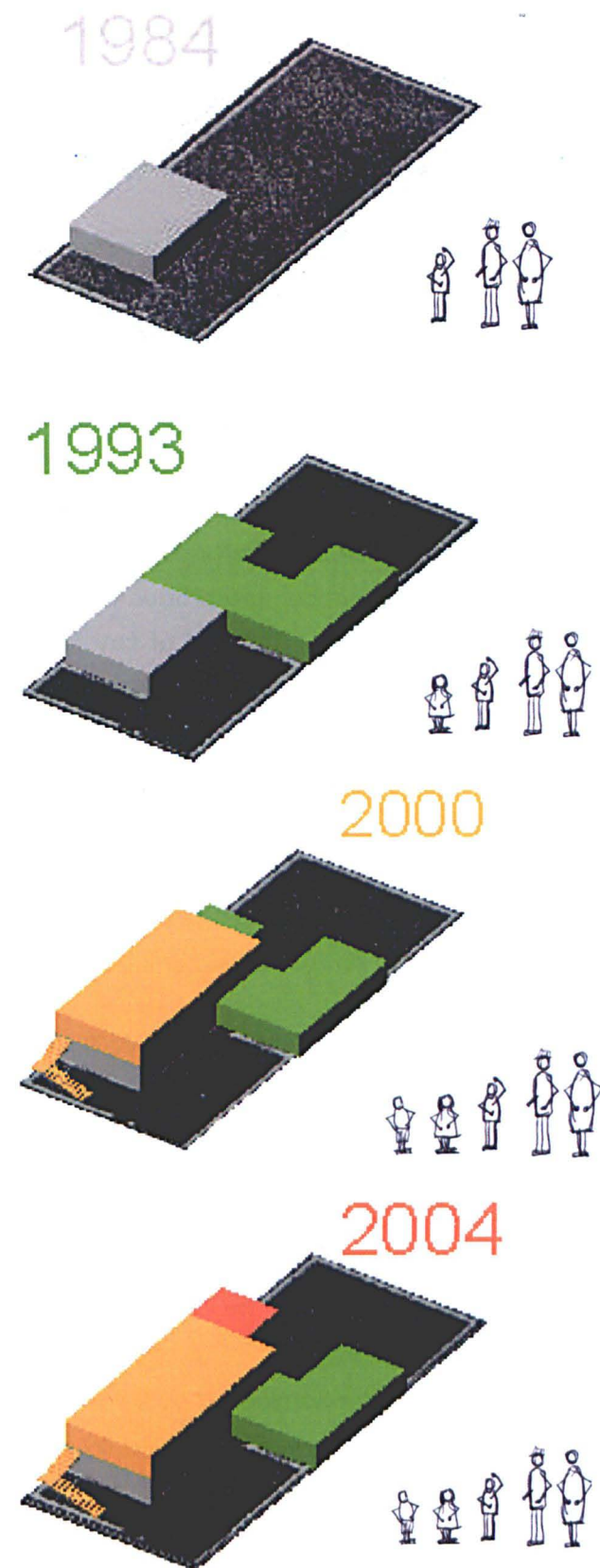


Fig. 5.3. Typical example of the forms 'process consolidation of informal housing related to the family growth.

³⁴ Vries, E. V. a. B. d. (2006). "Confection for the masse in parametric design of a modular favelas structure." Eindhoven University of Technology, Faculty of Architecture, Building and Planning Design System group: 10.

³⁵ See Hernandez, F. (2003). "Hybrid Spaces and the Hybrid Architectures." Traditional Dwellings and Settlements Review 154.

³⁶ Giddens, A. (1999). Historical Sociology Theories of the State: Antony Giddens. Fifty Key Thinkers in International Relations M. Griffiths. London, Routledge: p. 235. Also see Giddens, A. (1987). Social theory and modern sociology. Stanford, California, Stanford University Press.

³⁷ See Rapoport, A. (2003). Culture, Architecture and Design.

³⁸ Ibid.

³⁹ Bhabha, H. (2005). Towards a Global Cultural Citizenship. S. Mohanty, The Hindu. Pg. 55

globalization⁴⁰. Jose Castillo addresses the temptation of only identifying Informal Modernism as a source of typological or formalistic set of features, by suggesting that there be a separation of "the practice and forms"⁴¹. In other words, Castillo differentiates between process and product. His holistic definition of this phenomenon is termed Urbanism of the Informal. He argues that these are,

*"The practices –social, economic, architectural and urban- and the forms –physical and spatial- that a group of stake holders –dwellers, developers, planners, landowners and the state- undertake not only to obtain access to land and housing, but also to satisfy their need to engage in urban life. These practices are characterized by tactical and incremental decisions, by a complex interaction among players and a distinct set of spatial strategies that produce a progressive urban space and reconfigured hierarchies"*⁴².

In this sense, this thesis will adopt Castillo's approach which addresses "tactical and incremental decisions" as a prerequisite for understanding the forms of the Informal Modernism phenomenon. By cutting through the 'formalistic' surface of architecture produced under conditions of scarcity, silent and undervalued issues will be exposed. In other words, the understanding of key tactical features and main decisions can be found behind the forms of Informal Modernism. There are distinctive features in the idea of imperfection and the processes of improvisation, examples from Issues of Scarcity may specifically be used as Design Tactics for an alternative sustainable approach. This goes beyond the understanding of 'aesthetic' approaches only and sees them rather as principles that may inform the design process itself. The key issue is to understand that when citizens do not have access to advanced knowledge or high control of resources, they will be challenged by this condition of limited resources potentially in a creative manner. In other words, the challenge of scarcity can be also a creative and social opportunity to solve actual needs in a different way. In the similar context of Brazil, Ana Paula Baltazar and Silke Kapp argue that,

*"If they had access to more advanced means; they would probably not act to the same artistic logic, with its openness and its creation of singular events and singular values, because all the advanced architectural means we have today were forged by and for heteronymous production"*⁴³

A term useful and appropriate for understanding the sources informing the main issues under conditions of scarcity could be *transculturation*. This concept was introduced to architecture by Felipe Hernandez as a "multidirectional and endless interactive process between various 'cultural' systems"⁴⁴. The key point of *transculturation* according to Hernandez is that it is "in opposition to unidirectional and hierarchical traditional structures"⁴⁵. He argues that such configuration dominated by the principle of origin is frequently associated with claims for cultural power. Previously the term *transculturation* was used by the Cuban anthropologist Fernando Ortiz in 1947 to describe the phenomenon of

⁴⁰ Kerr, M. F. a. J. (2000). *Beyond the power of the signs. Intersections: Architectural Histories and Critical Theories*. I. B. a. j. Rendell. London, Routledge: p 125.

⁴¹ Castillo, J. (2002). "Urbanism of the Informal in Mexico City: Projects from the Megacity

" PRAXIS (2).pg. 12)

⁴² Ibid. pg. 12)

⁴³ Baltazar, A. P. and S. Kapp (2006). "Learning from Favelas: the poetics of users' autonomous production of space and non-ethics of architectural interventions."p. 10)

⁴⁴ Hernandez, F., Mark Millington and Lain Borden, Ed. (2005). *Transculturation*. Amsterdam, Rodopi. Pg. xi

⁴⁵ Ibid. pg. xi

merging and convening cultures⁴⁶. The classical understandings of the information transfer processes in the global world are conventionally recognised as being the North to South unidirectional flow of ideas. However, new studies make evident the important contribution of bidirectional flow. For example Teddy Cruz in his case study of the border cities of San Isidro USA and Tijuana Mexico, one of the most trafficked checkpoints in the world, points out that,

"No matter how high and long the borders becomes it will always be transcended by migration populations and the relentless flows of goods and services back and forth across the formidable barriers that seek to preclude them". Then "the ultimate avant-garde action occurs the moment that an average citizen is able to appropriate the new spaces and materials of the cities", in both sides⁴⁷.

Teddy Cruz points out in this case how materials on the American side are wasted, while in the city of Tijuana, under the conditions of scarcity, materials are reused. Within informality those materials are "recombining into fresh scenarios, creating countless new opportunities open to the unpredictability of time and programmatic contingency"⁴⁸. Cruz also points out what can be defined as Semi-Informal Modernism. This means that even the new social housing provided formally by the Mexican government, and developed by speculative private companies, is rapidly modified by a self-building tradition. Inhabitants freely personalise their housing, first by modifying windows and doors. Next, they occupy front and back yards with more construction, mixing traditional architectural programmes as expressions of informality. Commonly, first the action takes place and later legal and bureaucratic planning permission issues are sorted out⁴⁹.

In addition, on the other side of the border in San Isidro, massive groups of Mexican immigrants are reshaping American neighbourhoods by bringing their own traditions developed under the conditions of limited resources in their native towns. In the words of Cruz this approach "insinuates itself into the most rigid context using simple strategies of transgression and appropriation"⁵⁰. In this sense, their neighbourhoods use empty spaces and streets; they create their own mini-economies in order to get income. Commonly, these are generated according to their memories of construction in a previous context. According to Octavio Paz "the past reappears because it is hidden in the present"⁵¹. However, inside the new context such strategies will be seen such as 'illegal' and will be seen as confronting their traditional programmatic system. Yolanda Pedraza inhabitant of one of these new neighbourhoods in Santa Rosa California argues that "already more people from El Resumidero, Mexico live in USA than in Mexico"⁵². Pedraza points out that,

"After ten years, it can be said that our community is a little part of El Resumidero, we first brought our families, then relatives and friends. With all of them we also brought part of our traditions and values. As one example, walking on Sunday morning on the streets of our community after attending Mass, you can

⁴⁶ Ortiz, F. (1995). *Cuban Counterpoint: Tobacco and Sugar*. Durham NC and London, Duke University Press.

⁴⁷ Cruz, T. (2004-2005). *Border Postcards: Chronicles from the Edge*. James Stirling Memorial Lectures on the City. Canadian Centre for Architecture, Montreal and London School of Economics. Pg. 4

⁴⁸ Ibid. Pg. 6

⁴⁹ Ibid.

⁵⁰ Ibid. Pg. 6

⁵¹ Paz, O. (1999). *El laberinto de la soledad ; Postdata ; Vuelta a El laberinto de la soledad*. México, Fondo de Cultura Económica. Pg. 136

*hear the noise and smell the flavour of the street markets in Mexico. Different families are able to transport all the richness of such magic mornings from El Resumidero. The main difference is that now those are germinating in a different soil and by implication producing new seeds"*⁵³.

The aforementioned scenario points out how the Issues of Scarcity of Informal Modernism are informed by a *transculturation* phenomenon which is fuelled by globalisation, mass media communication and migration. However, it is important to point out that in addition to this phenomenon which may be redefined as *global transculturation*, as a result of the interaction between the USA, other western countries and Mexico; a *local transculturation* also exists. The *local transculturation* is possible due to the existence of two contrasting communities inside the same Mexican context. In other words local transculturation takes place between communities with a high level of contrast and dichotomy. This means that *local transculturation* exists due to a big gap between informal, semi-informal and traditional vernacular settlements developed by non-prescribed design process (ScarCity) and wealthiest settlements that are formally developed (AbundanCity). This phenomenon of a Mexican city or indeed of any city around the world with similar characteristics and contradictory 'truths' was referred to as the City of Paradoxes model.

By implication different characteristics of contrasting systems will be interacting and informing each other. For example features related to the 'native' and the 'westernised', 'perfection' and 'imperfection', order and chaos, mysticism and rationality or between all features identified with the traditional and the modern discourses will create a new hybrid.

Ana Paula Baltazar and Silke Kapp in a similar case studying the Favelas in Belo Horizonte, Brazil, argue that the formal and legal authority imposed a top-down approach is commonly impregnated with prejudices, "creating a clear boundary between the legal and the illegal settlements"⁵⁴. They note that,

*"There is no boundary... even if we can clearly see the differences in their cores, mainly because of the self-organised logic of occupation, we cannot leave aside that people living in 'favelas' are also economically active, working and consuming in the legal city. There is no boundary, except the ones imposed by physical interventions"*⁵⁵.

In short, it can be said that the overlapping of all this 'transcultural' density inside the Mexican mass urban cities could be the main source informing the "tactical and incremental decisions" of citizens under the conditions of scarcity. These issues are the only tools of citizens to develop their dwellings and be included. Sadly their contributions are not recognised in the formal notion of the production of space. Whilst it is physically evident that citizens are contributing to the configuration of the mass urban cities of developing countries; it may be argued that this phenomenon creates a complexity and richness that should be seen as a new opportunity. If one is able to redefine sustainability on this basis, the first step towards an alternative approach is partially complete. Looking at informal developments; architects should understand the immense potential of this process of construction which goes beyond an aesthetic technique.

⁵³ Pedraza, Y. (2008). Interview: My Mexican Town in America. A. Becerra. Sheffield, UK.

⁵⁴ Baltazar, A. P. and S. Kapp (2006). "Learning from Favelas: the poetics of users' autonomous production of space and non-ethics of architectural interventions."pg. 3) also see Jailson de Souza e Silva.

⁵⁵ *ibid.*pg. 5)

This phenomenon should be understood not only as new forms, new materials or new techniques, but as a different body of patterns which correspond to a different operational process. Huppau and Umbach argue that, the individual and regional products of the neo-vernacular phenomenon of mass urban cities are:

"Constitutive parts of the political and cultural project of Modernity in ways that we are only just beginning to recognize... This 'other' of modernity has been part of its history from the beginning, albeit largely excluded from modernist theories, and generally less visible than teleological optimism and triumphalist narratives of time, progress and emancipation"⁵⁶.

The key lesson of these Issues is to understand the logic of its foundation and its process as a unique event which could be mapped, in order to be fully reproduced as a solution. In short, it opens a new opportunity and gives explanations for introducing processes of intervention with a different 'order', which has previously been undervalued and demands an alternative role for the architect. At the same time architects should recognise the limitations that a prescribed process of design which is based on excessive control over resources and order has and how this limits the potential for a more creative sustainable and inclusive future. In the words of Teddy Cruz,

"The challenge of those issues secondary to the project of beautification, as a shifting socio-economics and cultural dynamics of the inner city point out"⁵⁷.

Issues of Scarcity as a design tactics

It is important to recognize the value of the Issues of Scarcity as a design tactic or future intervention within an informal Mexican context. However it is important to highlight that, perhaps such Issues can be classified as a 'contradiction' to normative systems of architectural design. In this sense, the Mexican film director, Guillermo Del Toro explains that in global times the Mexican population is receiving an accumulation of a 'multiple times' bomb of information commonly obtained through mass media products. As a result a 'void of identity' can be produced if inhabitants are not prepared⁵⁸. Consequently, if a certain part of population is not 'officially' trained, new models can be supplied by copying foreign models. Nevertheless, the new models will keep using the local techniques, materials, improvisation, and 'imperfect' local logic. Therefore, new hybrid models are generated by empirical knowledge and not necessarily by a homogenous or predetermined design process. It could be seen that under these conditions, and also from a normative architectural perspective, such architecture does not have any specific theory. However this paper suggests a theory which is as a direct result of a lack of or programmed systems. Such answers are the collective intuitive empirical knowledge of part of the population as a consequence of the everyday challenges of the condition of scarcity. Identifying its logic opens the gateway to understanding processes which can then demonstrate alternative solutions. In the words of the Mexican landscape architect Mario Schjetnan,

⁵⁶ Umbach, B. H. a. M. (2005). Vernacular Modernism Stanford, California, Stanford University Press. pg. 8

⁵⁷ Cruz, T. (2004-2005). Border Postcards: Cronicles from the Edge. James Stirling Memorial Lectures on the City. Canadian Centre for Architecture, Montreal and London School of Economics. Pg. 12

⁵⁸ Toro, G. D. (2009). En Mexico , mas que desmemoria, se vive un Alzheimer cultural. La Jornada. Mexico City.

*"Hybridisation of cultures has been conducive to a unique creativity and expression of identity in Mexico",
"The mixture of cultures and races is positive. Design has to be both, global and local, technological and
crafted, contemporary and with connections to tradition"⁵⁹.*

The challenge as an architect with a renovated vision working inside the Informal Modernism context is to recognise that the Issues of Scarcity could be a valid tool for facing the main challenges of informal areas in cities of the global south. The combination of undiluted elements in these areas is not an accidental fact; it is just the direct result to a challenge of contingent forces under their present conditions of scarcity.

In this sense, Octavio Paz explains in his essay about invention, underdevelopment and modernity that in México, "different times and different spaces are combined in here and now that is everywhere at once". Paz argues that "the works of the new time that is aborning will not be based on the idea of linear succession but on the idea of combination". He goes on to state that this means a "reunion of languages, spaces and times"⁶⁰. The expression of Paz's 'combination' or hybridisation could be translated into the field of architecture as an approach that will use the Issues of Scarcity (lessons of informality) as a Design Tactics. These might be suggested as the main tools for a Strategic Framework of an alternative design process for future interventions within the informal Mexican context. For instance, the mixing of 'tradition' and 'modernity' elements will be possible without any prejudices. In other words, non-manufactured materials could be combined with highly industrialized ones, conciliating two different 'etiquettes'. Such a combination will be understood as two different human expressions, rather than only a combination of materials or forms. Different uses would be recognised or reconciled. Local philosophies for adapting the local environment; technical options limited by traditionally available materials and non-highly-industrialised techniques; local skills and customary design process with complete involvement of each household in the housing process; open processes which follow a series of interventions according to different contingencies; communal service exchanges and group money schemes to mention just some examples. In terms of Rahul Mehrotra

"The idea is to combine materials, to juxtapose conventional craftsmanship with industrial materials and traditional spatial arrangements with contemporary space organisation. In short, to give expression to the multiple worlds, pluralism and dualities that so vividly characterise the Global South landscape".⁶¹

Hopefully, such Issues can inspire interested students or professionals involved to engage and understand this reality more critically and inspire them to develop their own approaches. In this sense an alternative approach accepts that possibilities may be found through identifying the Issues of Scarcity. Understanding informality beyond the 'imperfection' of formal objects and recognising the value of non-prescribed processes of design may be a fruitful ground for the discussion of a sustainable architecture appropriate to this specific context. In other words, Felipe Hernandez and Peter Kellet argue "Rethinking the Informal City" from a more critical perspective in order to understand the complexity of

⁵⁹ Schejtnan, M. (2002). "With Mexico in mind " Landscape Design(313): 12-14.

⁶⁰ Paz, O. (1974). *Alternating Current*. London, Wildwood House. Pg. 21

⁶¹ Mehrotra, R. (2007). *Rahul Mehrotra Associates*, John Wiley & Sons.

such transculturation process beyond their physical form.⁶² Such issues according to Rahul Mehrotra have to be reconsidered “not as a condition that need to be remade but rather as a contagious phenomenon that actually remakes and humanises cities”.⁶³

The aim of the next part entitled Part 3: *Research by Design: Exploring the Issues of ScarCity beyond its forms*, will be to apply the discussed theory in this and previous chapters as a critical framework to identify, explore and expose alternative solutions if one compares it to conventional design procedure used in the industrialised west. The critical framework of analysis is supported by diverse critics, theorist, philosophers, academics and professionals identified in diverse schools of thought such as postcolonialism, sustainable criticism, vernacular, neovernacular, reflexive modernity, poststructuralism and others to understand the issues of scarcity more critically. This framework will be used as the basis for the analysis of the *Condition of Scarcity* as an alternative theoretical model of *Architectural of Scarcity* practice in Mexico. The objective is to place the main issues of this *Condition* into a holistic comparative structure to learn and recognise organisational and strategic principles of the design process rather than concentrating on the historiographical or aesthetical elements.

⁶² Hernandez, F. and P. Kellett (2009). Introduction: Reimagining the Informal in Latin America. *Rethinking the Informal City: Critical Perspectives from Latin America*. P. K. a. L. K. A. Felipe Hernandez. New York-Oxford, Berghahn Books.

⁶³ Mehrotra, R. (2009). Foreword. *Rethinking the Informal City: Critical Perspectives from Latin America*. P. K. a. L. K. A. Felipe Hernandez. New York- Oxford, Berghahn Books.

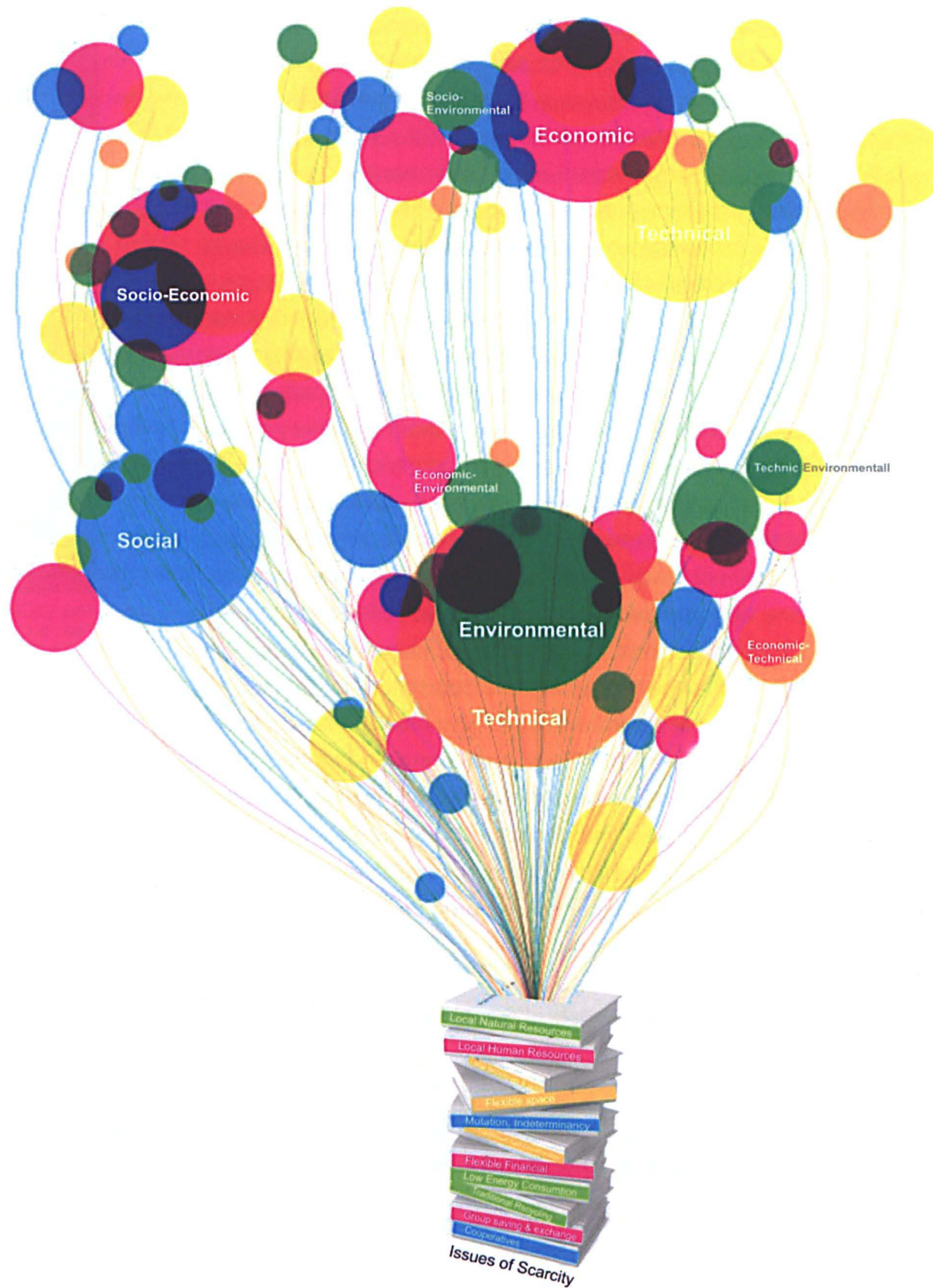
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Part 3:

RESEARCH BY DESIGN: DESIGNING TOOLS TO IDENTIFY THE ISSUES OF SCARCITY

Chapter 6: Understanding the Issues of Scarcity beyond its forms



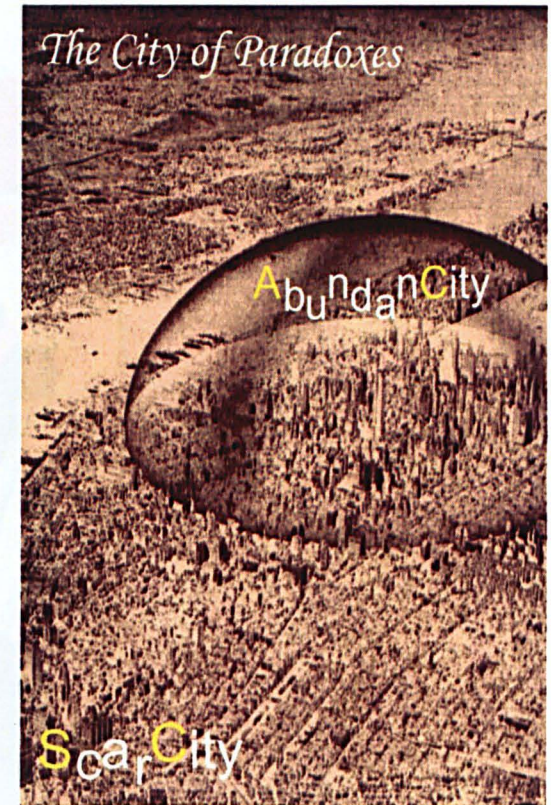
"When architectural needs are reduced to its absolute basic level, the result challenge the conventionality of western architectural form"

Melanie Dodd

Chapter 6: Understanding the Issues of Scarcity beyond its forms

Introduction

Recapitulating the previous theoretical part; in the first two chapters of this thesis the ambivalent conditions associated with the Mexican context and in specific the challenging situation of certain areas under the *Condition of Scarcity* were described. In **Chapter 1**, the current *Architectural Global-philic* phenomenon to adopt foreign concepts was discussed. This means the influence of western discourses have had on the construction of Mexican culture and by implication architecture. For instance sustainability is now considered as the new foreign novelty. Next in **Chapter 2**, the high level of contrast, inequality and dichotomy of within Mexico's communities was highlighted and explained through a renewed perspective mainly supported by postcolonial and poststructuralist theory which goes beyond historiography or aesthetical discourses. The resulting model of analysis highlighted how actual socio-political and economic conditions are shaping two different societies in Mexico's built environment -AbundanCity and ScarCity- which have different values capacities and priorities. However, AbundanCity and ScarCity are sharing the same spatial space, even so, such space has been physically divided, but it is transgressed due to both do intrinsically depend on one another. As a result both are informing each other giving as a result hybrid physical manifestations. This phenomenon of a Mexican city or indeed of any city around the world with similar characteristics of contradictory 'truths' was referred as the model of "The City of Paradoxes" (fig 6.1). Consequently in **Chapter 3**, the limitations of adopting sustainability as another western discourse that does not correspond fully to the reality and priorities of the whole Mexican population were explained. In specific, this chapter argued that sustainability is an exclusive western concept that only can be adopted in Mexico by the life styles of the wealthiest communities (AbundanCity), not with those who live under the condition of scarcity (ScarCity). Afterwards, **Chapters 4 and 5** explained through vernacular and neo-vernacular discourse how the main *Issues of Scarcity* have been studied through the past, present and what the possible implications for the future are. Different critics such as Rahul Mehrotra, Teddy Cruz or Diego Loveling, to name several, concur to put attention to the informal model which is involuntary sustainable due to little is wasted and most resources are reused. **Chapter 5** concluded that certain features of the ScarCity's model are in this sense highly valuable to inform an alternative sustainable approach if one compares it to westernised model of AbundanCity. In short, the *Issues of Scarcity* as a design tactics to inform the Architecture of Scarcity approach, were suggested. In other words, the potential to formulate a new approach to Mexican future architecture based on the idea of scarcity was identified. In terms of Melanie Dodd, "when architectural needs are reduced to its absolute basic level, the result challenges the conventionality of western architectural form"¹. In short, chapters 1 till 5 set the critical theoretical framework as the ground to investigate the conditions of mass urbanized cities of the global south beyond its forms.



Figs. 6.1 Conceptual understanding of The City of Paradoxes.

¹ Dodd, M. (2008). *Oportunistic Urbanism*. Oportunistic Urbanism. D. R. Lovering. Melbourne, RMIT University Press: p 127.

Philosophical model/critical framework of analysis

Summarising key arguments that support a critical framework of analysis beyond the normative it is significant to mention again different relevant theorist: Sakia Sassen explained the contrasting conditions of contemporary urban centres due to actual socio-economic model of development². Homi Bhaba explains the ambivalence model of every nation in the global south countries through the relationship of the 'pedagogical' to refer official projects and the 'performative' to refer anti-official projects.³ Rahul Mehrotra develops further this argument in the field of architecture; he was directly concern with the materialisation of both projects on spatial dimension. As a result he termed 'static' to the space developed formally and 'kinetic' to the space developed informally.⁴ Felipe Hernandez and Peter Kellet concur with Mehrotra's model which challenge to understand this phenomenon beyond formal or informal forms.⁵ Michael De Certeau, in *The Practice of Every Day Life* suggests identifying valuable 'tactics' utilised by individuals to create their own space.⁶ John Habraken argues to observe *The Structure of the Ordinary*, as he define the informal, as away to challenge actual normative forms of control of built environment.⁷ Jeremy Till highlight a need to develop new architects role in order to address changing social, economic and environmental context that face contemporary architectural practice⁸. In Mexico, Octavio Paz highlights the need to reformulate Mexican culture negotiating all its contradictions and accepting all the implication of its hybrid nature.⁹ In summary previous authors point out the struggles caused by projects based of the idea of 'perfection' which attempt to impose order and control. In the words of Silva Herzog the *Stupidity of Perfection* as he defines this situation, is always making evident through a reverse representation of imperfection. ¹⁰ The resulting model of analysis for this dissertation is inspired by previous critic's arguments. The term used to amalgamate a critical framework of analysis of cities with contrasting and dichotomous conditions in Mexico or other cities with similar characteristics is the City of Paradoxes which includes AbundantCity and ScarCity. The former refers to the space developed by the westernised approach based on prescribed design process and commodisation of natural, human and economic resources. As a result in this approach, architects take for granted to have total control over the creation of such space. The second term refers to the space developed under conditions of scarcity, due to different limitations, the design processes is challenge to be developed by non-prescriptive design process. As a result ScarCity depends on different contingencies of the everyday life being the interested stake holder the main actor. The main difference if one compares the model of this study to Mehrotra's approach is that here the main focus is a comparative of amount of

² Sassen, S. (1998). *Globalization and its Discontents* New York, New Press, Stiglitz, J. E. (2006). *Making Globalization Work* Penguins Books.

³ Bhabha, H. (1994). *The Location of Culture*. London, Routledge.

⁴ Mehrotra, R. (2009). Foreword. *Rethinking the Informal City: Critical Perspectives from Latin America*. P. K. a. L. K. A. Felipe Hernandez. New York- Oxford, Berghahn Books.

⁵ Hernandez, F. and P. Kellett (2009). Introduction: Reimagining the Informal in Latin America. *Rethinking the Informal City: Critical Perspectives from Latin America*. P. K. a. L. K. A. Felipe Hernandez. New York-Oxford, Berghahn Books.

⁶ Certeau, M. D. (1974). *The Practice of Everyday Life*. Berkeley, University of California Press.

⁷ Habraken, N. J. (1998). *The structure of the ordinary : form and control in the built environment*. Cambridge, Mass.; London : , MIT Press, .

⁸ Till, J. and T. Schneider. (2008). *Alternative Architectural Praxis*, The University of Sheffield, Till, J. (2009). *Architecture Depends* Cambridge ,, MIT Press.

⁹ Paz, O. (1999). *El laberinto de la soledad ; Postdata ; Vuelta a El laberinto de la soledad*. México, Fondo de Cultura Economica.

¹⁰ Silva-Herzog, M. J. (2006). *La idiotez de lo perfecto miradas a la política Mexico City*, FCE.

resources consumption of opposite design processes used to approach the built environment. Consequently, the focus is to identify distinctive features of the ScarCity model beyond and understanding of them as aesthetic, stylistic or tectonic approaches only and to see them as principles that may inform the design process. This thesis has been arguing that an approach which does not look to the perfection of Issues of Scarcity or is tempted to interpret it through a prescribed process of design may be a fertile ground to start the discussion of a sustainable architecture appropriate to the specific characteristics of Mexico.

Part 3 and 4

The aim of this **Chapter 6** (part 3) is to highlight **first** how such different societies, AbundanCity and ScarCity, contained inside Morelia, Mexico the selected example of city of paradoxes, provide evidence of a very different ethos when approaching the built environment and by implication these have opposite processes of design. In other words, AbundanCity and ScarCity have different models of using and consuming resources giving different understanding of the meaning of sustainability.

Secondly, Chapter 6 focuses its attention on the features of the design process of the development of ScarCity as a theoretical model to inform the *Architecture of Scarcity* approach. This means analysing deeply the main *Issues* of this condition that allow millions of Mexican citizens to obtain a shelter thought 'informality'. To achieve this aim three typical case studies developed informally or semi-informally in the city of Morelia are analysed. Identifying the main features of its non-prescribed design process will allow us to speculate later how such lessons can be used as set of renewed design tactics to impact future architectural practice in Mexico. The outcome lessons will be collected in the *Catalogue of the Issues of Scarcity and Design Tactics Programmes*. In other words, the research questions of this chapter are: What can be learnt from an understanding of existing features –*Issues of Scarcity*– of three typical cases of architectural production under the condition of scarcity? Why even under the condition of scarcity there is a huge amount of architectural production. How then the condition of scarcity can inform the *Architecture of Scarcity* approach? This means how some of the involuntary sustainable *Issues of Scarcity* of its non-prescribed design process can be identified to inform an alternative practice program in Mexico. In addition, this chapter will carry out an analysis of different institutions which can support aforementioned initiatives. This means to address the question where the money is coming from to support an alternative architectural practice. Finally different families and community design priorities will be analysed as well as the most common unpredictable or contingent situations to make sense of additional complex factors involved in the condition of scarcity.

Later **Chapters 7 and 8** (part 4) will speculate about the practical application of the researched lessons and the role of the architect within ScarCity's context through a game which abstract reality of informal practice. The aim of the *Architecture of Scarcity Game* is further developing understanding of the informal process and testing the validity of the founded lesson amalgamated in the in the Agent Tool Kit V2010 which will include: *The Catalogue of the Issues of Scarcity and Design Tactics*, *the Catalogue of Institution of Support*, *Family and Community Design Chest* and

Contingency cards. In other words this test will involve different participants to make sense of the Architecture of Scarcity approach. The research questions of these chapters are: how such lessons can be interpreted by an architect as a new set of design tactics to offer an alternative? And what can be the revised role of the architect? Finally **Chapter 9** will draw the conclusions.

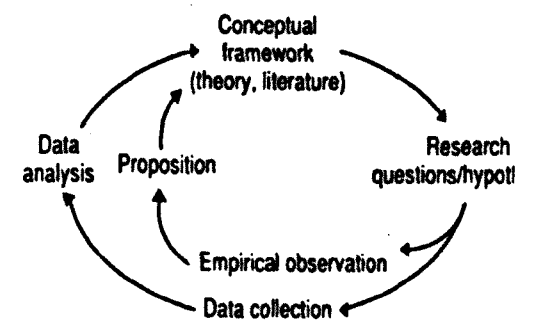
By exploring the main issues firstly in the selected case studies can be determined later if the same methodology could be replicated in other Mexican cities or other cities with similar characteristics in Latin America and even to be applicable in unvalued areas of population in developed countries. It is hypothetically speculated that possibilities exist to manipulate struggles faced by mass urbanised cities through guiding them on an alternative path before problems get magnified and more difficult to solve. Hopefully the Architecture of Scarcity approach can inspire others to develop their own approaches.

Methods: Research by Design.

In order to address the awaiting research questions of parts 3 and 4, this dissertation will use the *Research by Design* methodology (fig 6.2). After the theoretical review, the richness and potential of informal development studies in Mexico was identified. In specific the idea of alternative approach based on the idea of scarcity was acknowledged. It was also highlighted that in a lot of cases, informality is still explained through traditional architectural discourse which focuses on historic or aesthetical features missing other socio-economical and environmental factors that finally define informal forms. Consequently, new studies explaining the informal phenomenon from a deeper perspective were identified. However with some exceptions, it has been observed the lack of strong exploration of its theory into practice. Commonly, studies about informality have been finished as catalogues of recommendations often not tested in practice. The main concern is that if suggested theory remains silent and uncommunicated with a practical exercise the opportunity to develop further understanding and testing validity of founded lessons is missed. In other words the experience of additional stages which includes or speculates upon a practical use can lead to post rationalise and revise theory. In response to have a closest approximation to a realistic exercise The *Research by Design* approach is proposed to understand critically and practically the conditions of scarcity beyond informal or semi-*Informal* forms of the selected three case studies located in Morelia.

What Is Research by Design?

In addition to the theoretical part (chapters 1-5) which set the critical position as the ground to investigate conditions of the selected case studies, the following chapters 6-8 will also use design as part of the research. This means that visual mediums such as photographs, diagrams, graphics, drawings, constructed models, interactive models (games), simulations of reality and practice, etc. are used as part of the research along to writing



Figs. 6.2 Cyclical conceptual understanding of Research by Design

explanations. The expert on information design and emeritus professor at the University of Yale Edward Tufte argues that the most effective way of presenting information is through a visual display of data in all its variants. Tufte believes that this is generally an efficient method of developing further understanding and transferring knowledge.¹¹ Also according to natural mind construction, analytical visualisation of ideas normally come first and later descriptions or explanations are developed.¹² The objectives of visuals in this study can vary from: conceptualise ideas, document or map data, analyse data, models to explore data, models to simulate the practical use of data, etc. The final aim of the Research by Design methodology is to have an additional media for further understanding of data and testing validity of information which finally can inform or post rationalise theory. The Research by Design methodology will include two main stages: a) the *Research Spiral and Tools Design* stage and b) the *Speculation of Architecture of Scarcity Practice* (fig.6.2). The synthesis of methods of both stages can be amalgamated in c) as a speculative plan of work.

a) Methods of exploration and analysis of data/lessons

The *Research Spiral and Tools Design* stage aims to produce all the necessary information or data that applied science such as architecture requires to support a more critical design and construction practice. In other words, understanding of the non-prescribed process of design of informal developments is necessary before any 'agent', as the architect will be called, or agency begins its future intervention. Different activities of research such as classification, analyses, critical discussion, networking, training, etc, can take place in this stage. In practical terms this phase can be also entitled as the **Pre-Agency stage**. The resulting information will be part of a set of research tools to support an alternative practice with solid foundations on knowledge. The application of **Pre-Agency stage** on the different case studies will be fully developed in the following pages of this chapter.

b) Methods of further development and testing of lessons

The second stage, *Speculation of Architecture of Scarcity Practice or Post-Agency* stage will test the practical application of the researched lessons and tools previously designed in Pre-Agency stage. In other words, the further developing understanding of the non-prescriptive design process of informal architecture and testing the validity of the identified lessons take place in this stage. Founded lessons of different research stages were amalgamated in different tools such as the Catalogue of Issues of Scarcity and Design Tactics Programmes, Catalogue of Institutions of Support, Family Design Support Chest, Community Design Support Chest and Contingencies cards to integrate the Agent Tool Kit V2010.

¹¹ See Tufte, E. (1983). *The visual Display of Quantitative Information*. Cheshire, CT: Graphics Press. Tufte, E. (1990). *Envisioning Information*. Cheshire, CT: Graphics Press. Tufte, E. (1997). *Visual explanations: Images and Quantities, Evidence and Narrative*. Cheshire, CT: Graphics Press. Tufte, E. (2006). *Beautiful Evidence*. Cheshire, CT: Graphics Press.

¹²

This Tool Kit is the essential research that any agent needs as a back up to construct an alternative path supported by a non-prescriptive design process. Consequently he can establish his agency to begin encouraging the Architecture of Scarcity practice. To achieve this aim a board game entitled the *Architecture of Scarcity Game* was developed as a result of abstraction of reality of the selected informal and semi-Informal case studies in Mexico. The game involves different participants to speculate about alternative architectural practice. The additional lesson resulting of this test will be useful to develop further and more objectively the proposal. *Chapter 7* will explain in more detail the methods of the Post-Agency stage whilst chapter 8 will present elements, instructions and testing results of the *Architecture of Scarcity Game*.

c) Speculative plan of work

The final methodology developed at the end of this exercise could be considered as the first step to build up a speculative plan of work for a revised architect's role within this context. In other words it is necessary to clarify the theory that has been built through the iterative research process. The theory and methodological approach can be translated later as a provisional *Outline Plan of work for Architecture of Scarcity Design and Practice* which can be useful as first step for future live projects interventions. See the first part of the plan at pg. 209 at the end of Chapter 6. To see the complete plan go to pg. 286-287 at the end of Chapter 8

Pre-Agency stage: The Research Spiral and Tools Design

Experts in research methods such as Loraine Blaxter, Christina Hughes and Malcolm Tight concurs that research is often presented as a fixed process which can be developed in linear stages (Fig. 6.3.) However, they argue that due to intrinsic research's nature to develop investigation as a linear process, is not.¹³

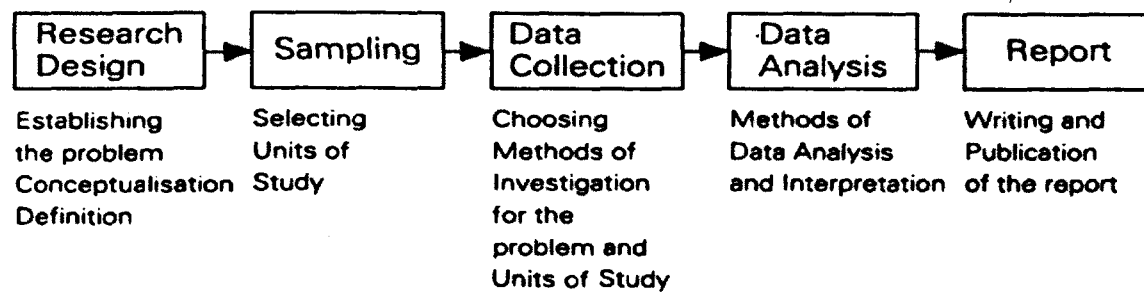
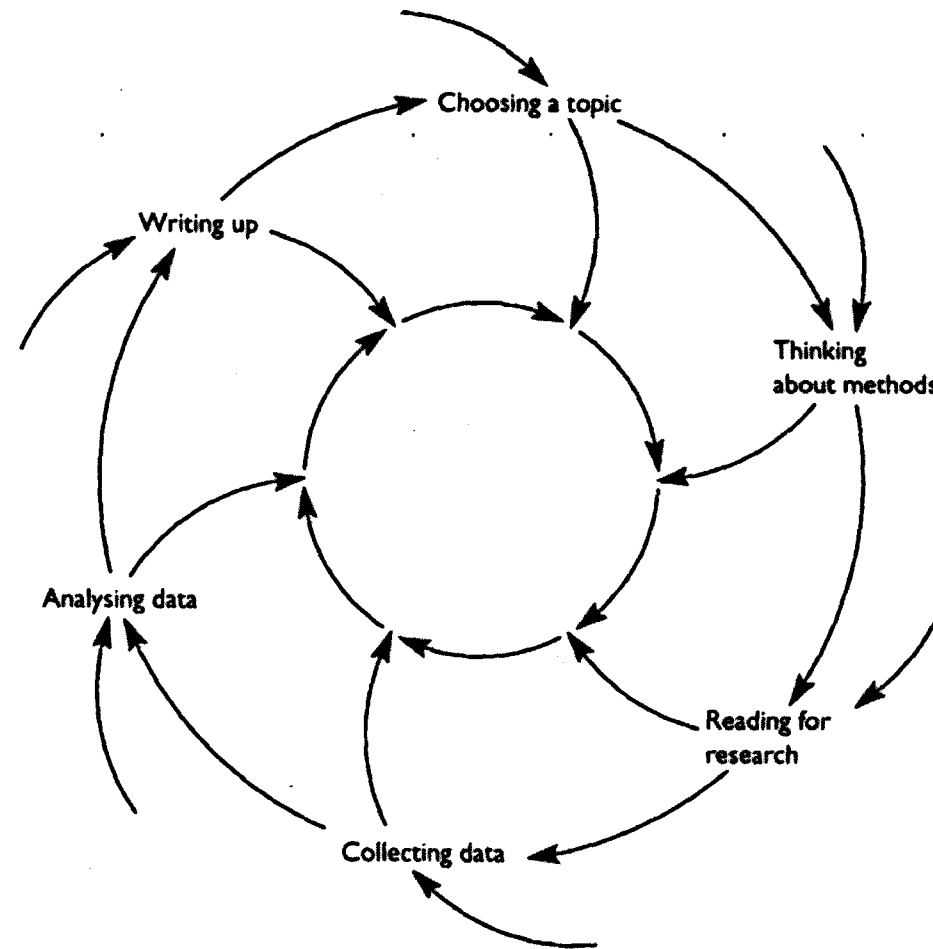


Fig.6.3 Research as a linear process by Loraine Baxter, Cristina Hughes, Malcolm Tight. 2002

¹³ Baxter, L., C. Hughes, et al. (2002). *How to research*. Philadelphia USA, Open University Press .

Fig.6.4 Bottom right: Research Spiral by Loraine Baxter, Cristina Hughes, Malcolm Tight. 2002



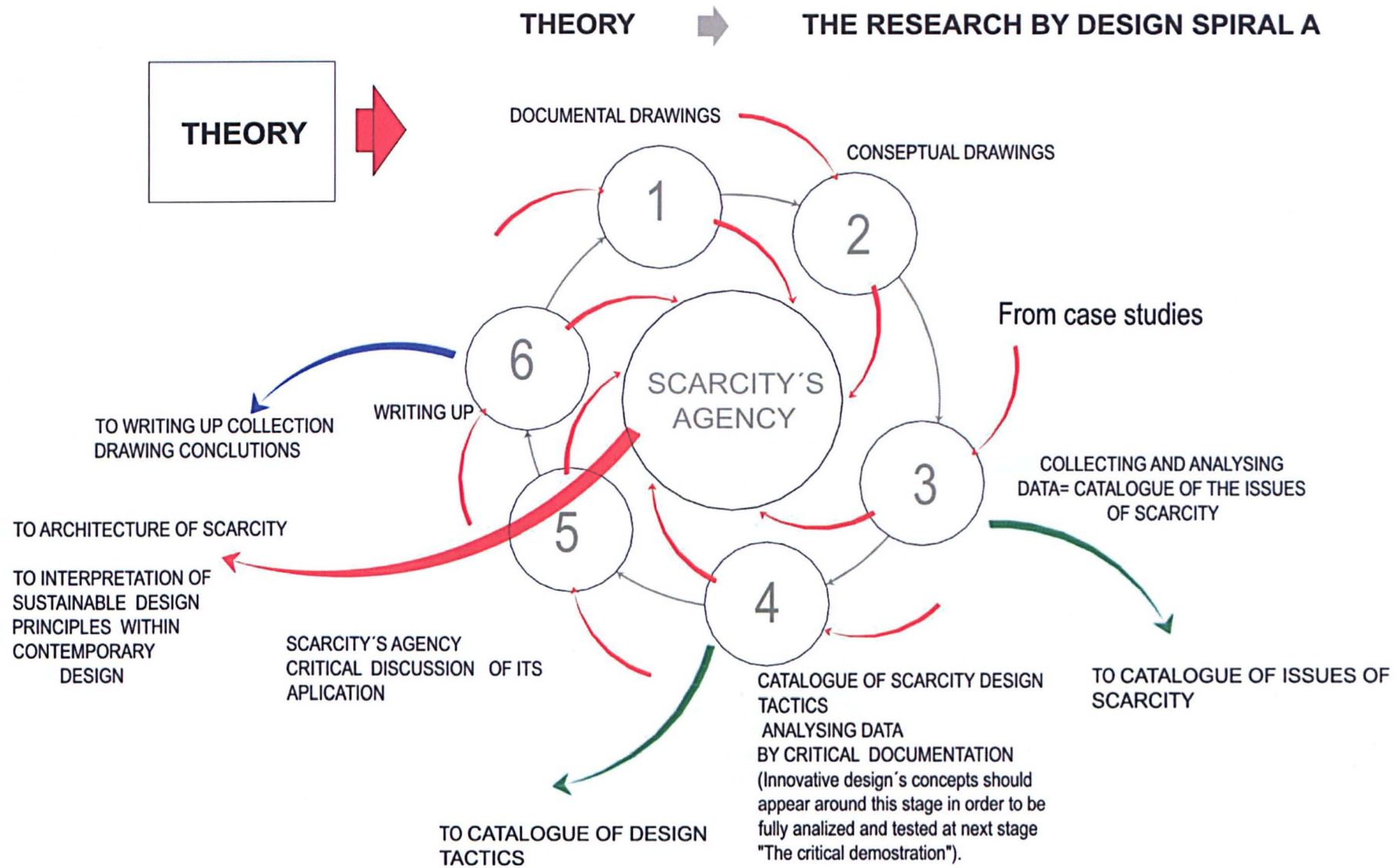
In order to address this situation some methods suggest more complex diagrams of linear view, which allow some levels of flexibility to take slightly different routes. An alternative approach is conceiving research as a circular process. This approach is based on constructivist stages of learning. The stages included in this view can be the same that the linear approach, but there is an implication that process accepts entered at any stage and that the experience of later stages can lead to post rationalise previous stages. The suggestion of Blaxter, Hughes and Tight is a derivation of this approach. They suggest seeing the research process as "cyclical or iterative" when investigation is related to action research.¹⁴ In other words they

suggest research as a number of stages organised in *Spiral* where each one can impact the way in which the next one is approached (fig. 6.4). Due to the nature of this research a method adopted from the research spiral suggested by Blaxter, L Hughes, C and Tight will guide the exploration and analysis of data/lessons or *Pre-Agency* stage for the selected case studies. The main reasons for selecting this method is that the research spiral is cyclical; can be entered at almost any point; is a never-ending process; will cause you to reconsider your practice; will return you to a different starting place.

The first variant of *Research Spiral* suggested for demonstrating *Pre-Agency* stage is presented in diagram A (fig. 6.5). Each research spiral has its own mini-structure. The different stages of research include: 1) Conceptual drawings, 2) Analytical Drawings, 3) Collecting and Analysis of Data, 4) Catalogue of data-Issues of Scarcity, 5) Critical discussion and 6) Conclusions and Writing up.

¹⁴ Ibid. Pg. 9

According to the specific needs of each study, every stage can be flexible enough to go more or less in depth in future studies. Also specific local conditions will draw a new set of topics to consider for mapping, or indeed maybe some of them are not going to be relevant. The idea of this exercise is to show a method that could possibly inspire other professionals involved in such issues rather than a set of prescriptive rules that should be rigidly followed.



THE RESEARCH SPIRAL Adaptation from Blaxter, L., Hughes, C. and Tinght, M. (2001)

Nevertheless, as the research developed, the research spiral evolved to a second variant, diagram B (fig 6.6). This experience highlights the possibility to adopt a similar diagram in different ways according to future interventions. The key issue is firstly to build up a solid

theoretical basis, and later perform a minimum series of stages to identify and un-lock important lessons. The final mini structure of research spiral applied in each case study includes: Stage A: Background, Mapping & Documentation, Stage B: Summary of Mapping, Stage C: Issues of Scarcity, Stage D: Appraisal, Stage E Design Brief and Stage E' writing up.

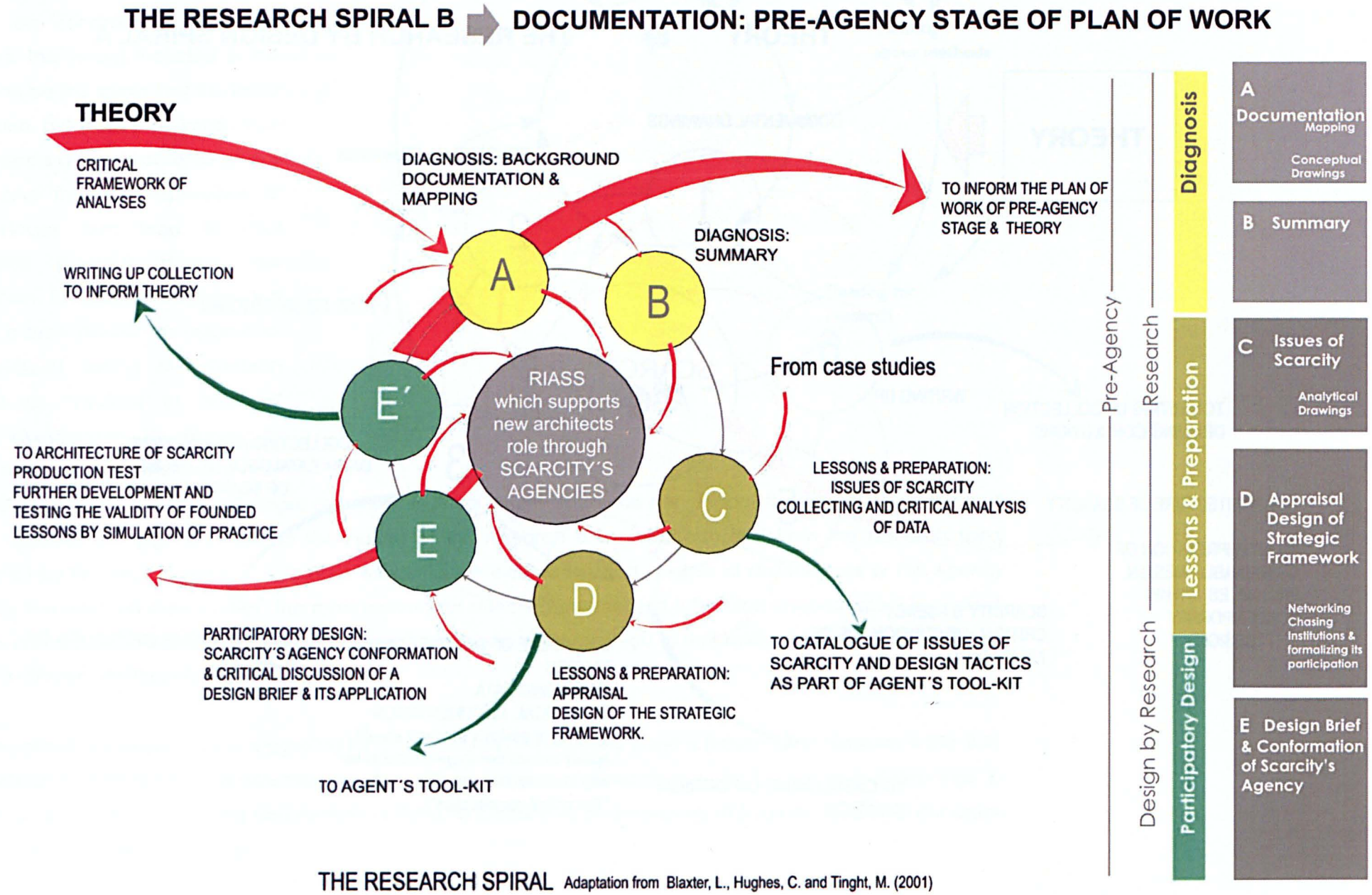
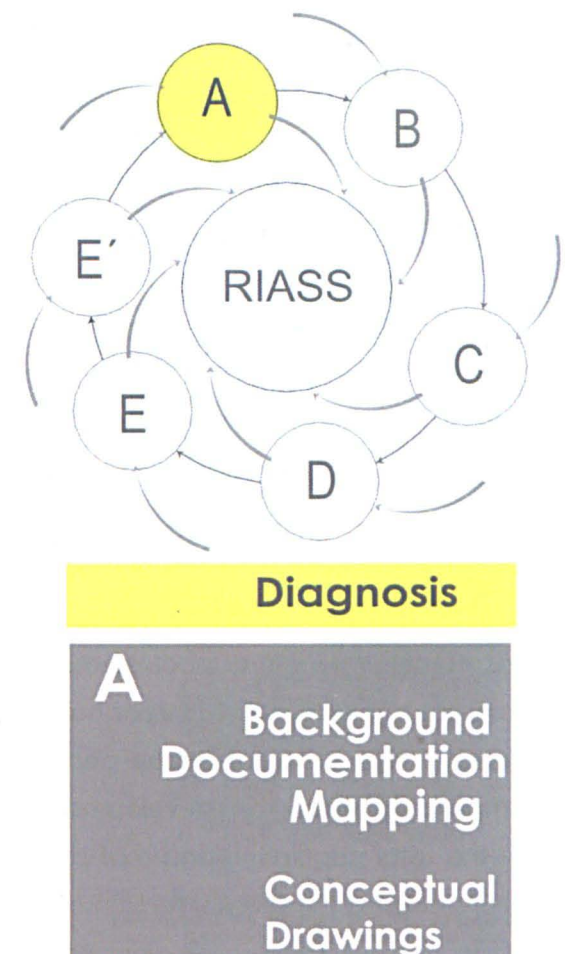


Fig.6.6. Research by Design Spiral B

After the presentation of the research method of analysis the following step is to carry out the Stage A: Background, Mapping & Documentation to selected case studies.

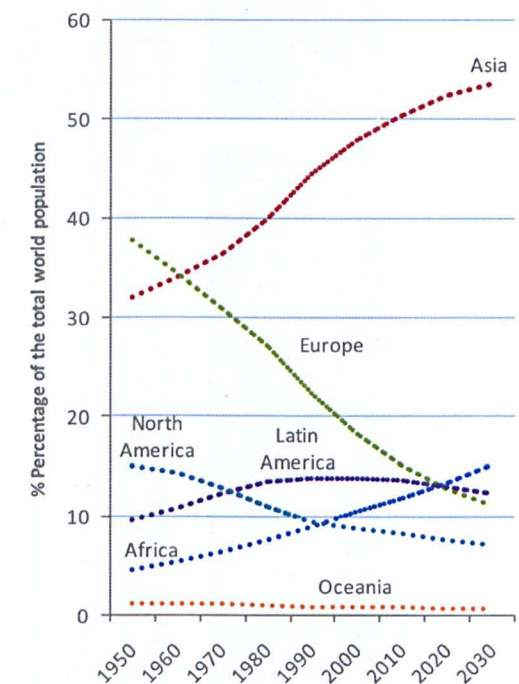
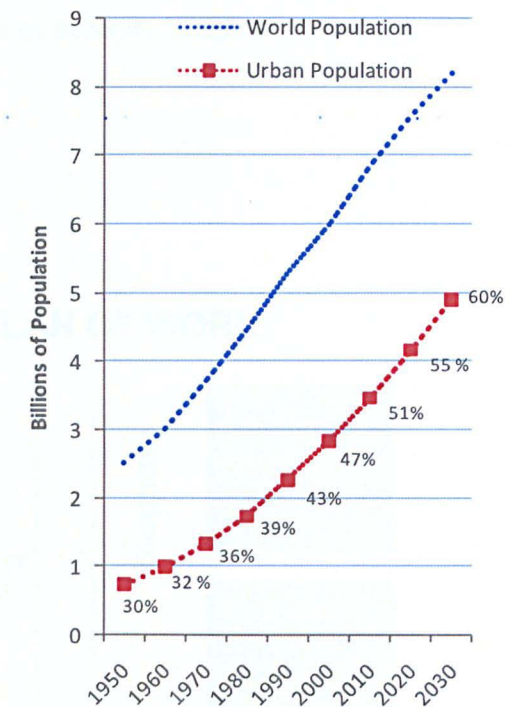


Stage A: Diagnosis: Background, Mapping & Documentation

The purpose of this stage is to set the background of analysis and map-document the main issues associated with local conditions of the selected case studies. There are different 'levels' of documentation, in this stage it is very important to make visible and communicate socio-political and economic issues that traditional discourses commonly does not take into account, such as: inequality, consumption, polarisation, irregularity, informality, etc. The conventional practice of architects is to impose new projects 'putting in'. The revised version of Architecture of Scarcity approach is to 'draw out' the local conditions first in order to understand the different dynamics involved from a bigger picture. Consequently, the rise of the main issues requires documentation to be more integrated and consistent - and thus the involvement of everyone and more holistic forces is greater.

A.1) Background: Informality becoming increasingly dominant in global south countries

Experts from different backgrounds such as sociologist Sakia Sassen or economist Joseph E. Stiglitz had explained the unequal conditions of contemporary urban centres (in this thesis defined as the Cities of Paradoxes phenomenon), concluding that some of the main causes of communities' dichotomy are related to the actual socio-economic model of globalization¹⁵. In addition, Hommi Bhabha has explained further this phenomenon from a wider perspective highlighting the ambivalence and hybridism nature of every nation in the global south¹⁶. The most interesting issue is that, even so, the ambivalent condition of cities of paradoxes phenomenon (fully explained in Chapter 2), urban life has become the most popular option in Mexico, with 70% of the population inhabiting metropolitan centres in 2000. According to INEGI 70 million people from a total population of 100 million were living in cities by the end of the century¹⁷. In 1950s only 30% of the population was living in urban centres. This change represents the biggest transformation from rural to urban life in Mexican history. The key issue is that part of this growth has been possible due to more than 38 million people from the less privileged part of the population, or in other words 55% of urban citizens, have fulfilled their need for housing through an 'informal' path. Their specific situation of rapid change and being limited to the condition of scarcity has challenged them to develop tactics to address local issues. Self-determination, self-organisation and self-constructions which have used only locally available resources have provided some of the answers. In other words, it can be said that the non-prescriptive process of design and informal construction has been the most successful/booming way of contemporary Mexican city development. It is projected that by 2030 the urban population could easily reach 80% of the total population and that by 2050 this figure may rise to 85%. The main concern is that if the same conditions causing the present tension continue, inequality and dichotomy will also increase making it even more difficult to achieve sustainable aims. Recent data from the World Bank estimates that 54.8 million from a total



Figs. 6.7 & 6.8 World Urbanization Prospects: The 2005 Revision Population Database. <http://esa.un.org.unup> UN

¹⁵ Sassen, S. (1998). *Globalization and its Discontents* New York, New Press, Stiglitz, J. E. (2006). *Making Globalization Work* Penguins Books.

¹⁶ Bhabha, H. (1994). *The Location of Culture*. London, Routledge. Pg. 140

¹⁷ Source: INEGI, derived from 2005 census data

Mexican population of 107.4 million can be considered in poverty¹⁸. This means 51 % of the total population. According to Mexican researchers this amount could grow 6 million in the next year if the same circumstances continue. Along with this anticipated rise, informal developments are also predicted to increase¹⁹.

From a wider perspective, the situation seems to be very similar in all of the countries of the global south. This means that in the coming two decades that urban settlements will grow more in less developed continents. It is estimated that by the year 2035, 2 billion people could inhabit some kind of informal development²⁰. This situation added to the actual challenges, can create even bigger struggles to achieve more sustainable cities. For instance, Asia will continue to concentrate the biggest urban population in the world, with Africa second and Latin America third (figs. 6.7 & 6.8). Nevertheless this last subcontinent is actually the one with the fastest urbanisation rate. It is predicted that by 2025 80% of its total population will be urban²¹.

	1950	1960	1970	1980	1990	2000	2010	2020	2030
World Population	2519470	3023812	3696588	4442295	5279519	6085572	6842923	7577889	8199104
Urban World Population	731765	992353	1328847	1736302	2270869	2844802	3474571	4177106	4912553
Urban Population (%)	29.04	32.82	35.95	39.09	43.01	46.75	50.78	55.12	59.92

At the moment the 7 largest Latin American cities; Mexico City, Sao Paulo, Buenos Aires, Rio de Janeiro, Lima, Bogota and Santiago de Chile concentrate almost 80 million people. This is equivalent to 20% of the total Latin American population. In addition the next 10 largest cities have a population of 35 million. This means that within the 17 largest cities live 30% of the whole Latin American population, showing the high urbanisation level of this region (fig 6.9).

The Mexican case

In the case of Mexico, the capital Mexico City is considered the 2nd largest metropolis; its urban area already goes beyond a 100 km radius²². Consequently, according to Aguilar and Vieyra, it is one of the most complex cities making it very difficult to tackle the different social,

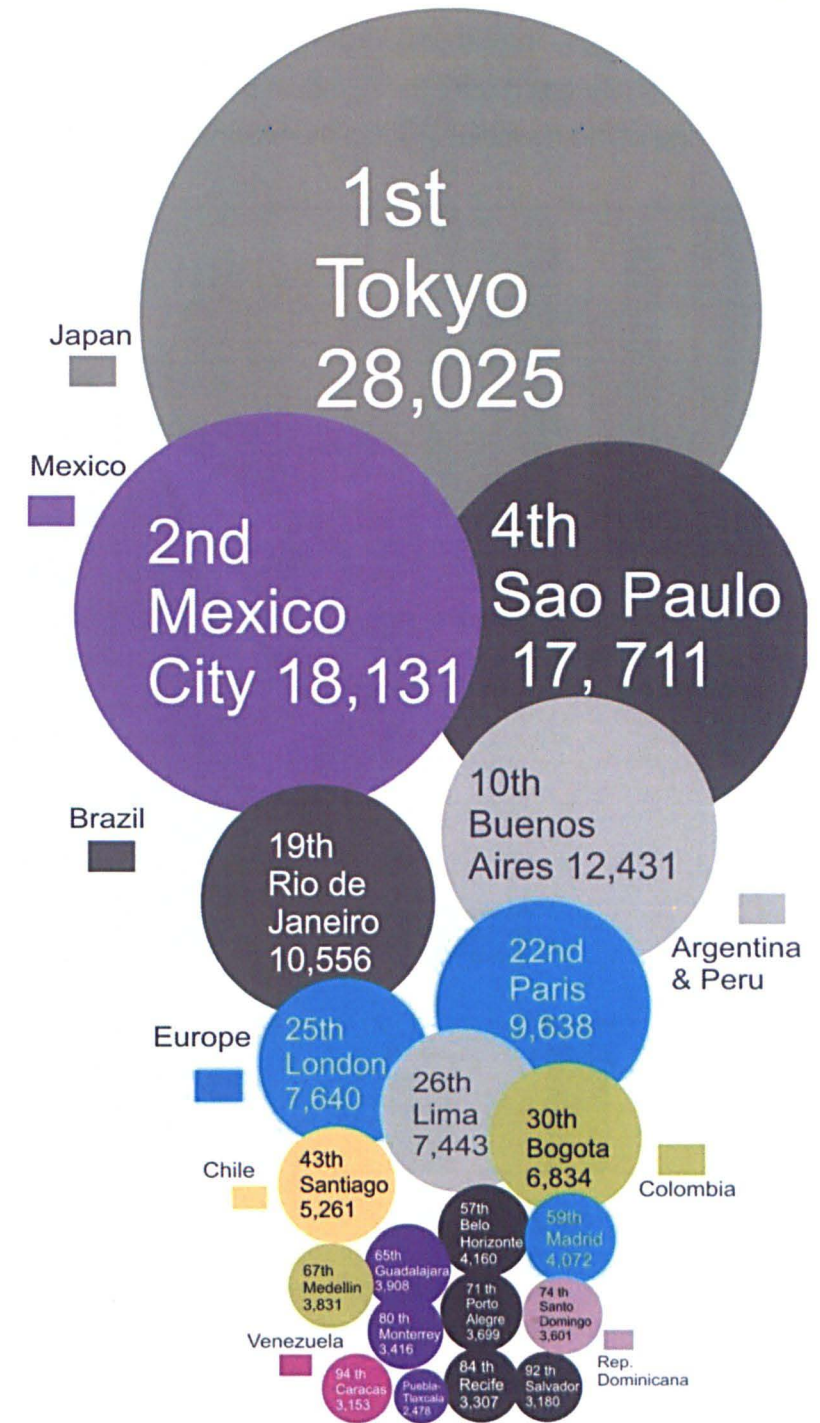
¹⁸ Group, G. (2009). Economic Downturn Affects Poverty Rate in Mexico SourceMex: Economic News & Analysis on Mexico

¹⁹ Source: CONAPO derived from 2009 analysis.

²⁰ Ravallion, M. (2001). On the urbanization of Poverty. Washington, World Bank, Davis, M. (2006). Planet of Slums. New York.

²¹ (ECLAC, 2003)

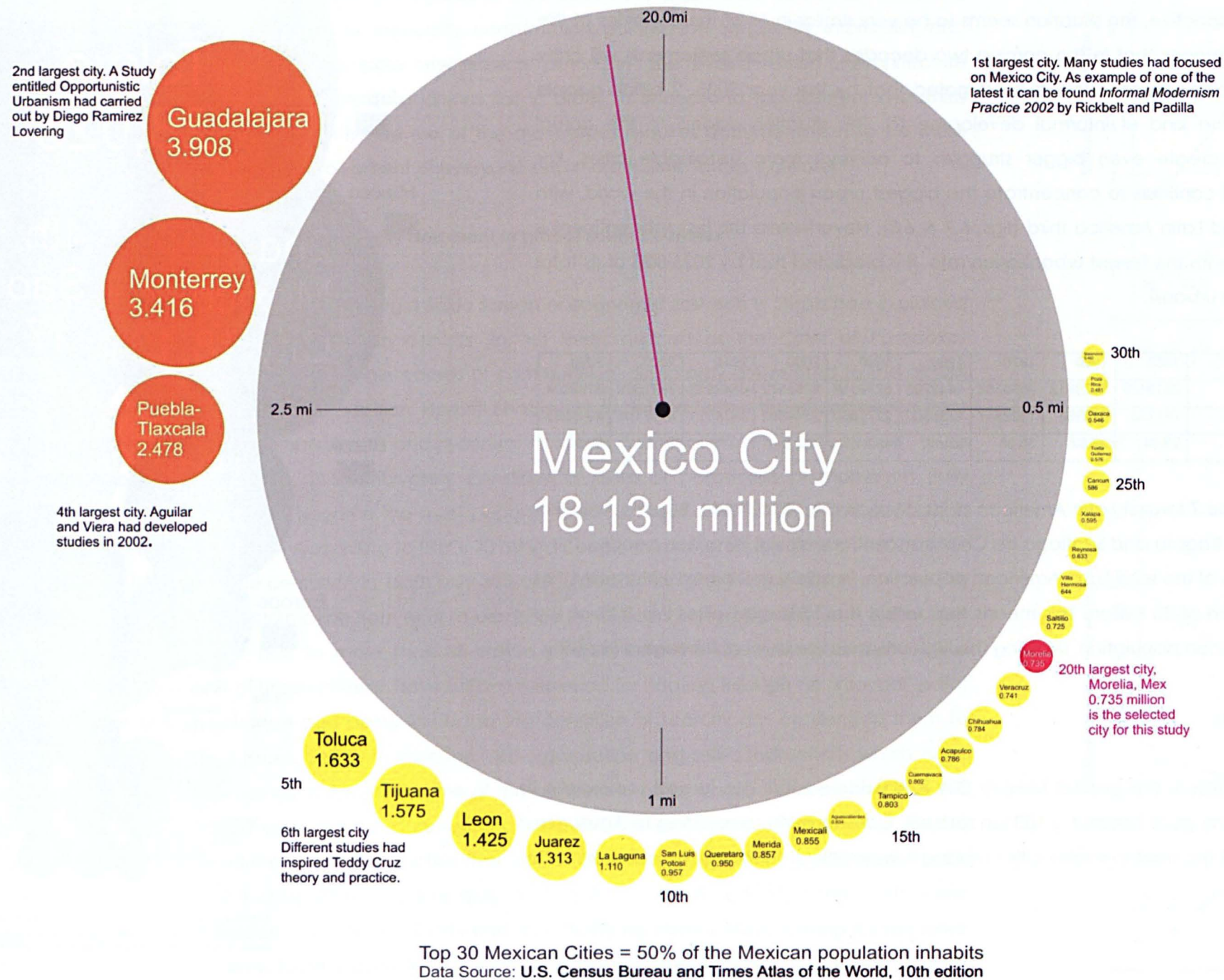
²² U.S. Census Bureau and Philips, G., Ed. (2006). Times Atlas of The World, Oxford University press.



17th largest Latin American Metropolis of the top 100 compared to the 1st Tokyo and the 3rd largest in Europe
Source: U.S. Census Bureau and Times Atlas of the World, 10th edition

Fig.6.9. Top Latin-American Metropolises compared. Diameters sizes are directly proportional to its population

economic and environmental issues due to this magnitude²³. Mexico City with its population of nearly 20 million has 18% of the total Mexican population. The other 3 largest cities Guadalajara, Monterrey and Puebla have additional population of 10 million. Considering that 26 medium sized cities add another 22 million people, it can be said that 50% of the population is concentrated in the 30 largest cities, positioning Mexico as one of the countries leading the urbanisation process in the global south²⁴ (fig 6.10).



²³ Aguilar, A. G. (2006). Las megaciudades y el deterioro ambiental. México, 37:Impulso Ambiental, CEADESU-SEMARNAT. Vieyra, A., Ed. (2006). Reestructuración sectorial centro – periferia. Los alcances regionales de la Ciudad de México. Aguilar, A. G: Las Grandes Aglomeraciones y su Periferia Regional. Experiencias en Latinoamérica y España. México, Miguel Ángel Porrúa.

²⁴ Source: INEGY, derived from 2005 census data

Fig.6.10. Top 30 Mexican cities compared to the Metropolis of Mexico City. Diameters sizes are directly proportional to its population

Unfortunately most of these cities are following an 'anarchic' pattern that can be compared to the one that Mexico City experienced 4 decades ago. In this model the informal settlements and low-income housing developments are the most common solutions for the masses, which commonly lack the most basic amenities. According to Antonio Vieyra a social geographer of the National University, he argues that this phenomenon also has a direct relationship to environmental damage, poverty, inequity and social exclusion. At the same time its population will suffer limited provision of basic needs, unfair land access, limited services and restricted water. Vieyra points out that as a result all these issues, there are clear challenges that have to be addressed in parallel to the new ones, such as climate change if someone is pretending to make these cities more sustainable²⁵.

In summary, aforementioned facts point out coming challenges and future implications for professionals interacting within this context where informality is becoming increasingly dominant (fig. 6.11 and 6.12). One of the main difficulties, even for those architects already practicing in this field, is the lack of tools to understand the informal processes and to listen to its citizens' remarks. The first mistake according could happen if architects try to understand such developments with values still embedded on a traditional practice and subsequently suggest prescribed solutions under the same perspective. In order to begin challenging traditional perspective, it is suggested to identify first actual processes of citizen's aggregation beyond informal forms to stimulate later processes that will enable them to improve their lives. The key issue is to identify first the local conditions that allow citizens to impact significantly the built environment. Consequently stimulate settlers to think critically and actively about their built environment, and finally organise potential lessons in order to be enhanced. According to Hernando De Soto, "only through a careful observation and understanding of these conditions can we hope to make them any better"²⁶.

Morelia, the selected case study

Studies of *Informal Modernism* from different perspectives have been mainly focused on Mexico City trying to understand the main issues. Since 1960s the capital city captured international attention due to its 'explosive' and 'anarchic' growth. For instance in the 1970s the area of Netzahualcoyotl, with 3 million citizens inhabiting self-built dwellings, was considered the largest informal development in the world at that time²⁷. As explained in Chapter 2, some examples of previous studies included John Turner since 1970s, and Bazant and Priscilla Connolly since 1990s until more recently²⁸. Additional interesting analyses of the informal process were done by Jorge

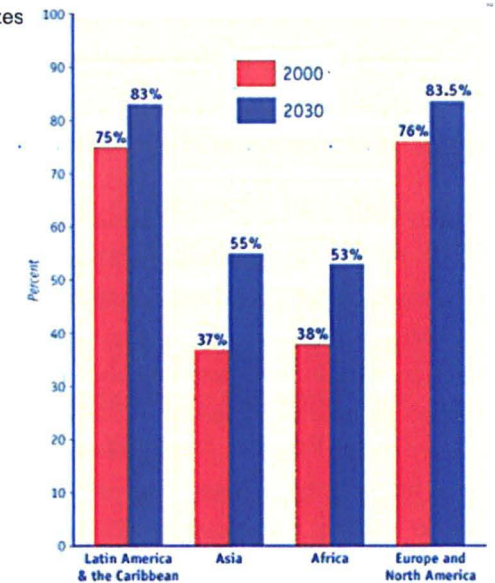
²⁵Vieyra, A. (2006). *Las megaciudades: la sostenibilidad en riesgo*. México, Impulso Ambiental, CECADESU-SEMARNAT.

²⁶ Soto, H. D. (2002). *The Mystery of Capital, Why Capitalism Triumphs in the West and fails Everywhere Else*. New York, Basic Books.

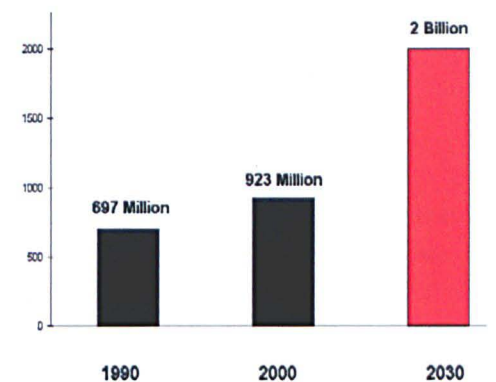
²⁷ Connolly, P. (2003). "The case of Mexico City, Mexico, ." UN-Habitat (2003) *Global Report on Human Settlements 2003, The Challenge of Slums Part IV: 'Summary of City Case Studies'*, Earthscan, London: pp195-228.

²⁸Turner, J. (1968). "Housing Priorities, Settlements Patterns and Urban Development in Modernising Countries." *Journal of the American Institute of Planners*(34): 354-353. Bazant, J. (2001). *Periferias Urbanas. Procesos de expansion y consolidacion urbana de bajos ingresos y su impacto en el medio ambiente*. Mexico, Trillas. Bazant, J. (2003). *Viviendas Progresivas*. Mexico, Trillas. Connolly, P. (1990). *Housing and the State in Mexico*. in: *Housing Policies in Developing Countries*. G. Shildo. London and New York, Routledge.

Figs. 6.11 Top Mexican Cities and Medium size cities compared to the Megacity of Mexico City. Diameters sizes



Figs. 6.11. Increasing percent of population in cities by region. World Urbanization Prospects: The 2005 Revision Population Database. <http://esa.un.org.unup>



Figs.6.12 World Urban Slums Prospects: The 2005 Revision Population Database. <http://esa.un.org.unup> UN

Andrade, Rodolfo Santa Maria and Alfonso Govea in Colonia Santa Ursula, Mexico City.²⁹ More recently, Rickbelt and Padilla (2002), Jose Castillo (2002), Aguilar (2006) and Vieyra (2006) have done additional contributions to this topic to mention some examples³⁰.

Studies of informality in additional Mexican cities are more limited, even though most of these cities are suffering similar struggles to Mexico City, but on lower scale. Nevertheless, in the last years, other large and medium size Mexican cities have started to be reconsidered due to important growth and associated lessons. According to Vieyra it is significant to try to understand main issues involved and tackle them before these cities start having the same amount of struggles as Mexico City³¹. Accordingly, some interesting studies are: opportunistic urbanism by Diego Ramirez Lovering, it is a study of informality of Guadalajara, the 2nd largest Mexican city³². Aguilar and Vieyra (2002) also have done investigation of the suburban areas of Puebla and Tlaxcala, the 4th largest Mexican conurbation. Regarding to medium sized cities, Teddy Cruz has been inspired by the informality of the border city of Tijuana, the 6th largest Mexican city.³³

This thesis will be focus on examining some case studies within and in the surroundings areas of Morelia the 20th largest city in Mexico. Morelia is located 300 kilometres west from Mexico City. It is worth mentioning that Vieyra also began his first study in Morelia this year (2009) entitled Urbanization, Environmental Damage and Social Exclusion in Morelia, Mich.³⁴ This is his first study of a medium sized city in Mexico, after previous ones done in Mexico City and Puebla. It is mainly focused on the production of a geographical data system and tracking urban expansion system to identify the main issues and to support other professionals.

²⁹ Jorge Andrade and his team studies are presented in Habraken, N. J. (1998). *The structure of the ordinary : form and control in the built environment*. Cambridge, Mass.; London : , MIT Press, . Also see Andrade, J. (1999). *El territorio compartido en la vivienda popular Mexico*, Division CAD, UAM.

³⁰ Ribbeck, E. and S. Padilla (2002). *Informal Modernism Spontaneous Building in Mexico City*, Heidelberg. Castillo, J. (2002). "Urbanism of the Informal in Mexico City: Projects from the Megacity

" PRAXIS (2). Aguilar, A. G. (2006). *Las megaciudades y el deterioro ambiental*. México, 37:Impulso Ambiental, CECADESU-SEMARNAT Vieyra, A. (2006). *Las megaciudades: la sostenibilidad en riesgo*. México, Impulso Ambiental, CECADESU-SEMARNAT.

³¹ Vieyra, A. (2009). Interview about Social Exclusion in Morelia. A. Becerra. Morelia.

³² Ramirez-Lovering, D., Ed. (2008). *Opportunistic Urbanism*. Melbourne RMIT University Press.

³³ Cruz, T. (2004-2005). *Border Postcards: Cronicles from the Edge*. James Stirling Memorial Lectures on the City. Canadian Centre for Architecture, Montreal and London School of Economics.

³⁴ Vieyra, A. (2009). *Urbanization, Environmental Damage and Social Exclusion in Morelia, Mich*, Instituto de Geografia, UNAM campus Morelia.

A.2) Mapping & Documentation

Morelia: The selected City of Paradoxes

Morelia with 735,000 citizens of population might be considered an interesting example of a medium size city between the range of 0.5 and 1.5 million of population due to its specific characteristics.³⁵ However, even so, this city does not have the same amount of problems compared to biggest cities as Mexico City, this example will show a common set of features of a City of Paradoxes model. The main issues discussed in the theoretical chapters such as dichotomous urban centers and contrasting views to approach the built environment are evident through Morelia's urban fabric. In other words, Morelia is an example showing the tension between formal and informal developments, like those of many other cities in the global south that have been shaped by multiple socio-economic and political factors of the actual model of development. As a consequence some cases of materialisation of this reality are exposed. In this sense, figure A.1 introduces different examples of communities developed by opposite design processes. On one hand some of the wealthiest developments of AbundanCity such as: *Ciudad Tres Marias, Bosques de Altozano and Lomas de las Americas* are presented as a reference. On the other hand social exclusion is observed through vernacular, informal and semi-Informal communities of ScarCity such as: *San Antonio, Jesus Del Monte, Lomas Del Punhuato, El Durazno, Villas Del Pedregal and Las Higueras* which in most of the cases are still in the process of consolidation, filling the gaps of different services and amenities. Subsequently, three of these case studies of ScarCity have been selected for deeper analysis; each one is a representative example of different variables of informality respectively; San Antonio of Traditional Vernacular, Lomas del Punhuato of Informal Modernism and Villas del Pedregal of Semi-Informal Modernism. The map of location and a diagram of case studies are presented in figures A.2.1 and A.2.2 respectively. In an attempt to make sense of the local conditions or 'draws out' the main issues, the first exploration was done like an 'itinerant' architect. This means that in addition to research a journey exploring citizen's stories under the condition of scarcity was developed to understand the different dynamics involved from a bigger picture (fig. A.3) Subsequently the rise of the main issues requires more detailed mapping and documentation to be more integrated and consistent.

The visuals of this stage that identify and explain the main issues of the local conditions of Morelia are:

- A.1 Morelia: Selected city of Paradoxes and its contrasting built environment
 - A.2.1 Map of location of Case Studies in Morelia, Mexico
 - A.2.2 Diagram of case studies
 - A.3 The journey of itinerant architect: finding peoples' stories.
 - A.4 Morelia: rapid growth and change through last 87 years
 - A.5 Informal vs. formal developments (ScarCity vs. AbundanCity)
 - A.6 Old Morelia vs. New Morelia in numbers of inhabitants
 - A.7 The donut effect
 - A.8 Map of income distribution according to post code areas
 - A.8.1 Section A of the map which identifies an example of actual tension of inequality node
 - A.8.2 Section B of the map which identifies an example of actual tension of gentrification node
 - A.9 Formal Modernism practice in Morelia
 - A.10 Contrasting Densities
 - A.11 Green vs. Brown Areas
 - A.12 Closed vs. Open
 - A.13 Transport media
 - A.14 Resources consumption
 - A.15 Indoors vs. Streets
 - A.16 Luxury Malls vs. Streets Markets
 - A.17 Other Issues
 - A.18 Globalization impact
 - A.19 Local and low tech resources vs. Imported and high-tech.
 - A.20 Conceptual comparative between the two models of development
- Other visual examples (not included in this case) that could be considered are: Local consumption, external consumption,
- Use of local skills vs. imported skills
 - Political by districts
 - Ethnical, ideological, rituals.

³⁵ Source: INEGY, derived from 2008 prospectus data

A. 1 Morelia: selected City of Paradoxes and its contrasting built environment

Selected City of Paradoxes
Morelia, Mexico 750, 000 hb
located 300 km west from Mexico City



AbundantCity

The term "AbundantCity" is used to refer overestimated areas of the population characterised by privatization of land, high speculation and economical profit. The emphasis of existence of certain "wealthiest" areas as a result of present socio-economics was pointed out by Saskia Sassen in her book "La ciudad Global". Frequently is inside of this areas were the most wealth part of population lives.

d. Formal-Modernism

The term Formal modernism is used to identify buildings developed by traditional architectural practice. Commonly buildings developed under this conditions use a prescribed process of design and construction acquiring all necessary elements to build a 'master' piece. In this case the approach presented as example was built in one of the wealthiest developments of Mexico by a contemporary Mexican 'style'.

ScarCity

The term "ScarCity" is used to refer underestimated areas of the population characterised by marginalisation. The emphasis of existence of certain marginalised areas as a result of present socio-economics is pointed out by Saskia Sassen.

a. Traditional Vernacular

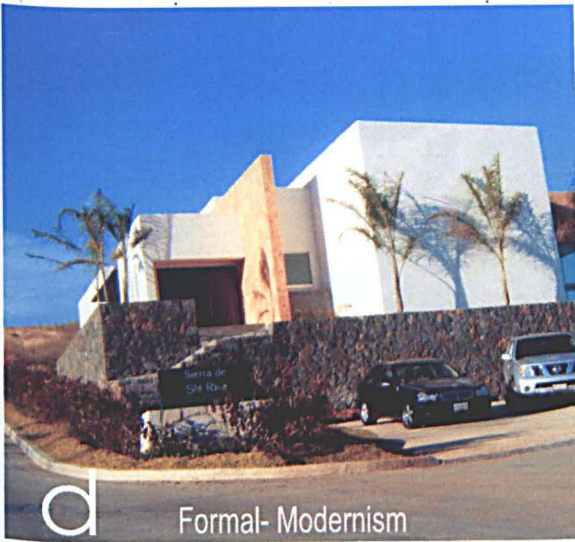
The term "Vernacular" architecture is commonly used to identify buildings developed by empirical knowledge or how was termed by Bernad Rudofsky in the book with the same name "Architecture without Architects".

b. Informal Modernism

This term was pointed out by Professor Echart Ribbeck and Sergio Padilla in their study of "Informal Modernism" Spontaneous Building in Mexico City" 2002. Ribbeck and Padilla argue that the massive phenomenon of self-build housing shows that even in megacities the vernacular tradition of building is experiencing a major renaissance, rather than dying out- albeit under completely different circumstances to the traditional or rural context

c. Semi-informal Modernism

The term "Semi-Informal Modernism" is used to identify buildings partially developed by a 'formal structure' commonly provided by the Mexican governmental low-income housing programmes such as: INFONAVIT, SOFOLES, ETC and the second part developed by 'irregular' self-build or self management tradition. It can be said that it is a hybrid building produced under a combination of 'formal' or official support and 'informal' or vernacular tradition. It can be said that it is the most 'legal' of the Vernacular.



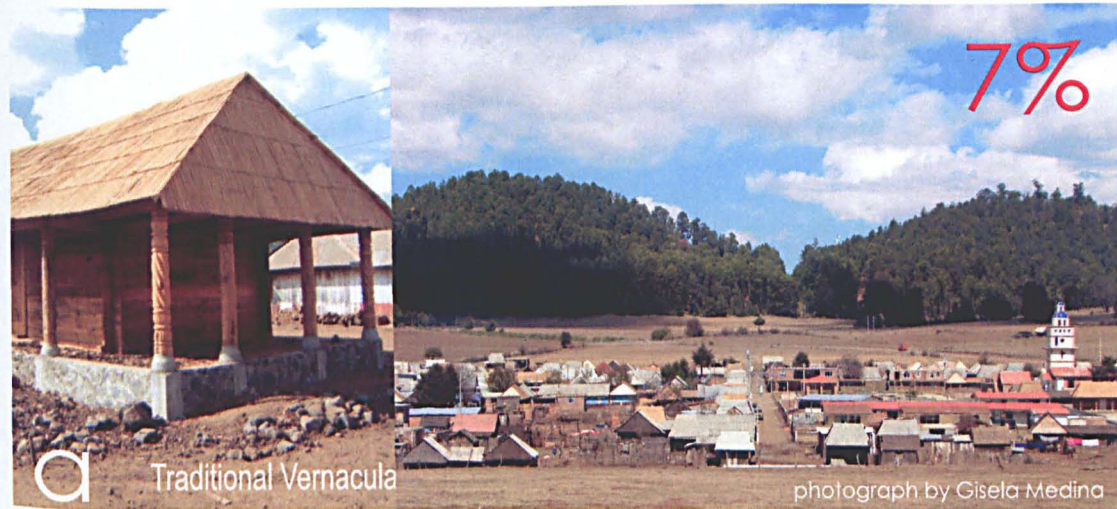
d

Formal- Modernism



19%

Panoramic View of Formal Modernism developments



a

Traditional Vernacula

7%

photograph by Gisela Medina



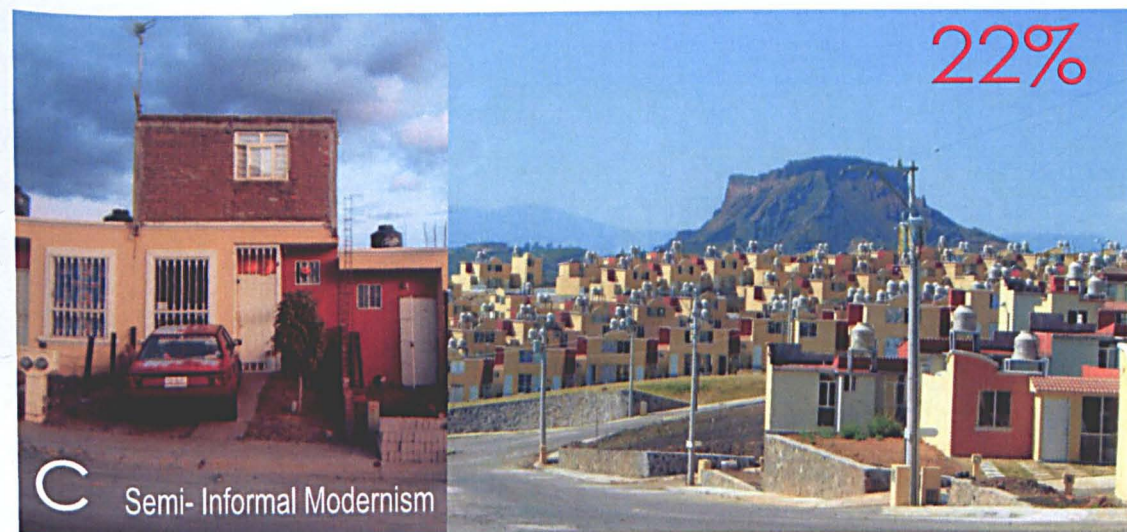
b

Informal Modernism



52%

Panoramic View of or Informal Modernism developments



c

Semi- Informal Modernism

22%

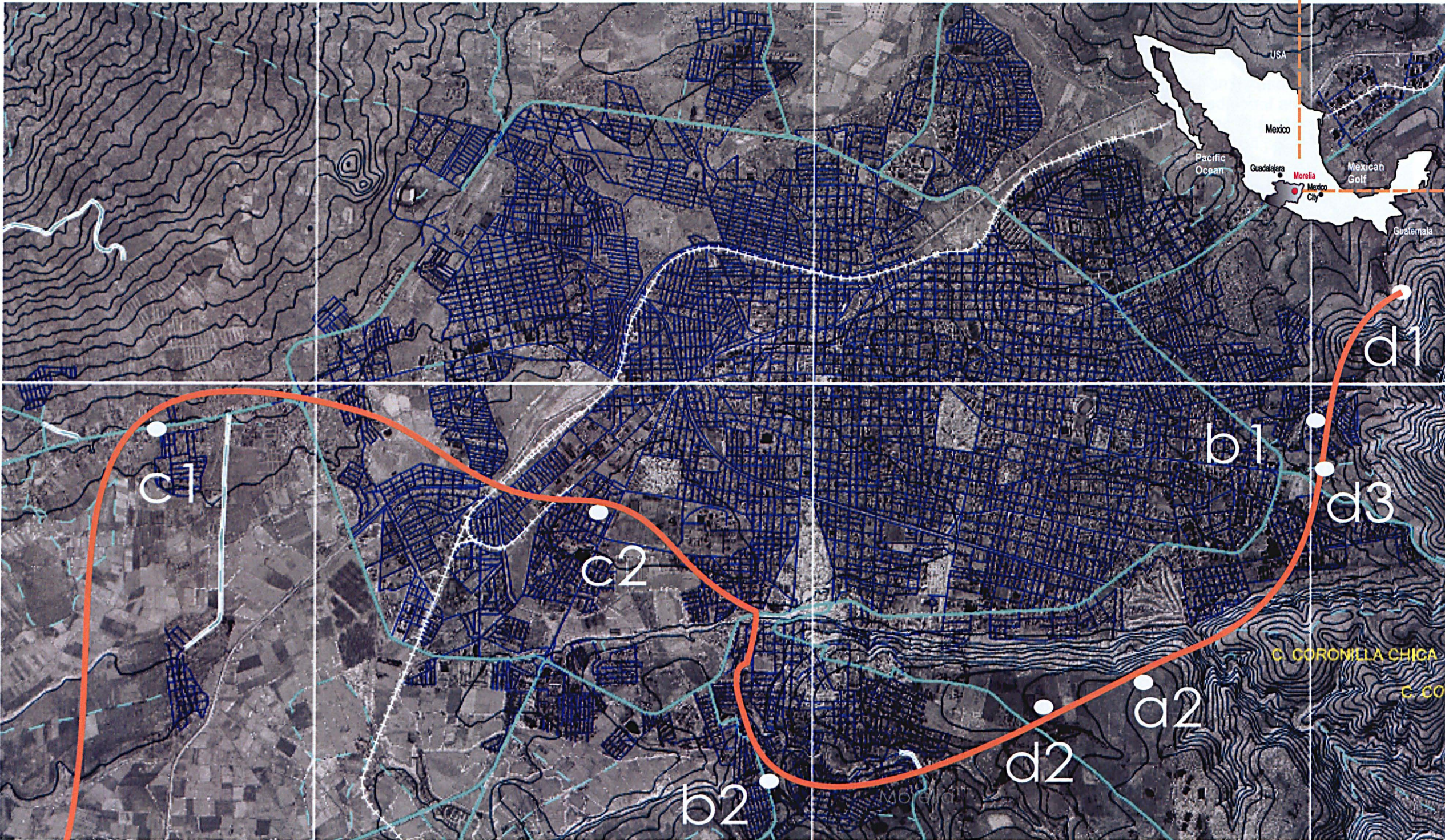
Panoramic View of Semi- Informal Modernism

59 %

of the Housing stock in Morelia has been built without an architect assistance whilst another 22% of low-income housing will not use an architect anymore in further extensions
Source: INEGI

A.2.1 Map of location of Case Studies in Morelia, Mexico

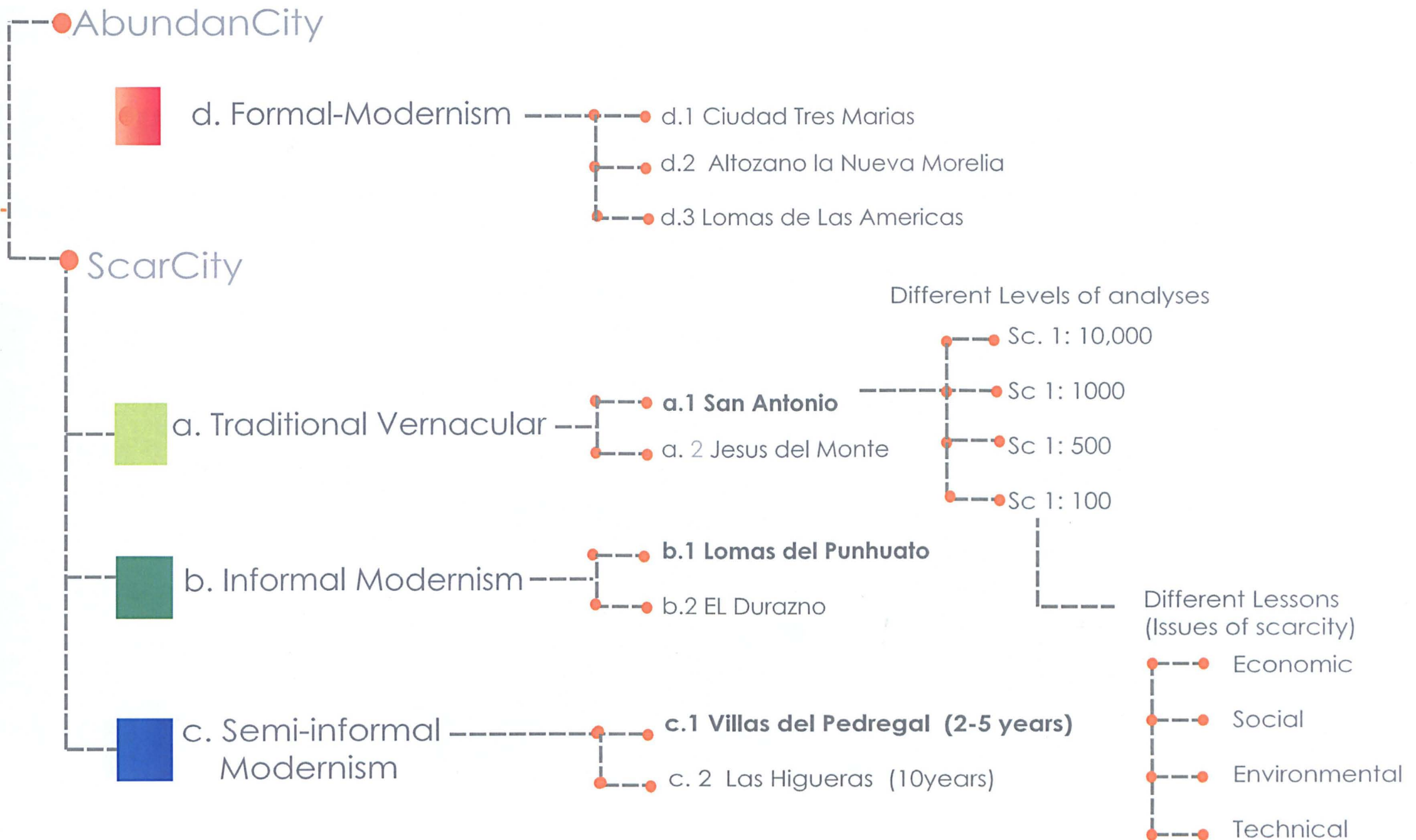
Selected City of Paradoxes
Morelia, Mexico, 750, 000 hb



a1
San Antonio
150 km away

Case studies location and the journey of itinerant architect

A.2.2 Diagramme of Case Studies



Note: Case studies a1,b1, c1 were selected for deeper analysis of stage C (Issues of Scarcity) presented in the Catalogue of Issues of Scarcity and Design Tactics. Also these case studies were used to simulate the speculative interventions through the Game of Architecture of Scarcity presented in chapter 8.

A.3 The itinerant architect; a *Journey* exploring citizens' stories

RURAL

SEMI-RURAL

URBAN

TRADITIONAL VERNACULAR

INFORMAL MODERNISM

Lower resources
consumption

55% of total housing stock

ACTORS



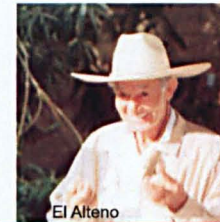
San Antonio



a.1



Elvia



El Altano



Los Chalos



Jesus Del Monte



a.2

Guillermina



Ernestina

100 km DISTANCE JOURNEY

PHYSICAL PRODUCTION



CHARACTERISTICS

Imperfection Effectivitness
 Improvisation Use the economy to fuel house
 Flexibility building
 Yuxtaposition Mutation Decentralized
 Flexibility Further social and economic process

Commonly little or no Architect participation

What lesson can be learnt and what is the role of the architect inside The context of *ScarCity* ?

Looking at the *context of Scarcity*, architects should understand the immense potential of this process of construction which goes beyond an aesthetical technique.

Not only as new forms, new materials or new techniques, but as a different body of patterns and typologies that correspond to a different operational process that could be mapped and then be reproduced as a solution.

First looking for people stories then having a look to their dwelling structures
 Contemporary Mexican Vernacular Architecture

SEMI-URBAN

SEMI-URBAN URBAN

SEMI-INFORMAL MODERNISM

FORMAL MODERNISM

Higher Resources Consumption

b.2



Domitila

El Durazno



c.1

Villas Del Pedregal



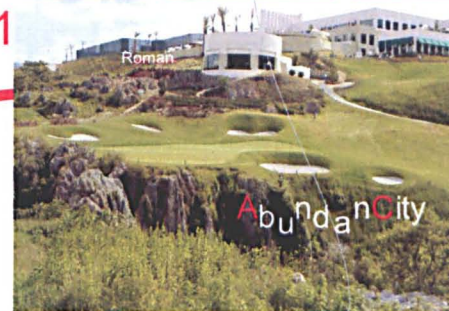
Roberto

Las Higueras

c.2



d.1



Roman Abundancia Ciudad Tres Marias

100 years Time gap According to Modernity

d.2



d.3



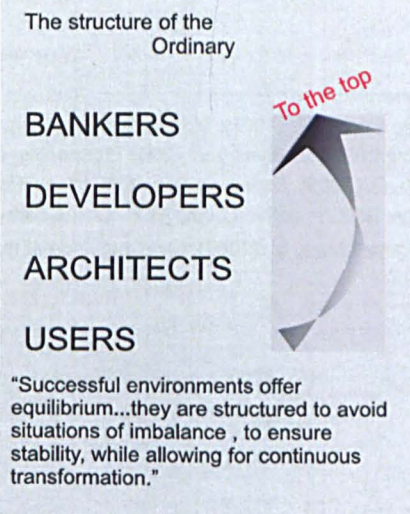
Little Architect participation

High Architect participation

Support local enterprise and small business

Promote variety
 Stupidity of Perfection
 Different space perception
 Tell how to find out what to do and then how
 Flexibility Mutation
 Promote community
 Link housing to longer urban system
 Start off the same, but all end up different to give them an individuality

Nabel Hamdi
 John Turner
 Jonhn Habraken
 Silva Herzog Marquez



The limitations offered by a context of ScarCity promotes a fertile ground for creativity. The first step could be explored through the understanding of its lesson such as imperfection and improvisation as a design tactic.

Rapid grow, change and Donut effect

The city of Morelia, like many others mass urban centres in the global south, is characterized by an exploding population and a rapid grow. After Mexico's independence in 1820s until post revolutionary times in 1920s, it means during a century, Morelia had a very moderate grow that reached 30,000 inhabitants by 1921. The same grow continued for the next decade reaching 40,000 inhabitants by 1932 producing a reasonable impact in the urban fabric. However, in coming two decades industrialisation of the city produced a more accelerated grow duplicating the amount of citizens by 1955 (80,000 inhabitants). In following decades, grow was exacerbated by a positive economic development of Mexico's oil company which also impacted every state's capital like Morelia.¹ By 1987 Morelia's population reached 370,000 inhabitants. The dramatic growth in population numbers, primarily due to rural migration to the city looking for a job, has created an unprecedented demand for housing of all types but in particular low-income or social housing. In addition, in subsequent 5 years one of the most common destinies for citizens of the Mexico City leaving the consequence of the 1985 earthquake was Morelia reaching 450,000 inhabitants by 1991. Exponential grow continue for the last years until reach 735,000 inhabitants by 2008² (fig. A.4)

One factor of this explosive growth has been possible due to large segments of the population in actual model of development have become displaced and vulnerable with little access to socio-economic infrastructures. In other words the most susceptible part of the population which can reach more than 50 % is exposed to social exclusion.³ As a result these citizens have fulfilled their need for housing through an 'informal' path whilst approximately another 20% to 22% who had acquired a low-income housing through governmental programmes are not considering using an architect anymore in further extensions.⁴ Mario Rodríguez Loeza who was in charge of the *Planning Permission Unit of Morelias' City Council (2002-2006)* argues that Morelia has a well established culture of informality in all aspects of social life such as housing, commerce and public space. In this sense, Rodríguez argue that even so certain projects that are today considered formal were contend with contingent pressures of every developing country in certain stages. Rodríguez suggests that only approximately 20% to 25% of Morelia's housing stock has follow a formal path from the start to the end.⁵ This means that the remaining 75-80% of Morelia's urban fabric has been developed in certain stage without architect assistance and outside the legal framework. In Rodríguez's terms "citizens prefer to act first and sort out bureaucratic documents later".⁶ Commonly these settlements had suffered inadequate services and lack of amenities at the beginning which were addressed progressively. Today a new fact to highlight is the majority of new suburban low-income communities developed in the edges of the city with inadequate transport for the considerable

¹ Arreola Cortés, R. (1991). Morelia. Morelia, Morevallado Editores, Raul Arreola, C. (1991). Morelia. Morelia, Morevallado Editores.

² Source: INEGY, derived from 2008 prospectus data

³ Group, G. (2009). Economic Downturn Affects Poverty Rate in Mexico SourceMex: Economic News & Analysis on Mexico

⁴ Source: INEGY, derived from 2005 census data

⁵ Rodríguez Loeza, M. (2009). My experience at the Planning Permission Unit of Morelias' City Council (2002-2006) A. Becerra. Morelia, Mexico.

⁶ Ibid.

distances from available work and lack of educational and health services. According to Rodriguez this condition is exacerbated by corruption, inefficiency and highly bureaucratic state and municipal governing bodies.⁷

The **second factor** that allowed last exponential grow of Morelia's urban fabric was "*La ley Agraria*" (the agrarian law) of 1992 which authorized privatization and use change of previously communal agricultural land called "*Ejidotes*".⁸ Developers looking for opportunities were able to acquire cheap land on the suburban areas of the city and create mainly two kind of new developments; the massive low-income housing supported by governmental programmes and the wealthiest communities next to the old urban centre. As a result actually the fastest-spreading developments today are *Colonias Populares* and low-income housing as part of Scarcity model and gated communities as part of AbundantCity approach (Fig. A.5)

If grow of the last 87 years is revised an interesting phenomenon that experts call '*donut effect*' can be identified.⁹ This means that history of the neo-Spanish cities grow such as Morelia highlights how elite classes were concentrated in a central area identified as city centre and working classes were surrounding this area as a 2nd ring.¹⁰ An opposite model if one compares it with some of the industrial cities of Europe such as Sheffield in UK or San Sebastian in Spain where working classes were mainly located in central areas near to factories and elites were located in the edges near to the country side.

At the moment that Morelia's city centre was not big enough for elite classes; they used vacant areas next to city centre or jumped working classes ring developing a considerable next 3rd ring of formal communities which commonly were developed along to new governmental projects (1921-1932). It can be observed how wealthy population moved from inner suburbs to the outer suburbs in search of newer and larger houses. Subsequently, following the same dynamic, to fulfil the needs of cheap labour of formal settlement and taking advantage of new roads and close infrastructure, the next generation of informal developments was conformed in empty areas of 3rd ring or beginning a new 4th ring (1932-1955). The same dynamic continued in next decades developing areas that can be identified as 5th (1955-1987), 6th (1987-1991) and last 7th (1991-2006) rings of the city. Both forms of development formal and informal were juxtaposed in city's expansion. It cannot be generalised however even rings had a higher percentage of wealthy classes expansions whilst uneven rings include major number of less privileged communities. It is important to observe that during periods that can be identified with higher percentage of informal developments 2nd, 4rd, and 6th, have been denser allocating a higher number of citizens per square kilometre in less space. Their condition of scarcity has challenged them to share more and use less amount of resources. In contrast, periods identified with higher percentage of wealthy classes' expansions 3rd, 5th and 7th or in other words areas of the city developed formally were exponentially bigger in terms of area's occupation and use of resources (fig. A.5 & A.6).

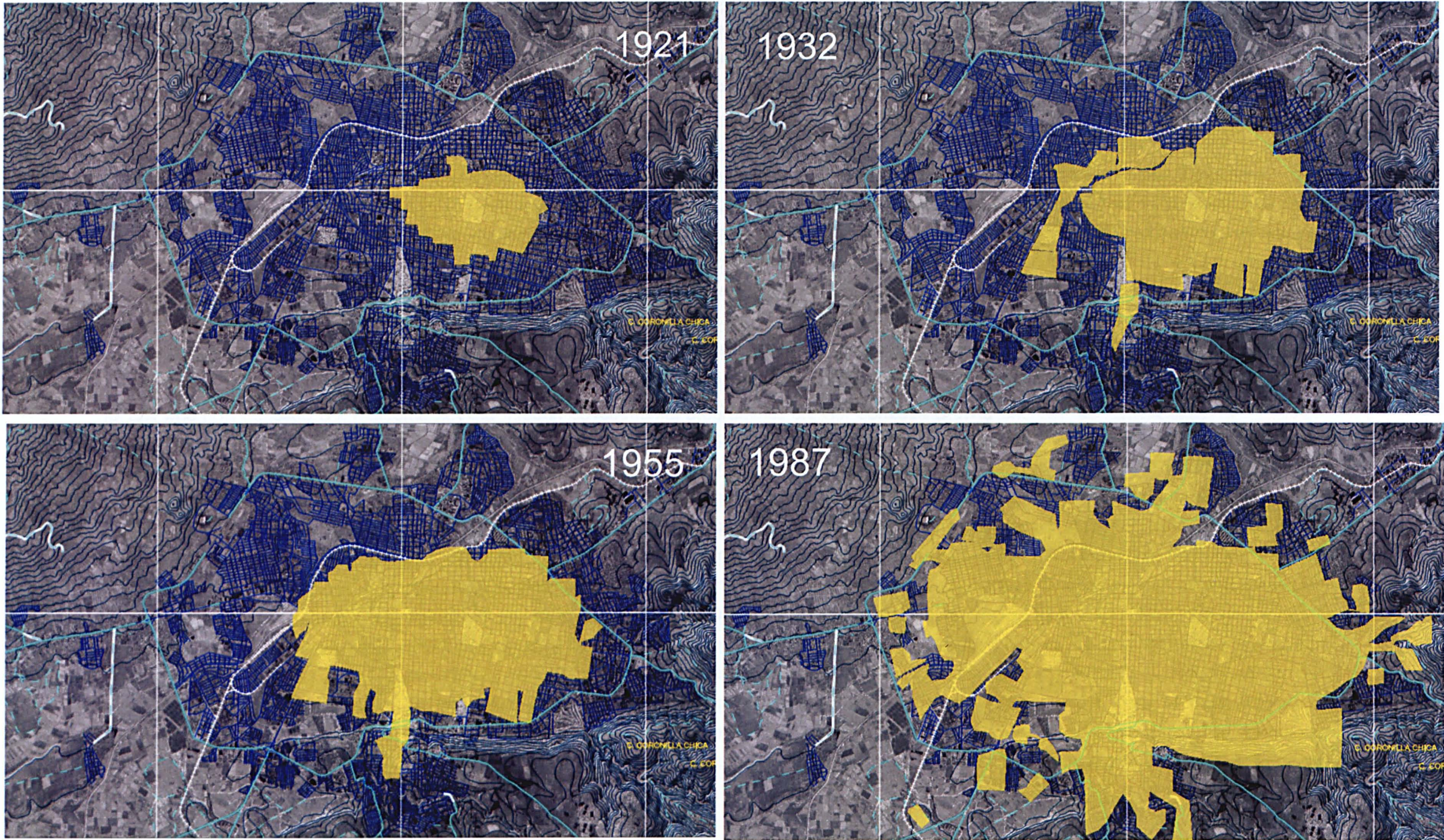
⁷ Ibid.

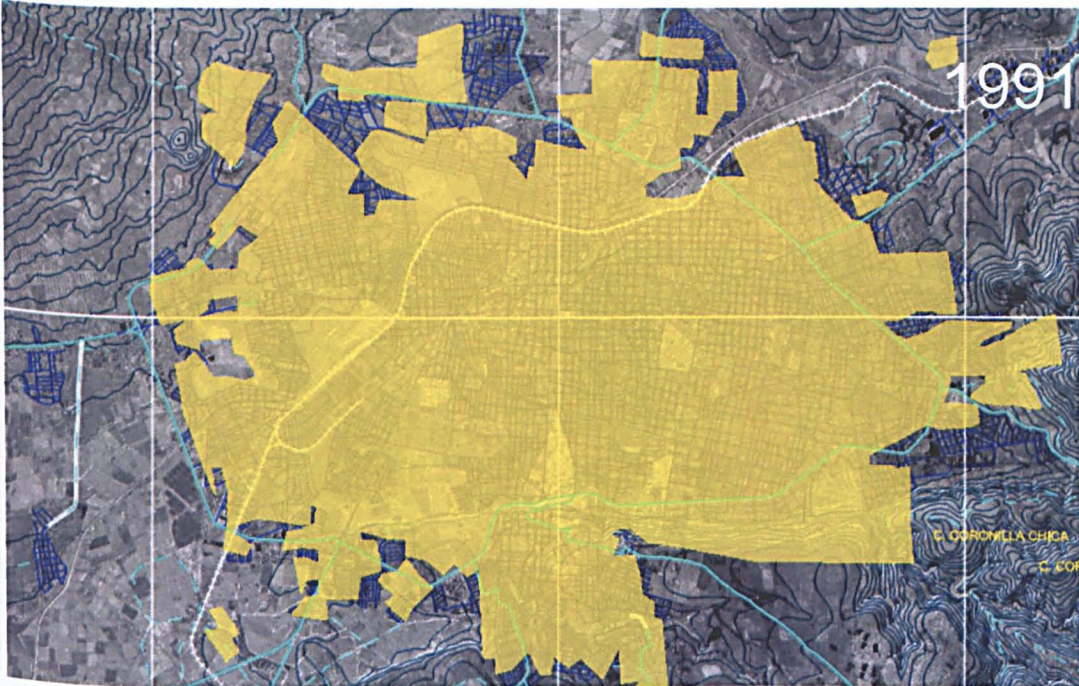
⁸ Union., C. d. D. d. H. C. d. I. (1992). *Ley Agraria: Nueva ley publicada en el Diario Oficial de la Federacion el 26 de Febrero de 1992*. S. d. s. p. Secretaria General, Centro de documentacion, informacion y analisis de la Camara de Diputados.

⁹ Burapatana, T. and W. Ross (2007). "Suburbanising and Unsustainable: Bangkok case study." *Environment and Natural Resources Journal* 5(1): 59-68.

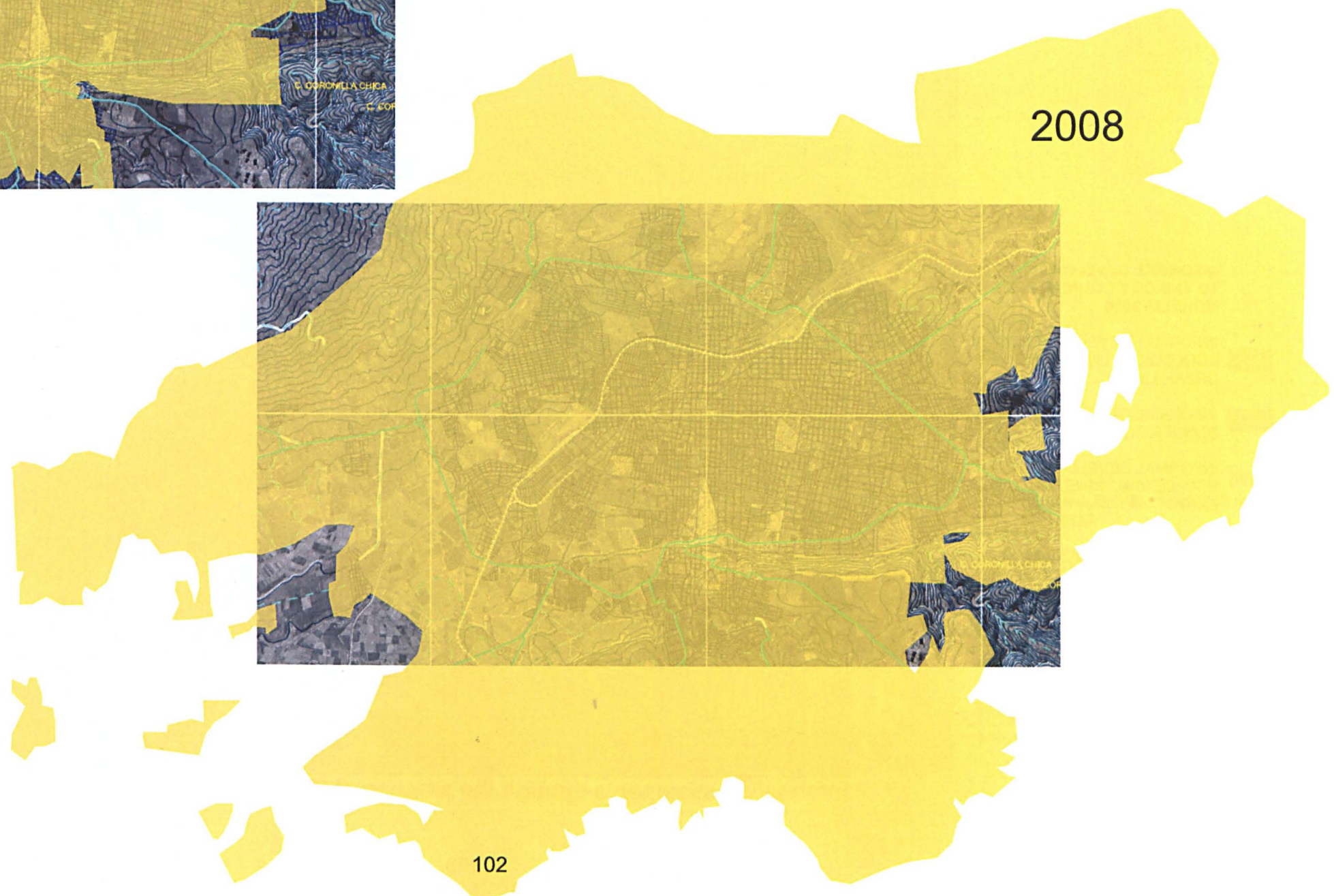
¹⁰ Arreola Cortés, R. (1991). *Morelia*. Morelia, Morevallado Editores, Raul Arreola, C. (1991). *Morelia*. Morelia, Morevallado Editores.

A. 4 Morelia: Rapid Growth and Change through the last 87 years





Urban grow compared to the size of the city in the background





1921

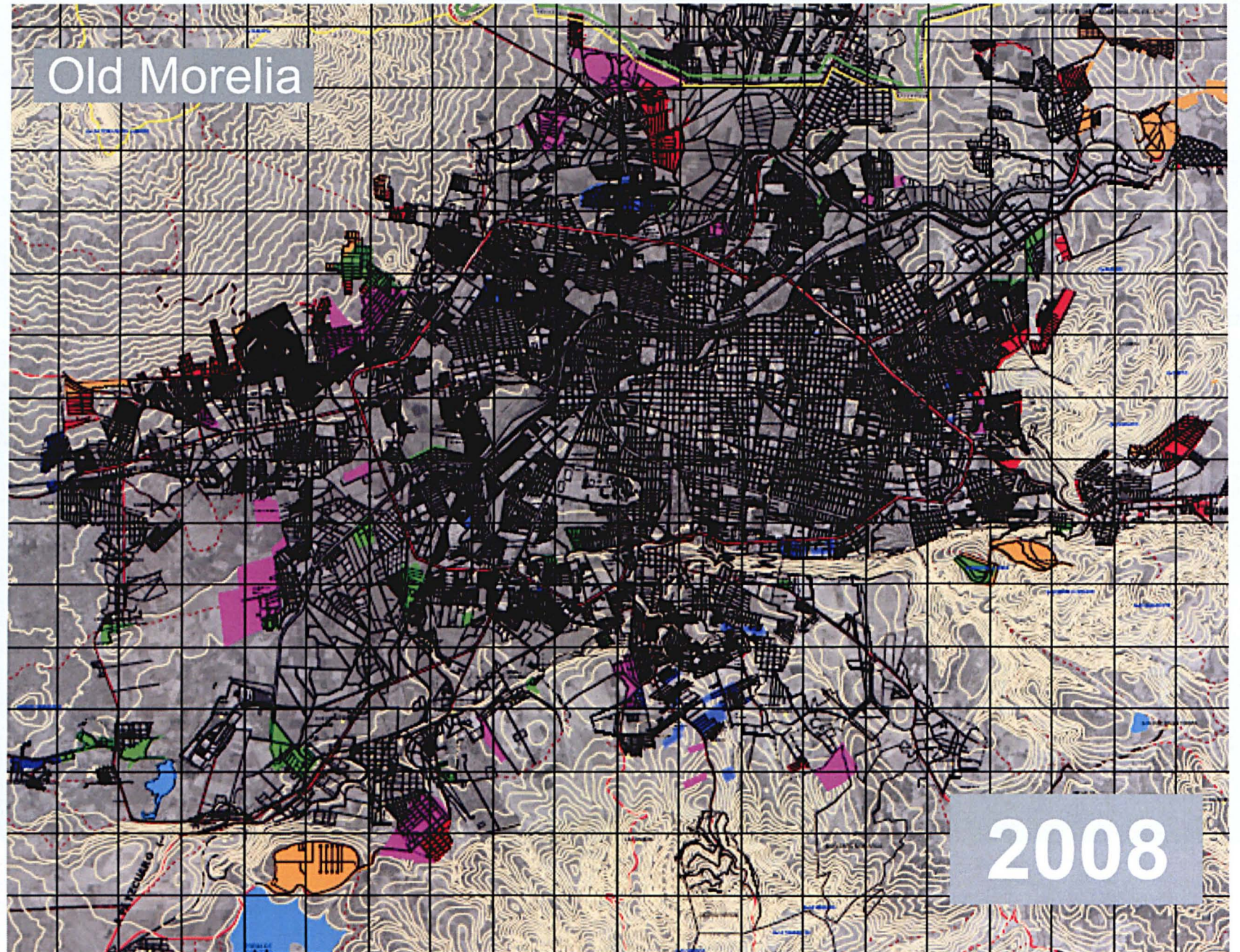
1932

1955

A.5 Informal vs. Formal developments

INFORMAL DEVELOPMENTS ACCORDING TO THE CITY COUNCIL PROGRAM OF MORELIA 2008

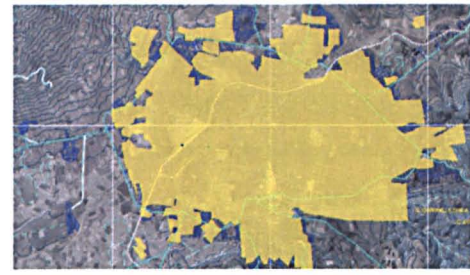
-  INFORMAL DEVELOPMENTS OVER ECOLOGICAL LAND RESERVES WITHIN URBAN LIMITS
-  INFORMAL DEVELOPMENTS OVER BORDER ZONES
-  INFORMAL DEVELOPMENTS OVER ECOLOGICAL ZONE OUTSIDE URBAN LIMITS
-  INFORMAL DEVELOPMENTS OUTSIDE URBAN ZONE
-  IRREGULAR DEVELOPMENTS IDENTIFIED BY ENVIRONMENTAL SECRETARY
-  IRREGULAR DEVELOPMENTS IDENTIFIED BY SECRETARY OF URBANISM



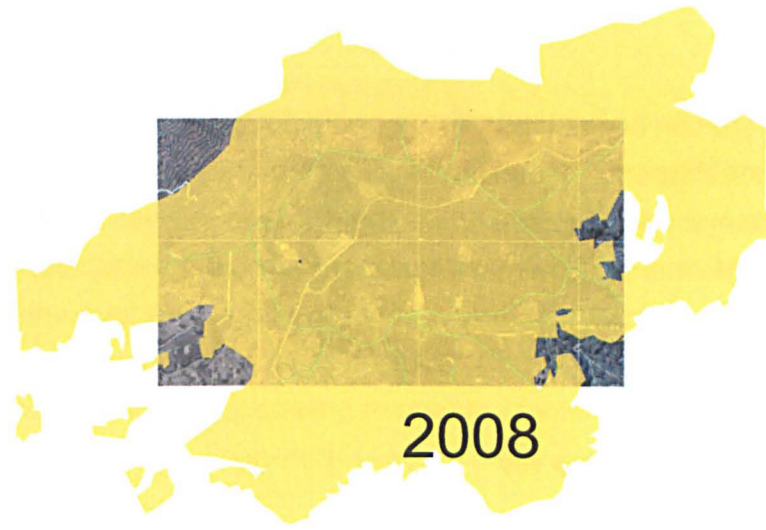
Informal developments through the process of Scarcity. Source: Urban Development Programme of Morelia



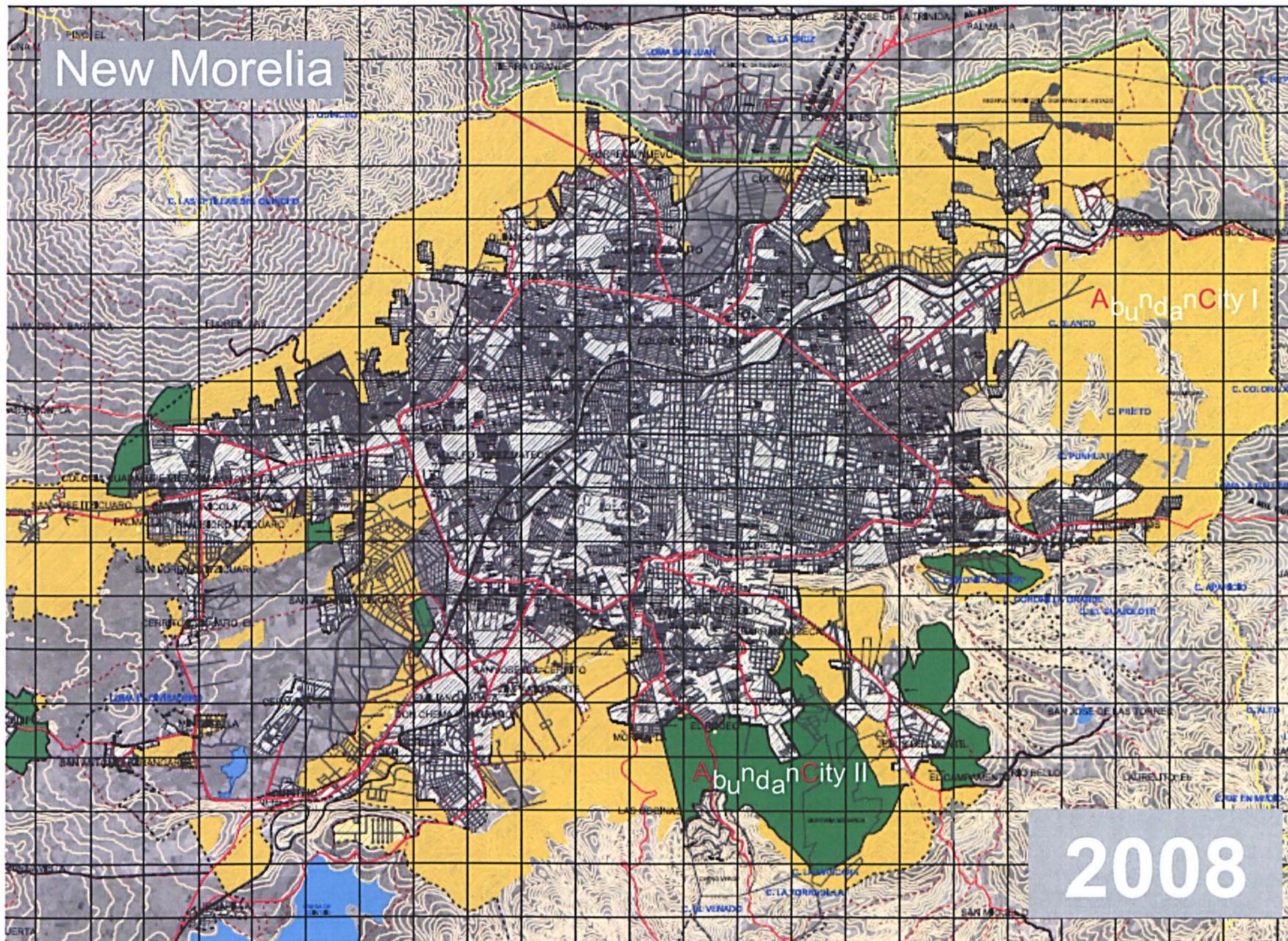
1987



1991



2008



FORMAL DEVELOPMENTS IN MORELIA

FORMAL DEVELOPMENTS ALREADY CONSIDERING 'SUSTAINABLE' POLICIES

Abundancity 1. Location of Ciudad Tres Marias in relation to the City

Abundancity 2. Location of Bosques de Altozano in relation to the City

Formal developments through the process of Abundance. Source Urban development programme of Morelia

Today mainly three areas can be identified. The first area corresponds to the original 1st ring and the upgraded 2nd ring. The second area correspond to the original 3rd, 4th, 5th which today is a more mixed area with homogenised settlements due to informal developments were upgraded progressively. The third area correspond to the 6th ring mainly conformed by informal settlement still in process of consolidation and the 7th ring which is the latest and shapes actual limits of the city. Due to its more evident characteristics it is in the 7th where the main case studies of analysis are located.

The 7th ring shaping actual limits of the city

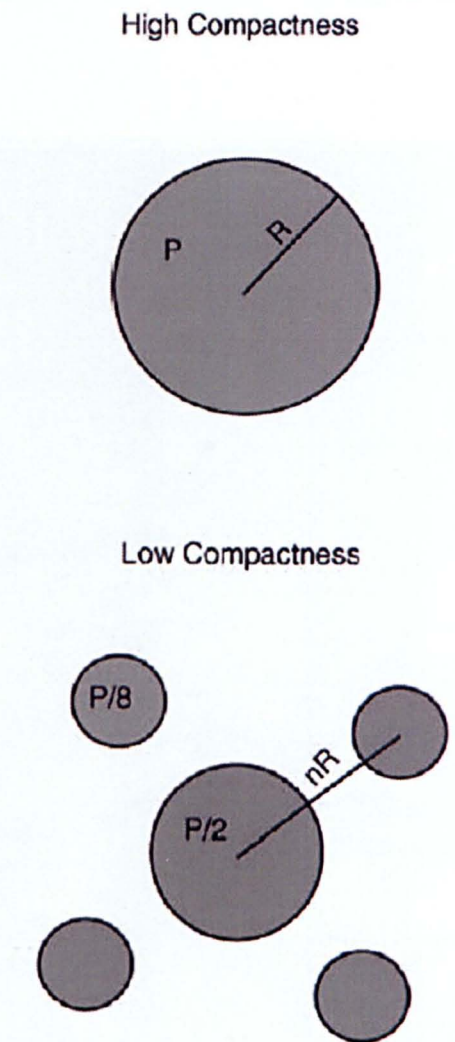
Putting more attention on the last 7th ring, it highlights clearly how each expansion has been directly proportional to its number of population which means that growth has been considerably bigger every time. The 7th ring has passed over expert's predictions considerably. It is integrated by formal developments in the south and east areas, low-income housing supported by the government in the north and west areas and informal developments in available spaces of north and south areas (fig. A.6.)

In the **south and east** areas developers had created two of the wealthiest developments in Latin America over cheap land which was previously designated to agriculture. Such formal developments are highly influenced by the American suburban dream where roads and cars are a key factor of mobility. *Ciudad Tres Marias* and *Altozano* and few others conform what is called *La Nueva Morelia* (The New Morelia). Each developer is promoting a different set of 'sustainable' initiatives for a more environmentally friendly Morelia as part of the slogan to catch the attention of future clients. However, neither of them addresses such issues critically. To have a clearer idea what this really means, in terms of land occupation *Ciudad Tres Marias* and *Altozano* suggest a density of 2-4 housing per hectare in the most luxurious areas which also includes golf courses¹. In total *La Nueva Morelia* occupies an area which is equivalent to approximately 30% of actual Morelia's urban shape. Developers had planned that between 60,000 to 80,000 citizens of Morelia's higher middle class and higher class will be moving to *La Nueva Morelia*. In other words this means that only between 8%-10% of Morelia's population will be occupying approximately 30% of urban land. In terms of use of resources this means that a minority of citizens of new AbundantCity can be using up 4 to 6 times more amount of resources that are needed to run the Old Morelia (Fig.A.7)

As one example, to reach such communities, inadequate public transport runs out. If you live out there, you've got to have a car or remain in virtual home imprisonment. As a result not only has the number of motor vehicles grown, but the average vehicle kilometres travelled (VKT) per capita has increased considerably. In addition other issues such as potable water and electricity supply have bigger demand. In sustainable terms, it can be argued that this approach could be highly questionable.² (See comparative of figs. 6.13-6.14)

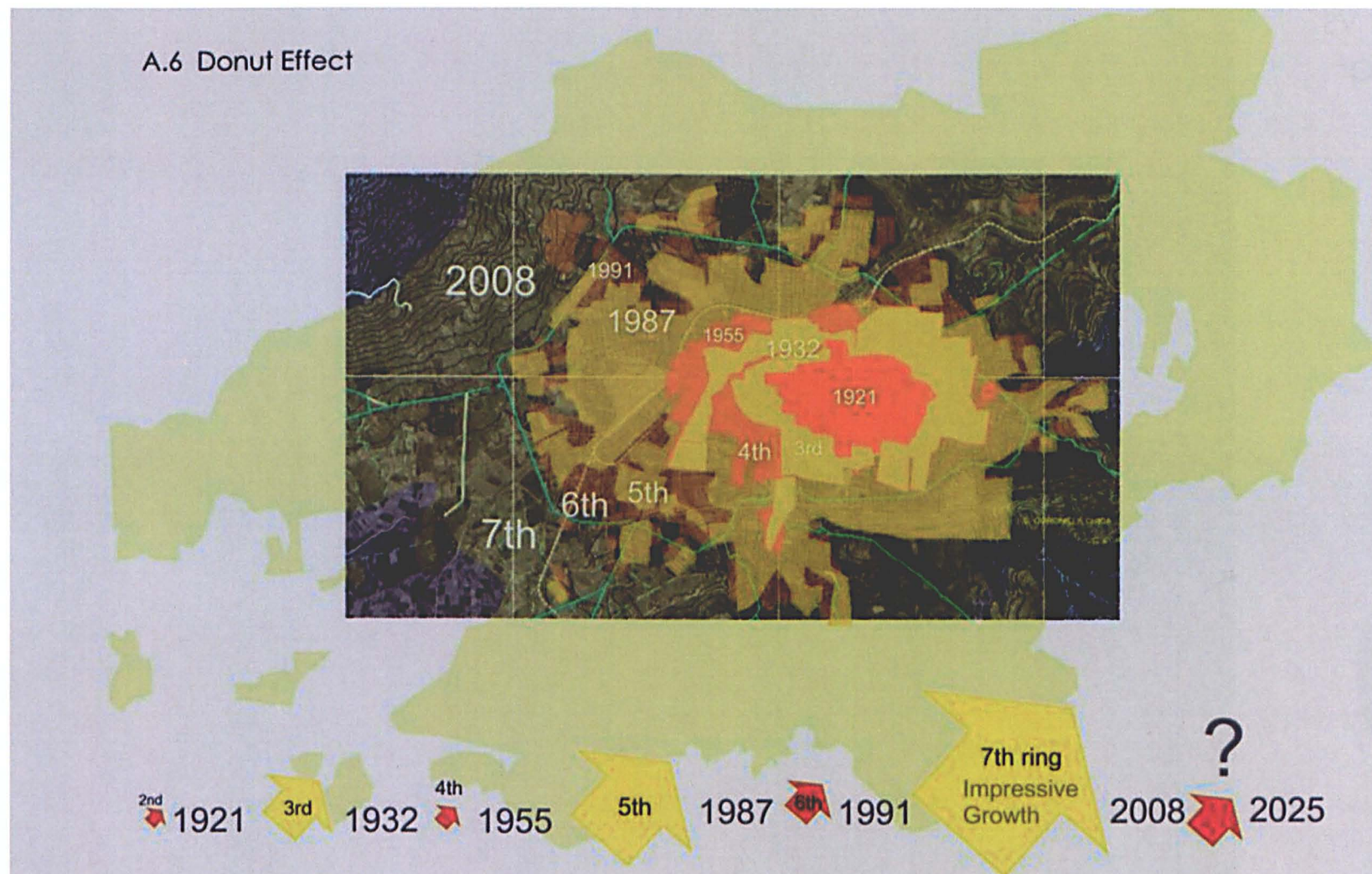
¹ Quinzanos, M. P. (2007). Bosque Altozano. Morelia, Mex.

² Burapatana, T. and Ross, W. (2007) Suburbanising and Unsustainable: Bangkok case study. Environment and Natural Resources Journal Vol. 5, No.1, June 2007.Pgs 59-68

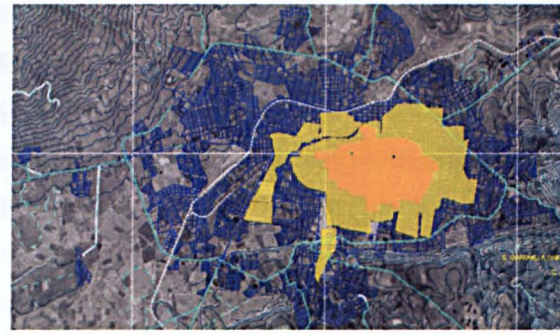


Figs. 6.13 & 6.14 Conceptual diagram of compactness. Source: Zhang and Guindon 2005.

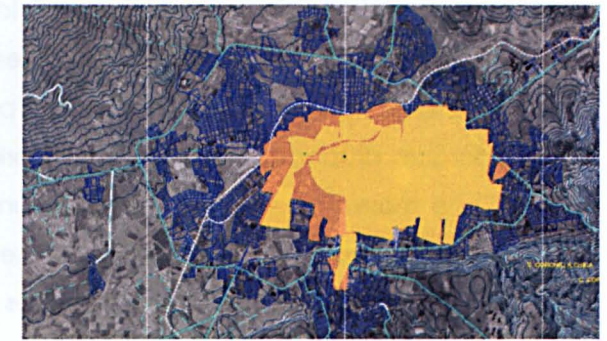
In the **west** and certain areas of the **north** land, developers had created thousands of low-income housing over cheap land which was as well previously designated to agriculture. Normally different government programmes will subsidise families to address their housing demand with low income wages. The land speculation and search for high profit is allowing developers to create communities on the edges of the city with inadequate transport for the considerable distances from available work. At the same time lack of adequate green areas, educational spaces, health services and insecurity.³ As a result one more time not only has the number of motor vehicles grown, but the average vehicle kilometres travelled (VKT) per capita has increased considerably. The main difference is that settlers here depend on an old cars, economic cars or public transport. (See comparative of figs. 6.13-6.14). An additional comparative of use of resources (petrol litres per person a year) by different media according to selected settlements can be consulted at fig. A.13. Finally the majority of informal developments which are still in consolidation processes are located in vacant areas along the whole ring (fig. A.5)



³ Boils, M. G. (Dec 2006). Segregacion y modelo habitacional en grandes conjuntos de vivienda en Mexico. Seminario Pobreza, Exclusion Social IIS/Facultad de Arquitectura UNAM, Mexico City, UNAM.

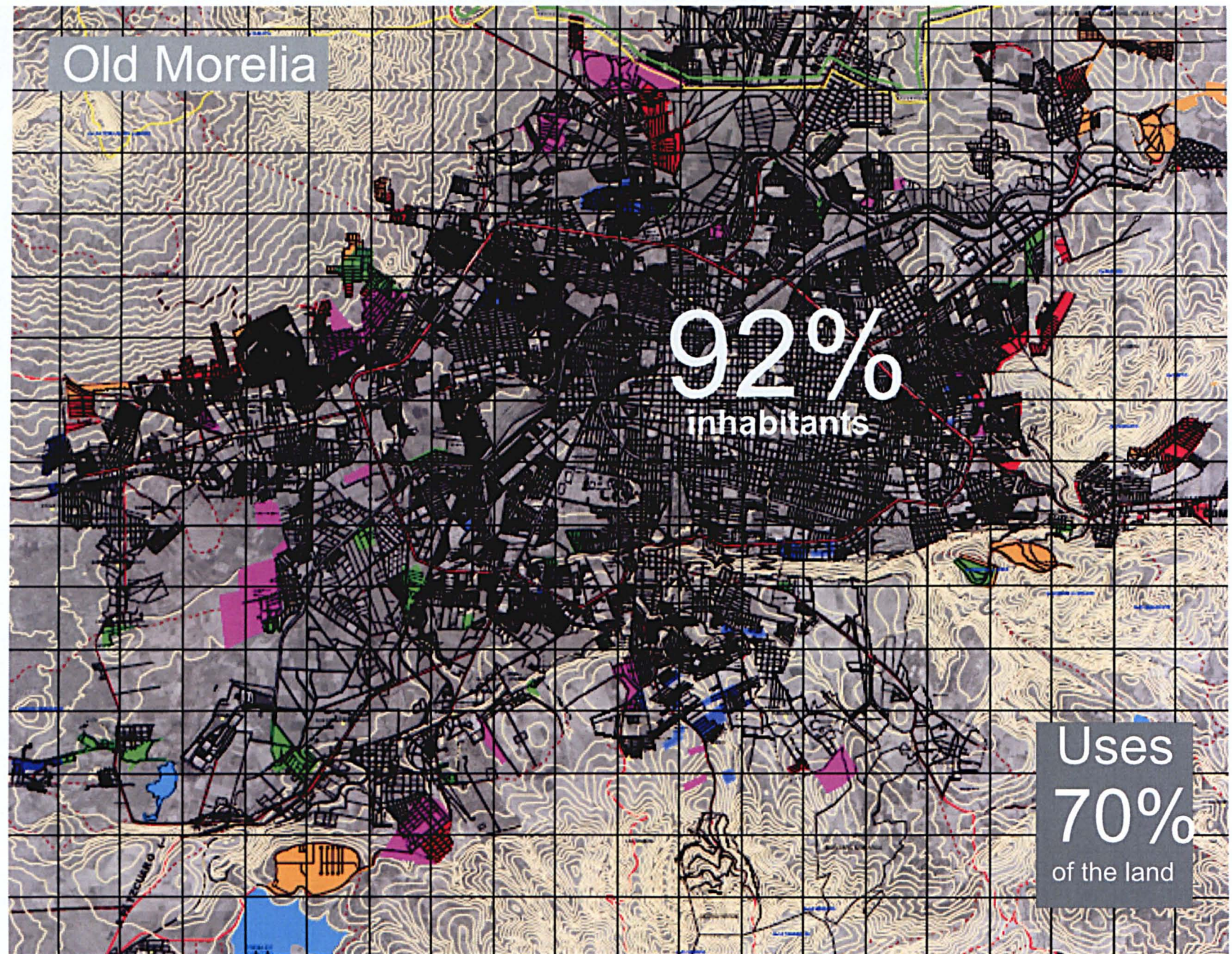


1921 to 1932

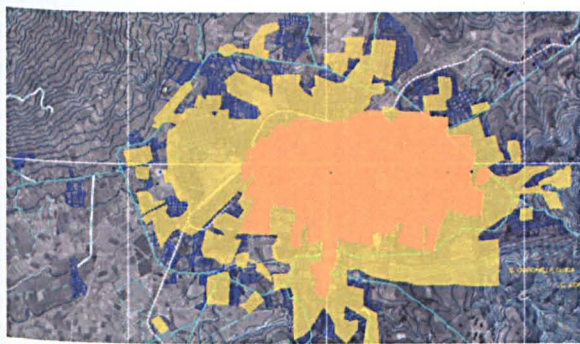


1932 to 1955

A.7 Old Morelia vs. New Morelia



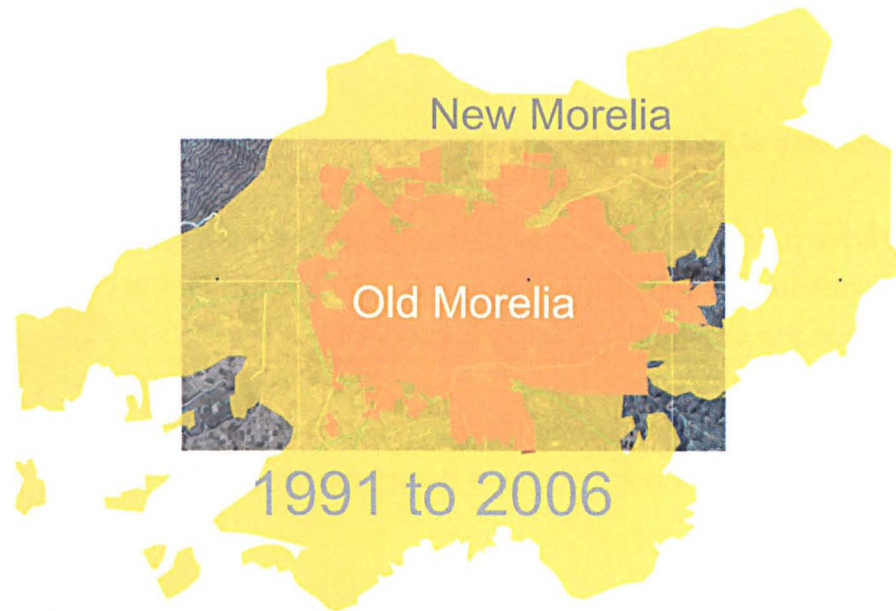
92% of the Inhabitants are living in the Old Morelia. Source: Urban Development Programme of Morelia



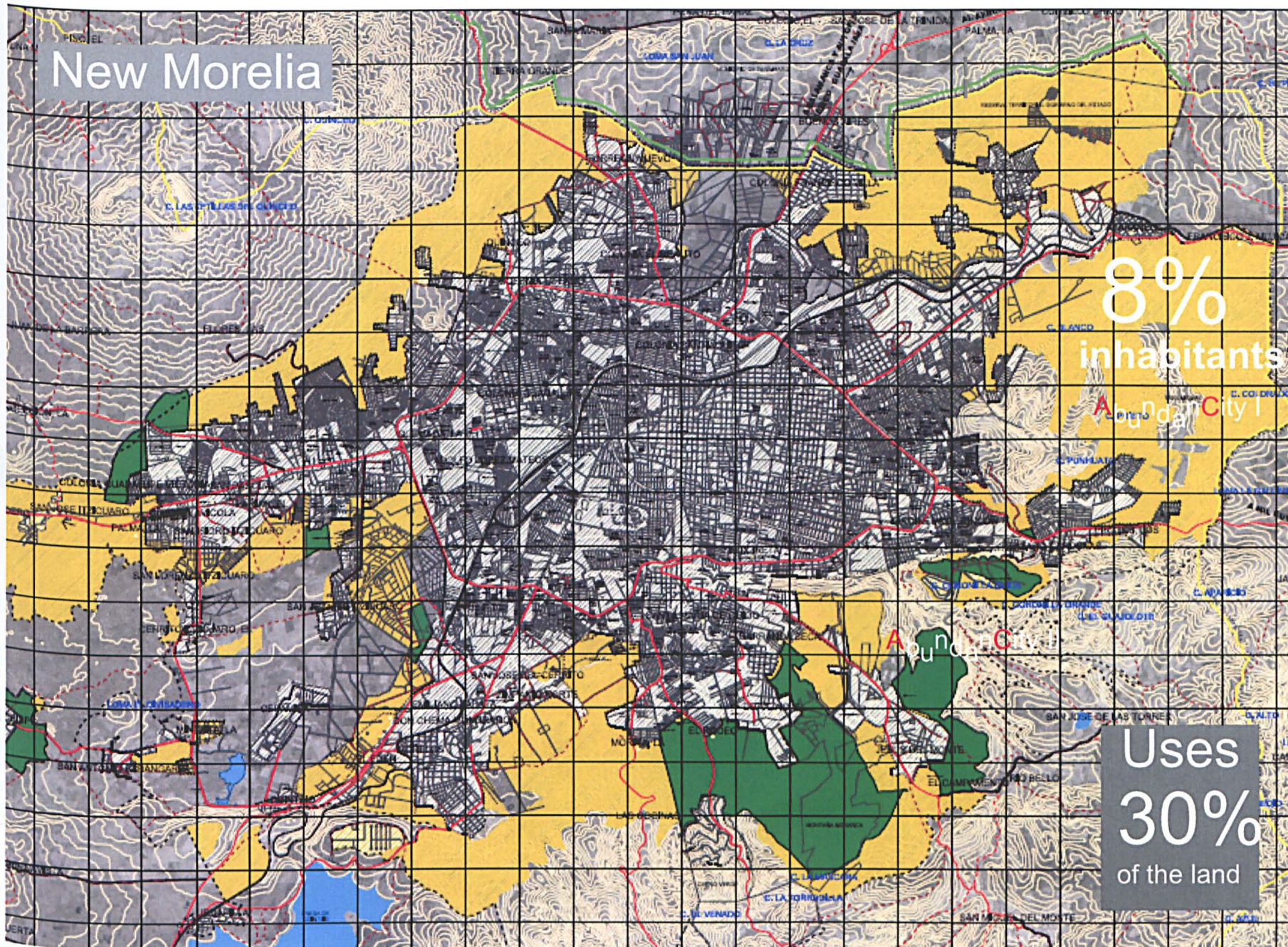
1955 to 1987



1987 to 1991



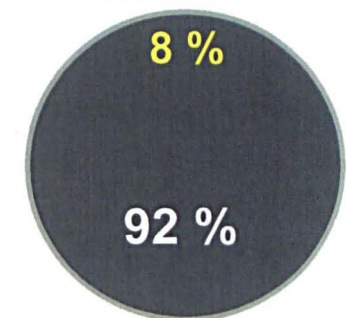
1991 to 2006



Percentage of Use of Land AbundantCity



Percentage of Inhabitants in Yellow zone



8% inhabitants

Uses 30% of the land

750,000 total Inhabitants
8% = 60,000 inhabits will be moving to the yellow Zone in the next 10 years

It is planned that around 8%-10% of the Inhabitants will be moving to the New Morelia.

Source: Urban Development Programme of Morelia

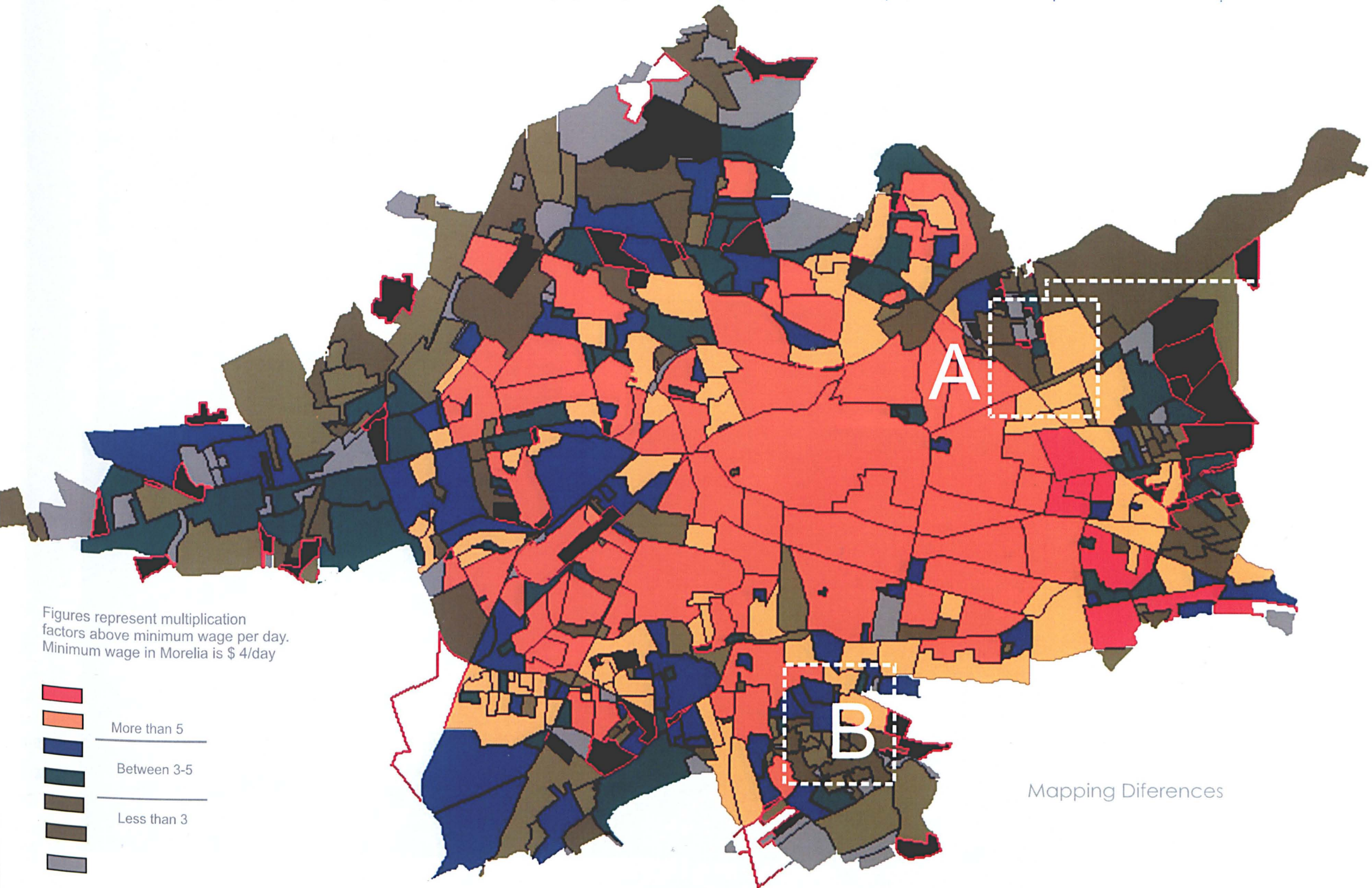
Further implications of the city of paradoxes

In order to have a deeper understanding of further implications of the city of paradoxes model it was developed a map of the income distribution according to postcode areas for the city of Morelia. This map allows identifying by different colours the contrasting economic conditions of Morelia's population. The red colour was assigned to the population with higher economic income and dark green and grey to the lowest. Consequently the main nodes of tension were clearly identified by the contrasting of colours selecting section A and B as example (fig. A.8). A visit was carried out to observe and document deeply the physical materialisation of identified contrasting conditions in such proximity.

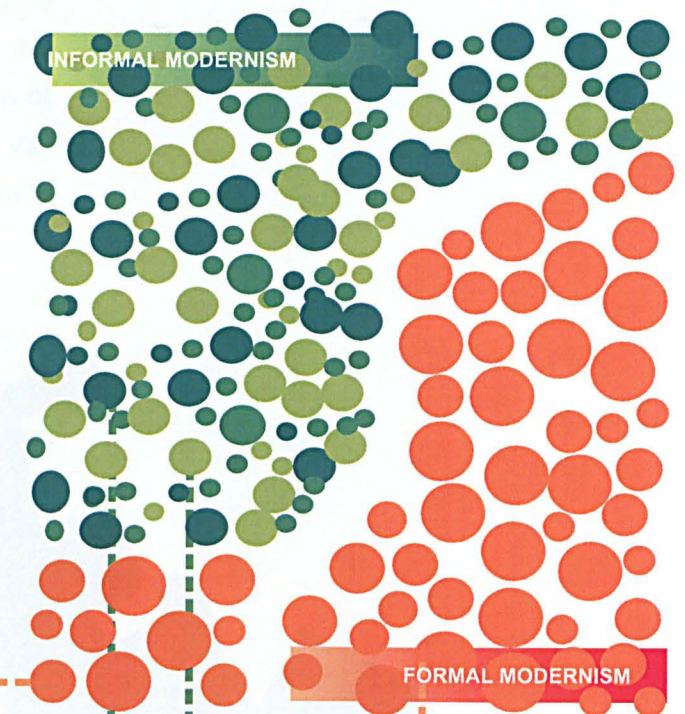
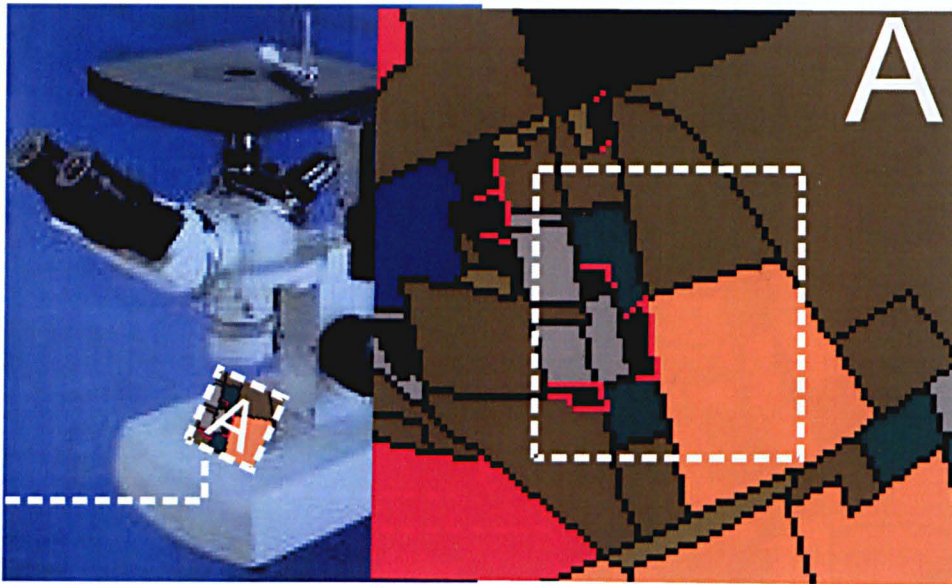
The **Section A** identified a clear example of the actual Morelia's inequality. In the front, the gated community of *Lomas de Las Americas* was developed near to the main ring road. In the background taking advantage of the developed infrastructure the informal settlement of *Faldas Del Punhuato* was developed in federal land which was originally defined as *Reserva Ecologica* (Ecological Reserve). From a bigger picture inequality can be observed between homogeneous housing cells of formal modernism practice which are characterised by order, regularity, cleanness that contrast to variety of housing cells of informal modernism practice which are characterised by variety, mutation, disorder and change. In other words, a 'perfect' community according to traditional values of architecture and fully assisted by the control of architects can be founded next to the imperfect and improvised community developed by their own citizens. Although physical dichotomy can be observed in such proximity and communities are divided by walls, both are commonly transgressing and informing each other. On one hand walls of *Lomas de Las Americas* are broken by the cheap labour and techniques of citizens from *Lomas Del Punhuato*. On the other way workers will keep in mind projects developed in the next community and will attempt to develop their housing progressively adopting certain features in a modest variant and improvised way. At the same time housewife's of *Lomas de las Americas* will take some advantage of 'next door fresher and cheaper street markets (fig. A.8.1).

The second example, **Section B** highlights a different situation. The visit identified an example of actual tension caused by gentrification. In this case the old town of *Jesus del Monte* which has been developed by traditional vernacular practice was reached by the urban fabric of *Bosques De Altozano's* development. Different housing developed by vernacular approach were characterised by adaptation to the local conditions such as topography, local materials and construction techniques. Nevertheless, earth brick housing of *Jesus Del Monte* has been absorbed by new formal modernism developments (fig. A.8.2). During this process remaining vernacular housing are literally considered obstacles of the road for the brand new loft apartments or gated housing developed in Mexican Contemporary Style of *Altozano's* expansion. Accordingly, mainly inspired by the American suburban dream such development encourages the massive use of cars as media transport (fig. A.9). By implication other issues of the everyday life are also suffering dramatic changes.

A.8 Map of the income distribution according to postcode areas for the city of Morelia



A.8.1 Section A of the map which identifies an example of actual tension of inequality



Representation of section A

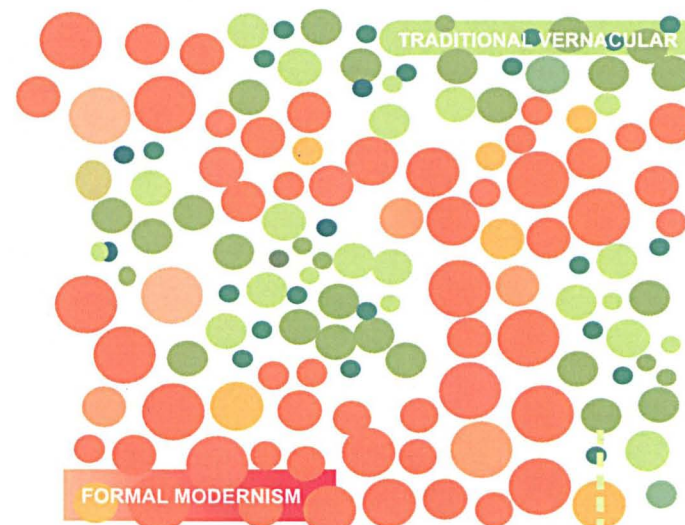


Gated community of Lomas de las Americas in the front and the informal modernism development of Faldas del Punhuato in the background

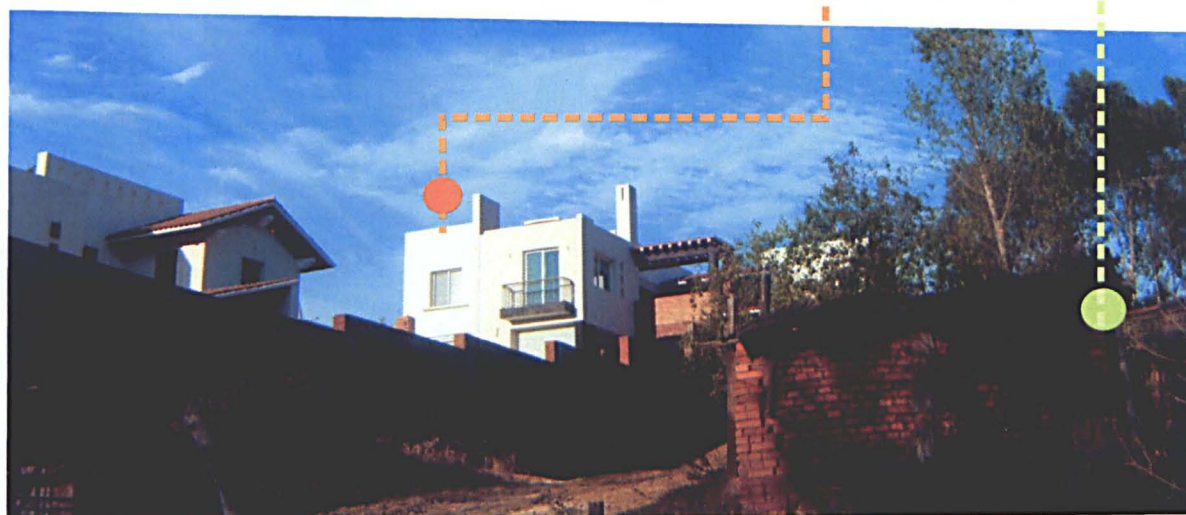
A.8.2 Section B of the map which identifies an example of actual tension of gentrification



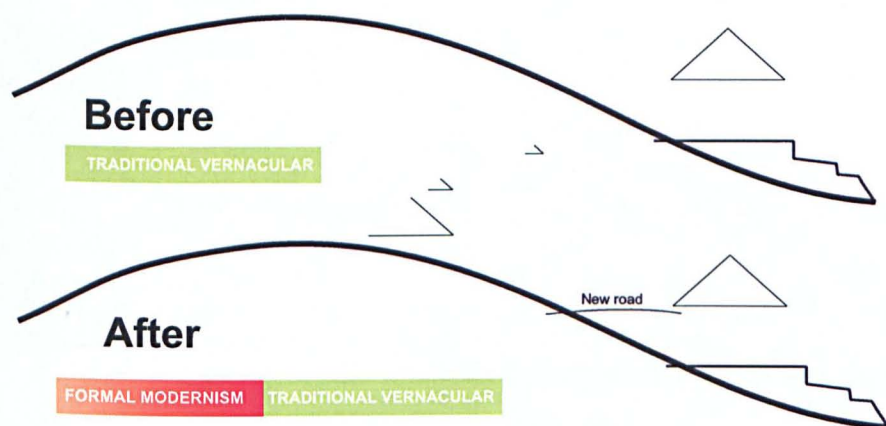
Section B



Remaining housing developed by traditional vernacular techniques.

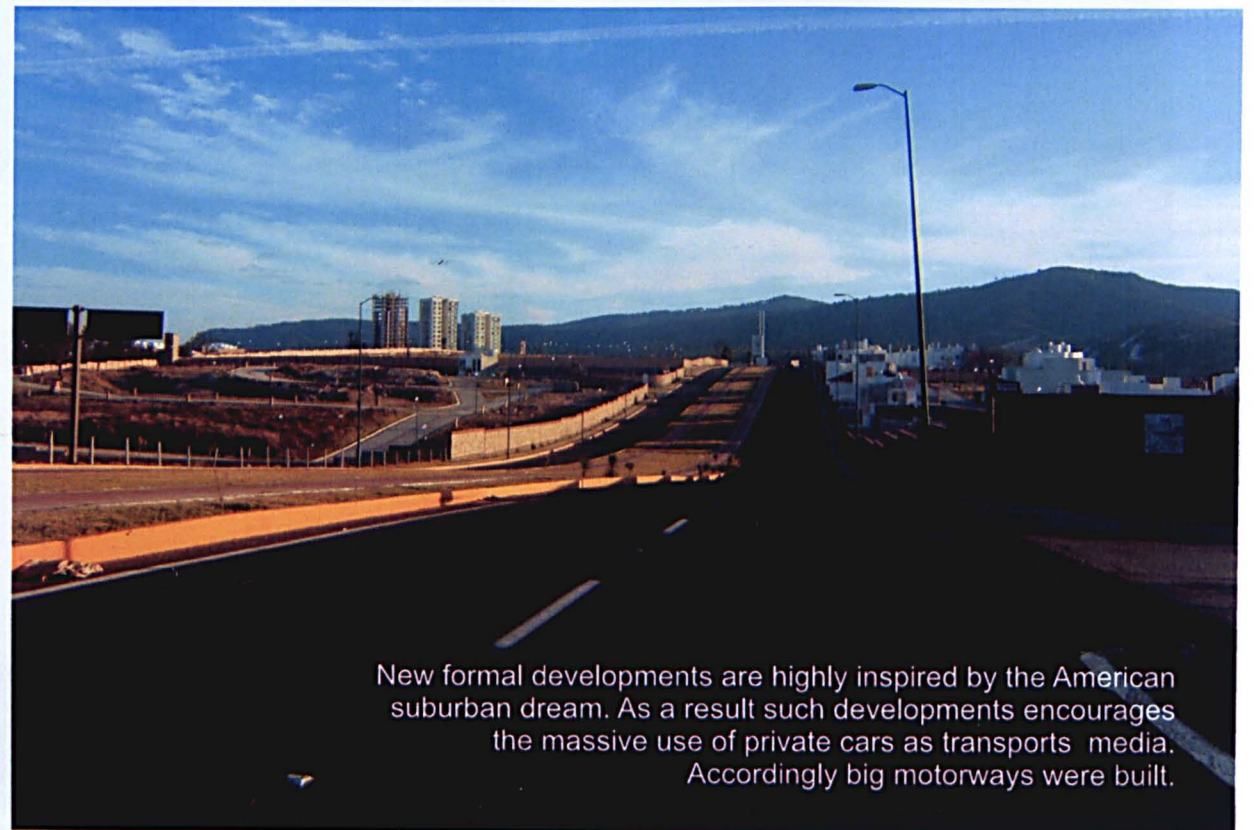


In the front last remains of traditional earth brick housing of the town of Jesus del Monte which it's been absorbed by urban grown of Morelia. In the background brand new formal modernism gated development.



Remaining traditional vernacular housing literally considered obstacle of the road.

A. 9 Formal Modernism practice in Bosques de Altozano, Morelia, Mexico



New formal developments are highly inspired by the American suburban dream. As a result such developments encourages the massive use of private cars as transports media. Accordingly big motorways were built.

Further implications related to the way of using and consuming resources

Beyond the physical manifestations already discussed in previous examples, the city of paradoxes model of AbundanCity and ScarCity represent further implications related to the way of using and consuming resources. A set of visuals which put together some of these aspects and develop further issues previously discussed are presented for reader's reflection and interpretation. The visuals are: A.10 Contrasting densities, A.11 Green and Brown areas, A.12 Closed vs. Open, A.13 Transport media comparative, A.14 Resources consumption, A.15 Indoors vs. Streets, A.16 Luxury malls vs. Street markets, A.17 Local and low tech vs. Imported and high tech, A.18 Other issues. This final visual concludes the series of this exercise highlighting how every single aspect of the everyday life can be approached and affected in different way. An interesting example of these single aspects is: the most used blender in AbundanCities is designed to be waste after 5 years period. The main focus is the style and colour that can be combined with kitchen design. In contrast, the most used blender in ScarCities is a model designed for long term use. The main focus is durability and possibility of reparation in case of damage. Commonly every single piece to blender fixing can be founded in all street markets of informal settlements (A.18.2)

A. 10 Contrasting Densities



Photographs by Ray Young



Photographs by Ray Young

Formal Developments in Bosques de Altozano, Morelia, Mexico



Above left: Irregular settlements of Colinas del Sur, Morelia, Mexico.
Bottom: Low-Income Housing Development, Villas del Pedregal, Morelia, Mexico



A.11 Green vs. Brown Areas



1 hc/
10 people

Photograph by Tres Marias consortium

Golf course in Tres Marias, Morelia, Mexico



0.25hc/
1000 people

Low-Income Housing in Villas de la Loma, Morelia, Mexico

A. 12 Closed vs. Open



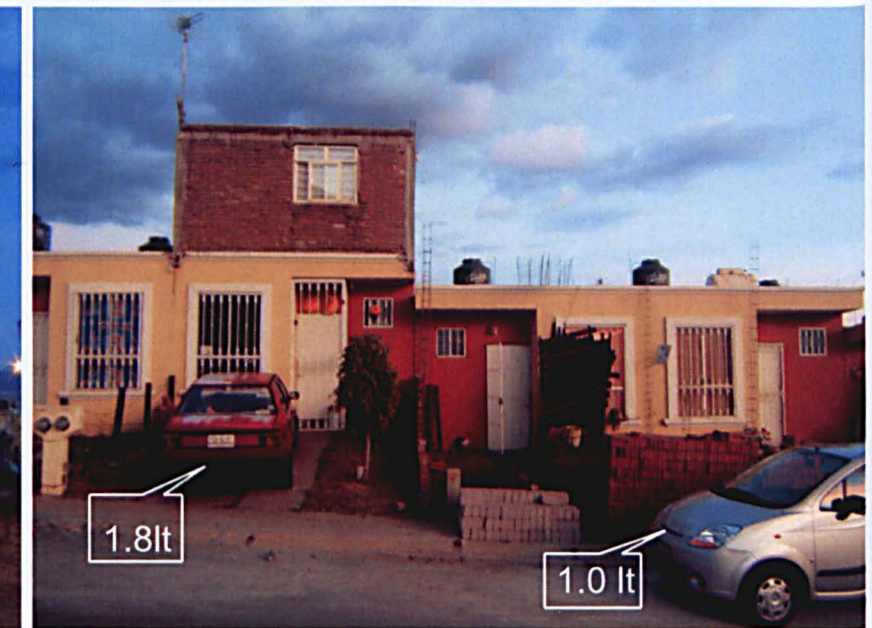
Photograph by Ray Young

Gated Community in one of the brand new developments of Bosques de Altozano, Morelia, Mexico
Commonly this communities will include, 24/7 vigilance, cctv camera and electrified walls and fences to avoid transgression



On the other hand Informal modernism developments are always open to free transit expressing their own interpretation of freedom. Such critics such as Emiliano Gandolfi had entitled them spaces of freedom. El Durazno, Morelia, Mexico

A.13 Transport media comparative according to different developments



100 lt/month per car average divided between 5 members of the family average = 20lt/ month per person = 240 lt/year per person



250 lt/month per car average
 750 lt/month per three cars average per family
 750 lt divided between 4 members of the family average = 187.5 lt/ month per person
 2250 lt/year per person



Hummers in Mexico

Last year Mexico became the 2nd world's place in luxury Hummers consumption after USA. Morelia occupies the 9th place nationally even so it is only 25th largest city of the country.

Hummers H2 and H3 sold between 2006-2008

USA	141,000	
Mexico	5,100	
Canada	3,401	
Ecuador	26	Source: AMIA

Hummers vehicles are recognised as symbol of power. Even so this vehicle is not affordable for the masses some of them will express somehow their intentions or its own versions of Hummer's possession.



43 lt/year per person



0 lt/year per person



2150 lt/month average divided between 600 passengers average in yellow route = 3.58lt/ month per person = 43 lt/year per person

A. 14 Resources consumption

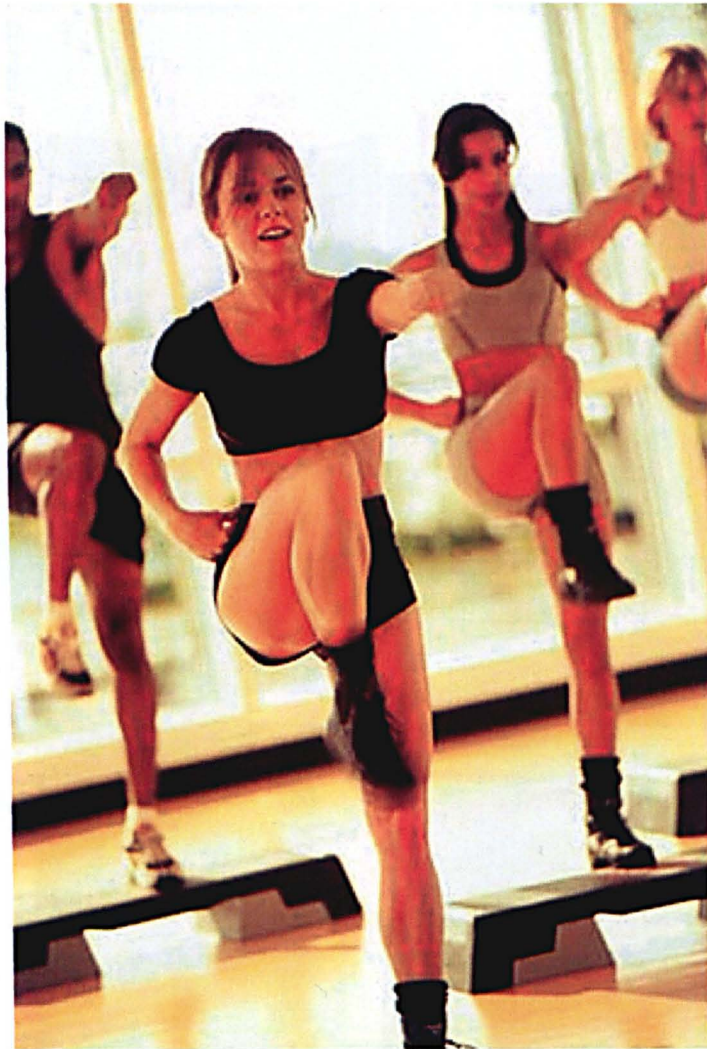


Different devices considered essential as part of life style of Formal Modernism developments

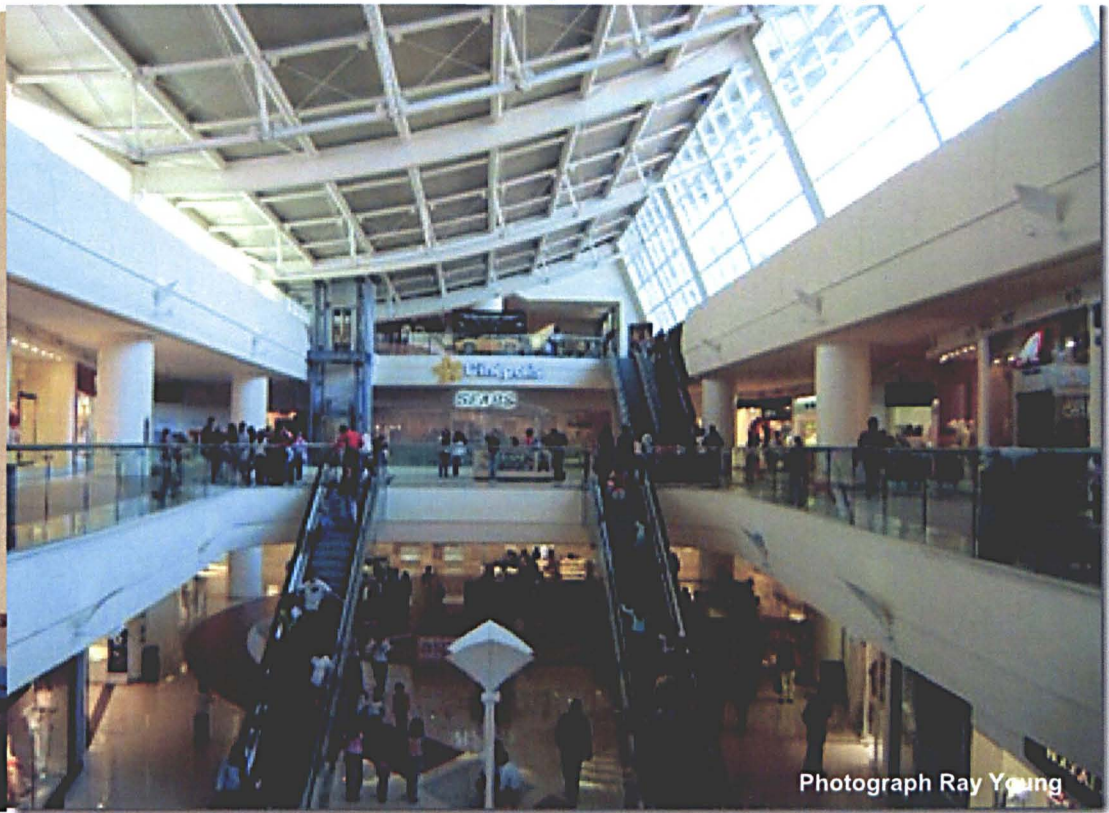


Different devices considered essential as part of life style of Low-income housing developments

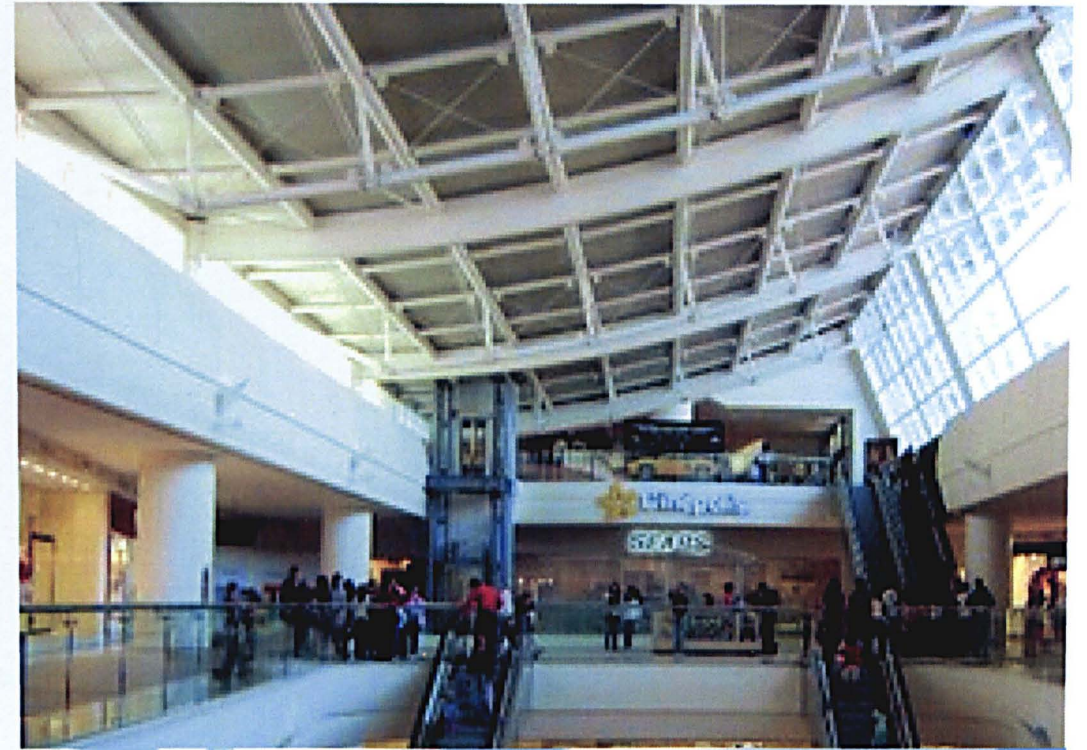
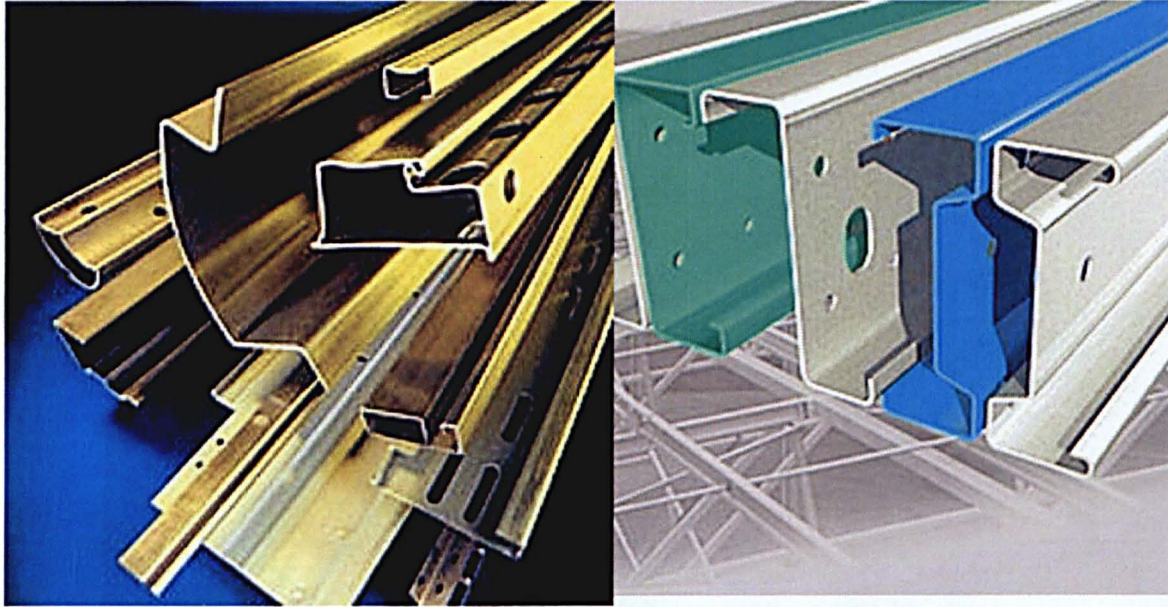
A. 15 Indoors vs. Streets



A.16 Luxury Malls vs. Street Markets



A.17 Local and low tech resources vs. Imported and high-tech.



A.18.1 Other issues

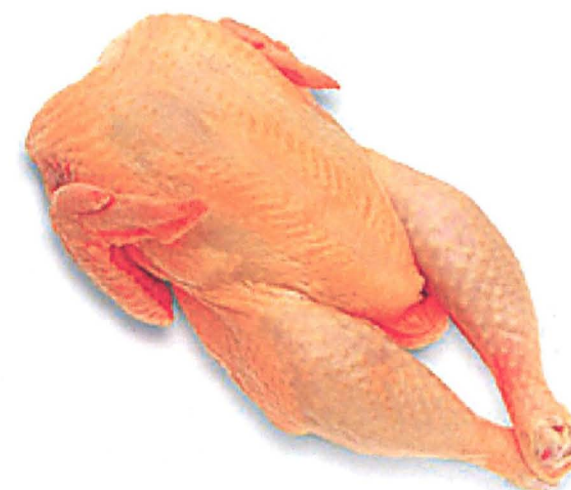
Refrigerated vs Fresh



Packeted vs unpackaged



Genetically modified vs Organic



A.18.2 Other issues

Voluntary recycling vs forced to recycle



Original brands vs fake brands



Designed to waste vs designed for durability and repair

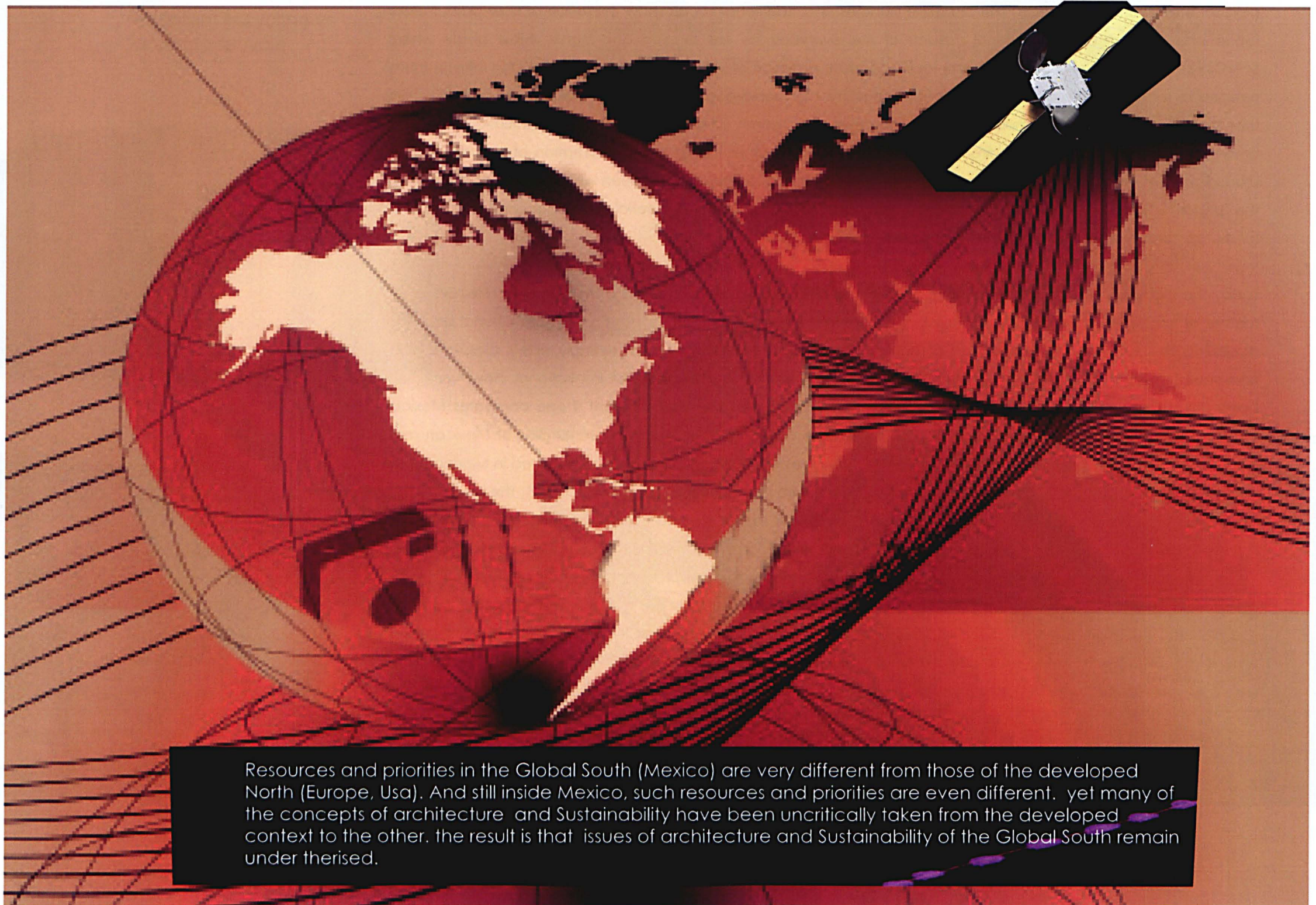


Synthesis of Stage A

The analysis of Morelia's urban fabric expansion highlights that, the city of paradoxes phenomenon is not new; instead it has been part of Mexico's development culture. The main difference today is that this phenomenon has been exacerbated by actual development's model where informality and semi-informality have become increasingly dominant. The resulting socio-spatial arrangement of the city has thus followed to suit with such socio-political and economic aspects. The analysed sections and additional visuals show evidence of how actual urban fabric and by implication additional aspects of the everyday life are marked and highly visible divide where; ScarCity sectors of the city at its periphery lack adequate provision of social, economic and servicing infrastructures needed to subsist. On the other hand the AbundantCity, high socio-economic sector, inhabits a different city, one that thrives in highly serviced and protected. However, the 'donut effect' demonstrates the intrinsic relationship between both sectors which are directly proportional to each other during the conformation of actual Morelia's urban fabric. In other words Morelia's analysis highlight the strong relationship between what Homi Bhabhas entitled the 'performative' and 'pedagogical' or Rahul Mehrotra's terms 'static' and 'kinetic' which are undiluted elements for the conformation of contemporary hybrid Latin American cities.

Today the globalisation impact is informing, affecting and reshaping all the aspects of the everyday life. Even so in remote or traditional communities of Mexico the consumption of coca cola, distribution of international brands or accessing to internet is becoming part of contemporary culture (figs. A.19.) Accordingly elite's classes and by consequence appointed globalphilic architects are looking western sustainability as inspirational. However as has been strongly argued in Chapter 3, values, priorities and capacities are very different if one compares Mexican characteristics to western industrialised countries or even if one compares internal communities of Mexican mass cities such as Morelia. This analysis shows evidence of how western concepts only can be adopted in Mexico by the life styles of the wealthiest communities (AbundanCity), not with those more vulnerable (ScarCity). The key issue for a more critical discussion of sustainable architecture appropriate to the specific context of Mexico is to understand that sustainability, as well as, other previously adopted western models, still maintains utilitarian idea and high consumption of natural resources use. The final conceptualization can be expressed by a comparative where it was identified that developments based on AbundanCity's model which already are adopting some polices based on sustainability, still **waste more** that they need. In contrast, developments of ScarCity's model which follow a more empirical knowledge inherited by the vernacular tradition **waste less** that they need (fig. A.20). As a result the first step is to address initially this unbalanced condition. In terms of use of resources it is important to observe that the ScarCity's model is already more involuntary sustainable. Consequently, special focus of its features is necessary. Before to begin this speculation the Stage B Diagnosis: Summary of mapping is developed.

A.19 Globalization Impact



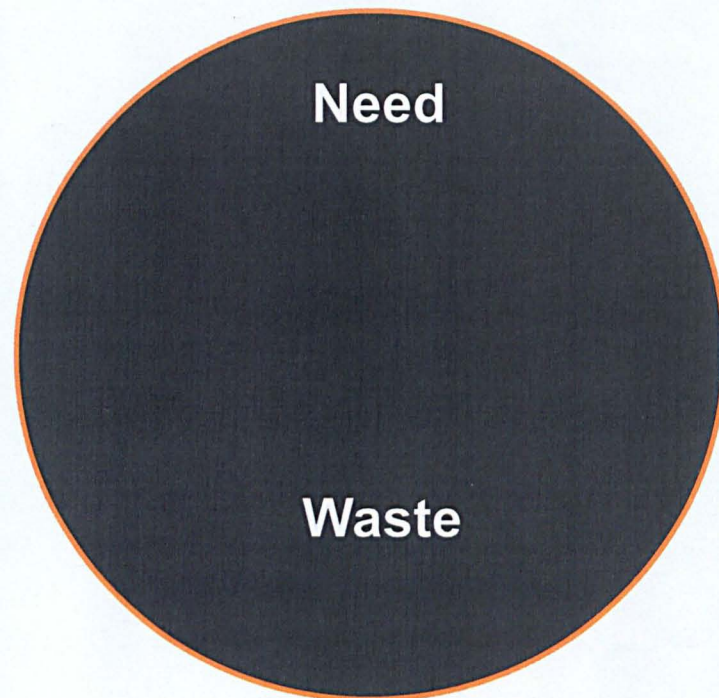
Resources and priorities in the Global South (Mexico) are very different from those of the developed North (Europe, Usa). And still inside Mexico, such resources and priorities are even different. yet many of the concepts of architecture and Sustainability have been uncritically taken from the developed context to the other. the result is that issues of architecture and Sustainability of the Global South remain under therised.



Even so in remote and most traditional communities, the Globalization phenomenon is reshaping the every day life.

A.20 Conceptual comparative between the two models of development

AbundanCity

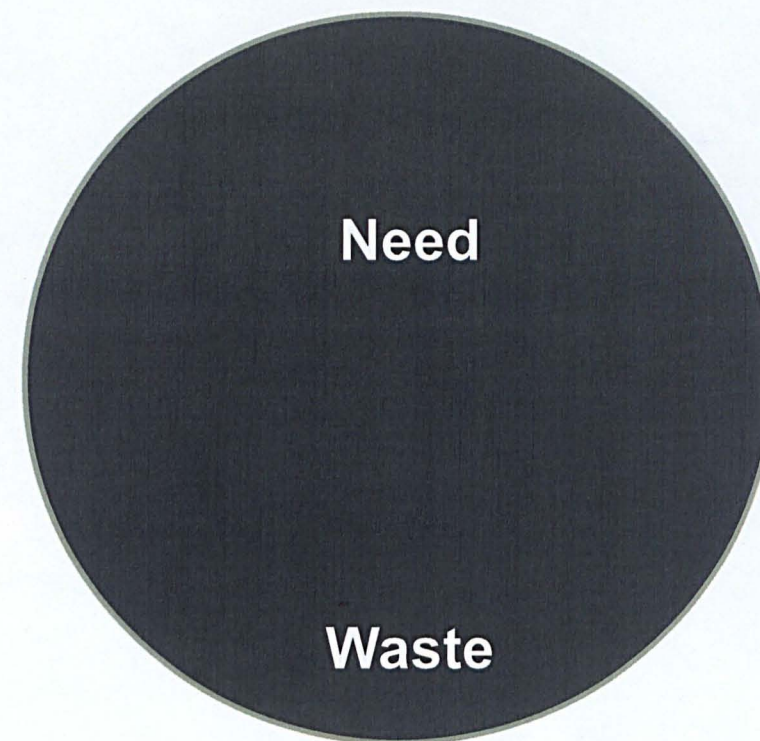


“To think that their present circumstances and their present societal arrangements might be sustained –that is an unsustainable thought for the majority of the world’s people”.

Berlin Institute

“When architectural needs are reduced to its absolute basic level, the result challenge the conventionality of western architectural form”.

Melanie Dadd,



ScarCity

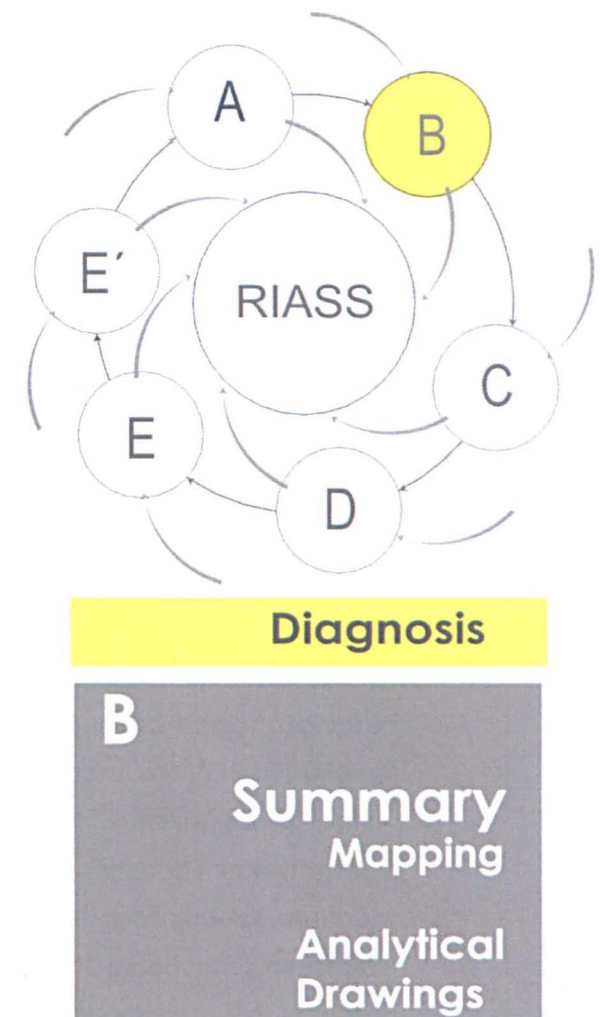
Stage B: Diagnosis: Summary of Mapping

A summary or recap in this case means a short overview. The main purpose of such a simplification is to highlight the major points from the Mapping and Documentation carried out during stage A. The target is to help the reader get the gist of the main issues involved in a short period of time. In this case it is important to recap the nodes of tension and identify the levels of contrast or levels of marginalisation of the studied communities. To achieve this aim the *Human Development Index* will be used to have a more objective and wider perspective of local conditions.

The Human Development Index

The Human Development Index (HDI) is going to be used to give a more approximate idea of the contrasting conditions of Morelia. In other words the (HDI) will be used to identify different 'states of development' in the studied communities. The HDI is the most common index used today to measure and compare different levels of development within communities in the same city, different areas of the same country or different countries according to their level of 'human development'. This index will be useful in explaining further previously identified 'nodes of tension' caused by communities with contrasting HDI's levels that coexist together in such proximity which are sharing the same spatial space. In the end, this can make clear the different capacities, values and priorities of the two mapped models, ScarCity & AbundanCity, towards interpretation and adoption of sustainability. However before to use the HDI in this case study it is important to highlight its limitations.

Different experts such as Bryan Caplan, Ambuj D. Sagara, Adil Najam, T.N. Srinivasan, Mark McGillivray, Howard White, Farhad Noorbakhsh, have criticised this index on a number of grounds. Their main arguments are that it: fails to include any ecological considerations, focuses exclusively on national performance and ranking, is a redundant measure that adds little to the value of the individual measures composing it, is a means to provide legitimacy to arbitrary weightings of a few aspects of social development; and is not paying much attention to development from a wider perspective. In the terms of Ambuj D. Sagara, and Adil Najam, human development reports "have lost touch with their original vision and the index fails to capture the essence of the world it seeks to portray"¹. The index has also been criticized as "redundant" and a "reinvention of the wheel", measuring aspects of development that have already been exhaustively studied². The index has further been criticized for having an inappropriate treatment of income, lacking year-to-year comparability, and assessing development differently in different groups of countries.³ Some authors have proposed alternative index to address some of the index's shortcomings.⁴ Nevertheless, until now there is not a more holistic index in existence that covers these issues and that is applicable in the studied context. The only country with a more holistic Index is Bután. Since 1972 Butan has the Index of Happiness Interna Bruta (FIB) which measures the socio-economic development, environmental conservation, preservation of cultural values and



¹ Najam, A. D. S. a. A. (June 1998). "The human development index: a critical review." *Ecological Economics* 25(3).

² Srinivasan, T. N. (1994). "Human Development: A New Paradigm or Reinvention of the Wheel?" *American Economic Review* 84(2): 238-243.

³ White, M. M. a. H. (2006). "Measuring development? The UNDP's human development index." *Journal of International Development* 5(2): 183-192.

⁴ Noorbakhsh, F. (1998). "The human development index: some technical issues and alternative indices

" *Ibid.* 10(5): 589 - 605.

government effectiveness. An interesting effort in Mexico is the Índice Nacional de Calidad de Vida en México (National Index of Quality of Life in Mexico). This is a new proposal that will attempt to 'Measure Progress' in Mexican communities from a more holistic approach⁵. Unfortunately it was not possible to use this Index yet due to it still being under development at the Centre of Wellbeing Studies of the University of Monterrey, México. Hopefully, this index could be available for future studies. Consequently, the most convenient Index at the moment to be used in Stage B, the Summary of documentation exercise, is the Human Development Index.

Stage B results

The **first** step was to develop a map of the HDI according to post code areas for the city of Morelia. As a result a large spectrum of changing HDI was identified. Different HDI vary from a range of 0.69 to 0.94 of a scale of 0.00 to 1.00. In practical term this means that Morelia has a spectrum of communities that the lowest match with the average HDI of Guatemala and the highest match with the average HDI of Canada. Previously identified sections A and B represent two examples of contrasting HDI in such proximity. This means that communities such as the informal settlement of Faldas Del Punhuato or the vernacular community of Jesus Del Monte which has a HDI of 0.69 are located next to formally developed communities of Lomas de las Americas and Altozano which has a HDI of 0.94. (Equivalent to developed countries)(fig. B.1). In metaphorical words in this analysis Guatemala was founded next to Canada. To explain further this argument an additional section C was identified in limits of the new development of Ciudad Tres Marias. Visualisation of this section highlights and compares one of the most significant issues shaping such dichotomy which is related to privatization, high speculation and economic profit. This aspect exposes the main difference of Mexico's walls comparing it to other important world's walls. In comparison to some of these such as Berlin wall which was mainly ideological and political, Ireland which was mainly religious or in Jerusalem which is highly ethnical; Mexico's walls are mainly related to socio-economic speculative factors as well as in other Latin American countries (Fig. B.2)

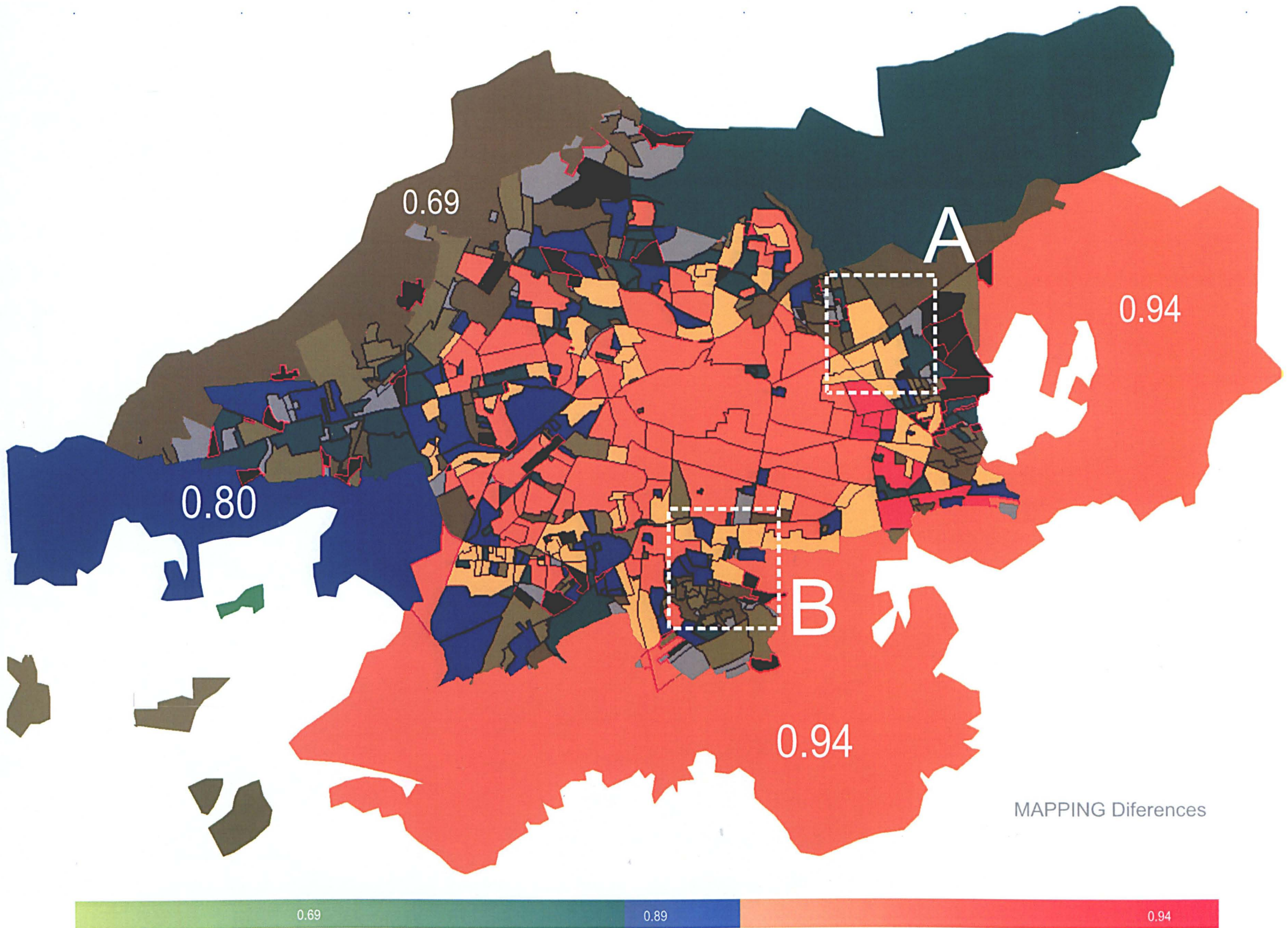
The **second** step was to develop more detailed visuals of the full spectrum of Morelia's HDI. In this exercise one building of each case study was selected as representative unit of the different developments founded in Morelia (fig B.3). This exercise stresses visually the big variety of different developments and by implication the variety of HDI per case study and the most common facilities of each level. Consequently, a second spectrum highlights how Scarcity's communities had evolved reaching higher levels of HDI over time (fig. B.4). Finally, a spectrum speculating if can be possible to move even forward the different ScarCity settlements whilst maintaining the model of lower consumption of resources. At the same time the spectrum speculates about the possibility of consumption reduction of AbundanCity. In other words this graphic speculates if one can formulate an approach to Mexican future architecture based on the idea of scarcity (fig. B.5)

The visuals of this stage to summarise mapping are:

- B.1 Comparison of land speculation and different levels of Human Development Index (HDI): Mexico's Walls
- B. 2 Spectrum of building developments in Morelia and its relationship to the Human Development Index: identifying the level of marginalisation.
- B. 3 Evolution of different developments in Morelia over time
- B.4 Can be possible to move them even forward whilst maintaining the model of lower consumption of resources?
- B.5 Map of the changing Human Development Index in Morelia
- B.6 Average of Mexico 0.842 (2008) and its three main areas
- B.7 Mexico in relation to other countries

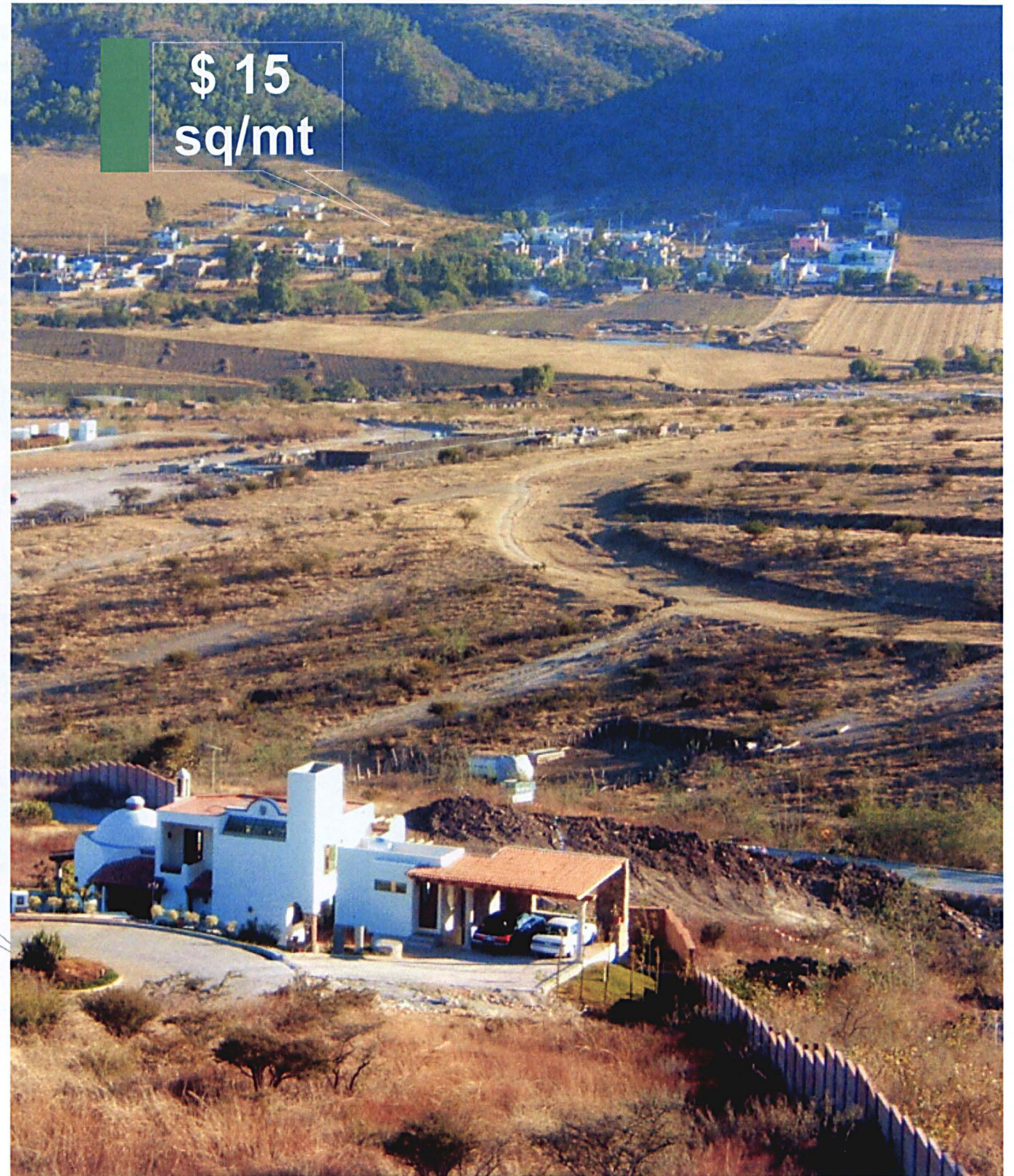
⁵ INCAVI (2008). Índice de Calidad de Vida en Mexico. Monterrey.

B.1 A Map of the changing Human Development Index in Morelia



MAPPING Diferences

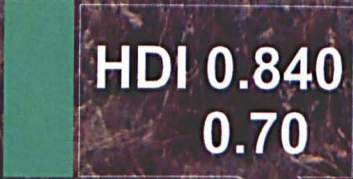
B.2 Comparison of land speculation and different levels of



\$ 15
sq/mt

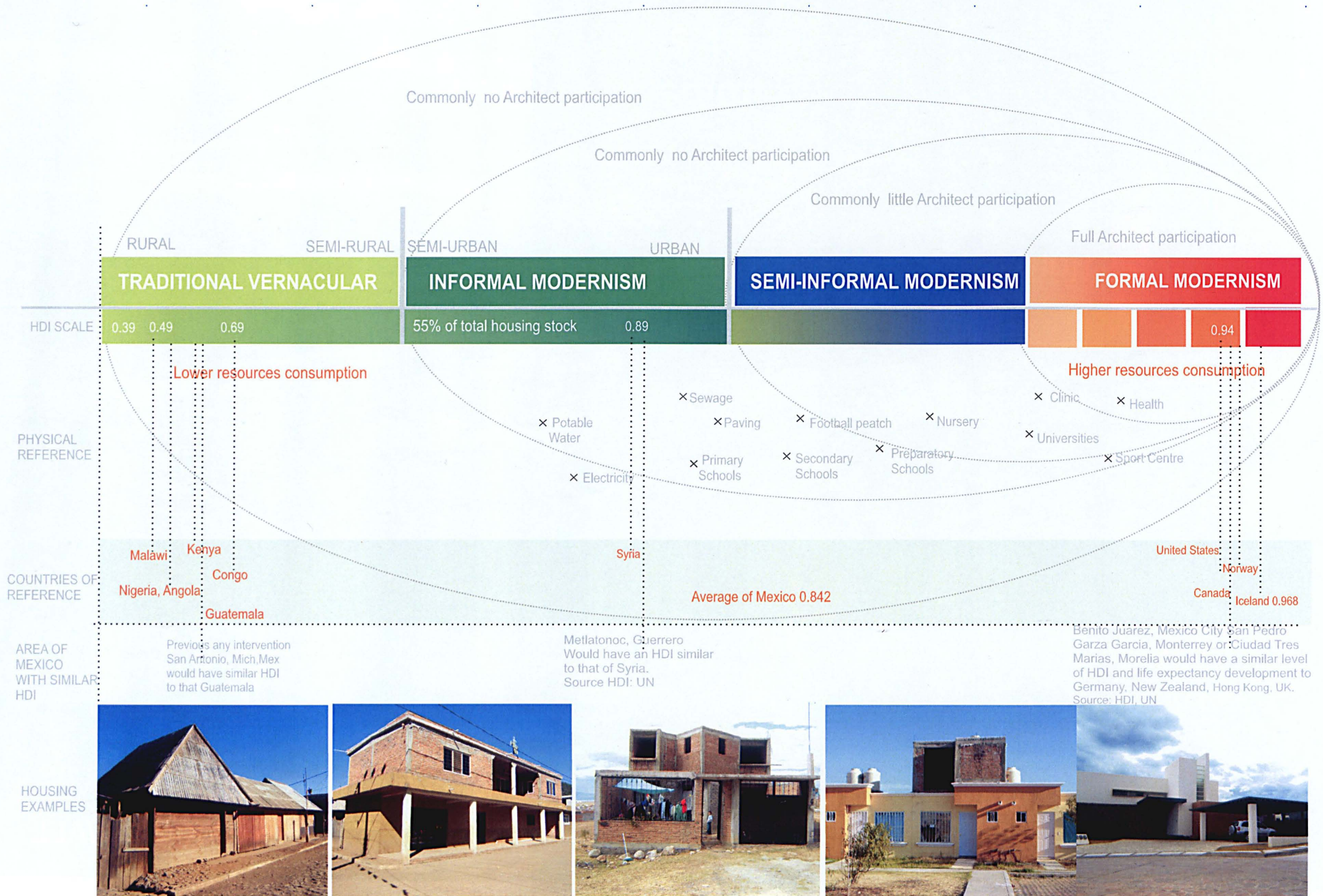
\$ 150
sq/mt

Human Development Index (HDI)

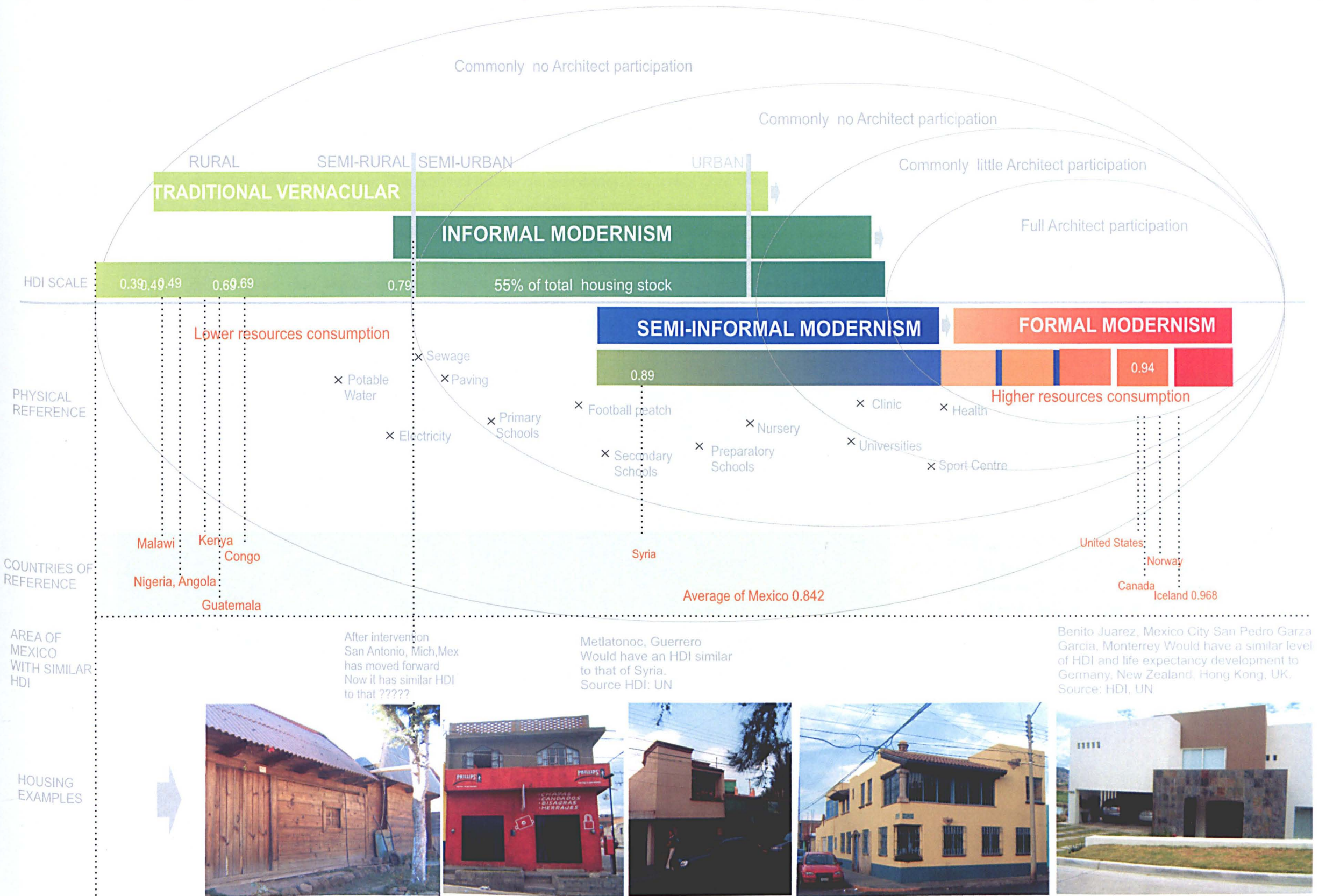


MEXICO'S WALL

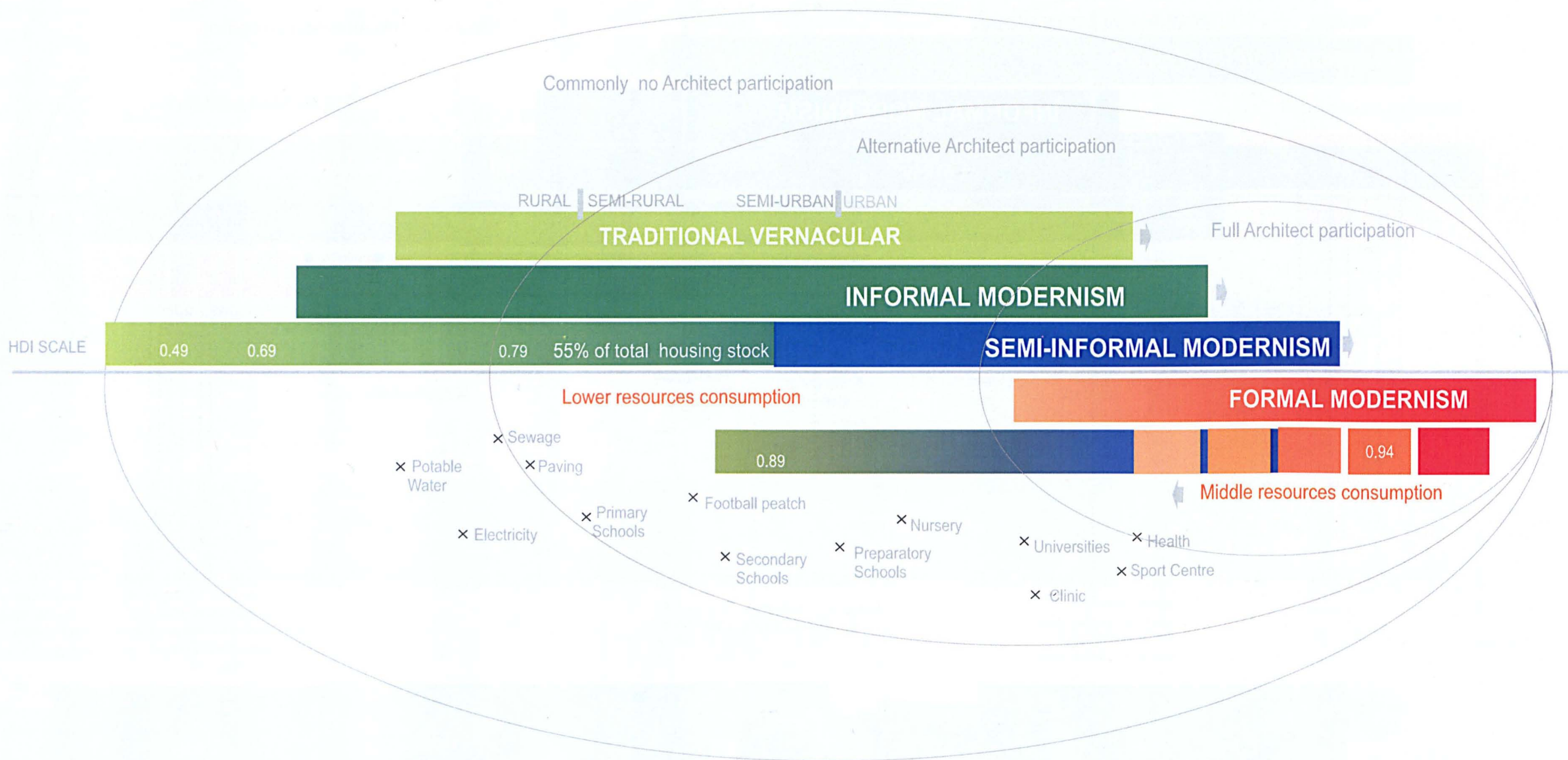
B.3 Spectrum of building developments in Morelia and its relationship to the Human Development Index



B.4 Evolution of different developments in Morelia over time



B.5 Can it be possible to move them even forward whilst maintaining the model of lower consumption of resources?
Can one formulate an approach to Mexican future architecture based on the idea of Scarcity?



Expanding the City of paradoxes model to a national and international comparative

Finally the **third** step of this stage was to show a bigger picture of contrasting HDI in the whole country identifying three main areas which divide Mexico between the rich north and poor south (fig. B.6). Also Mexico was compared to the rest of the world highlighting contrasting HDI in the world that divide the world between developed countries and developing countries (fig. B.7). In conclusion this exercise highlights a tension that can vary from very local to a global concern. It can be argued that as well as the City of Paradoxes phenomenon, also a Country of Paradoxes or a World of Paradoxes exists (figs. 6.15 & 6.16). Each level stresses the different values, priorities and capacities discussed already in different national or international forums towards more sustainable future. The most recent example related to the international sphere in the failure of the Copenhagen Climate Summit last 2009 where a big international audience was expecting a real commitment of every nation to reduce CO2 emissions and different agreements of actions to tackle the coming challenges of climate change.¹ For instance although the Mexican proposal to create and international Green Found to expand the participation of all countries in the climate change agenda was approved, it was rapidly minimised by different countries programmes and their main concerns.² Maturity is needed to understand more critically this phenomenon, maybe conciliation of international 'performative' of 'pedagogical' in Bhabbas terms is necessary to start addressing such issues.

Fig. 6.15 Bottom left: Visual expression of Mexican map bigger resources spending per person in the northern part of Mexico (blue zone). It also evidences stronger influence of USA model of consumption based on abundance use of resources. Interesting relationship between the political division and this map exist.

Fig. 6.16 Bottom right: World map of bigger resources spending per person in developed countries (blue zone). Source: Adapted from, Geography Departments maps of the University of Sheffield.

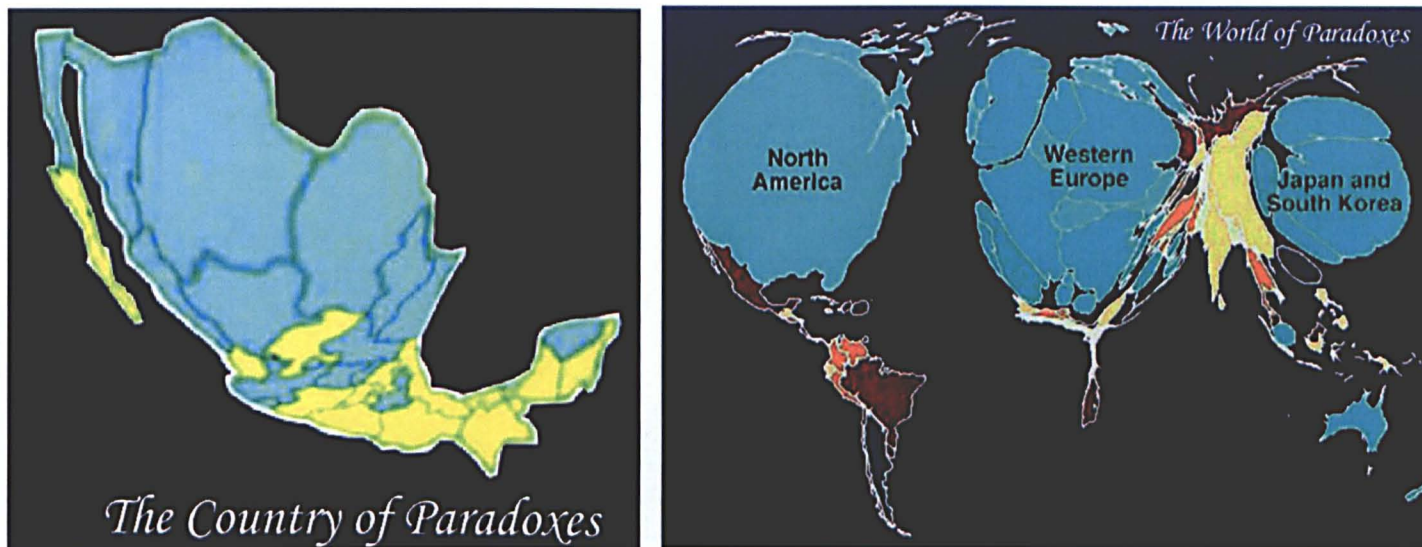


Fig 6.17 The same conceptual representation of the theoretical comparative of use of resources between the two extreme approaches can be also applicable in national or international levels.

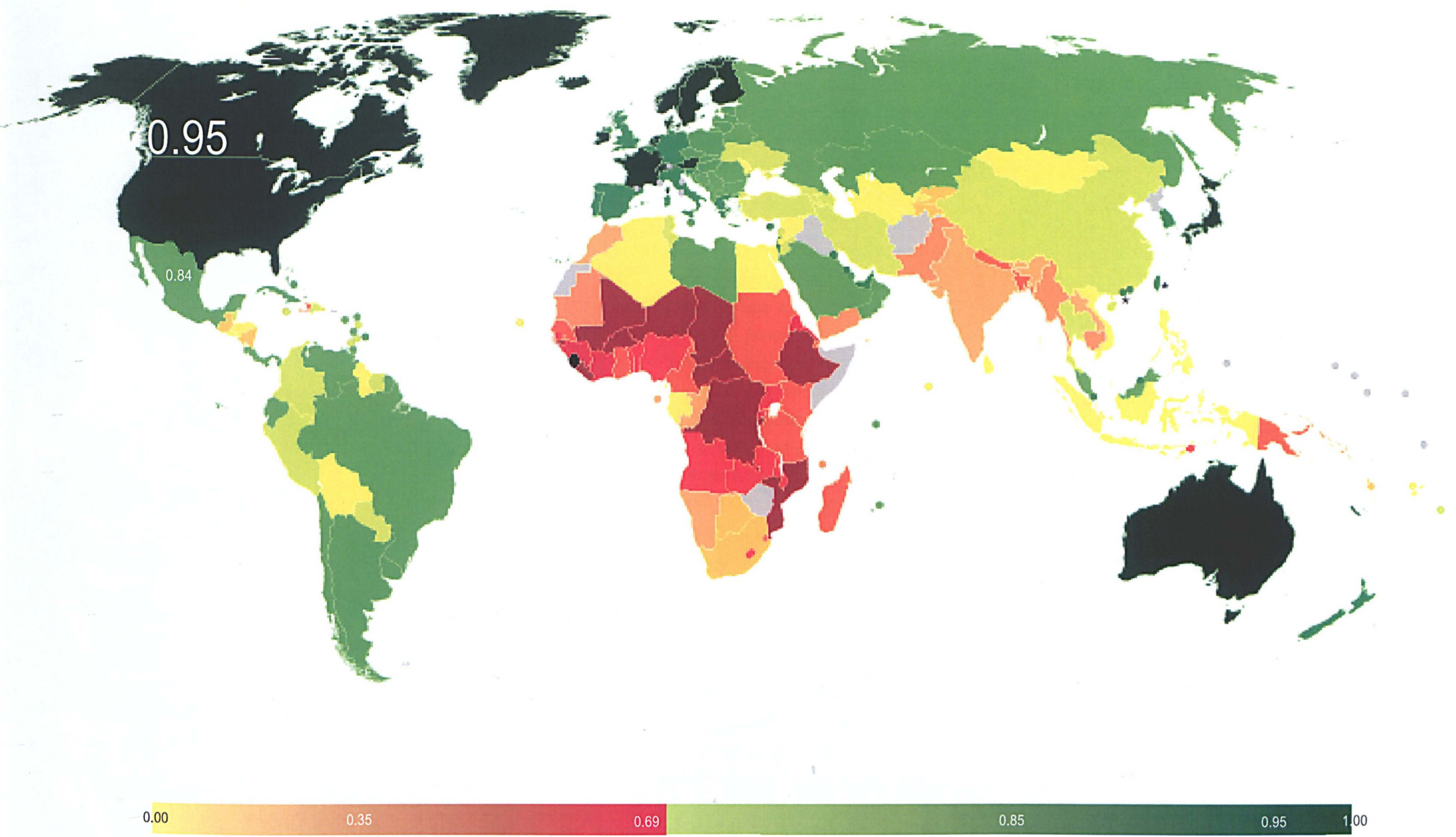
¹ Vidal, J., A. Stratton, et al. (2009). Low targets, goals dropped: Copenhagen ends in failure. The Guardian.

² Semarnap. (2009). "Mexican president Calderon accepts Globe award in Copenhagen." Noticias del Medio Ambiente.

B.6 Average of Mexico 0.842 (2008) and the three main areas



B.7 Mexico in relation to other countries



Stage C: Lessons and Preparation: Issues of Scarcity

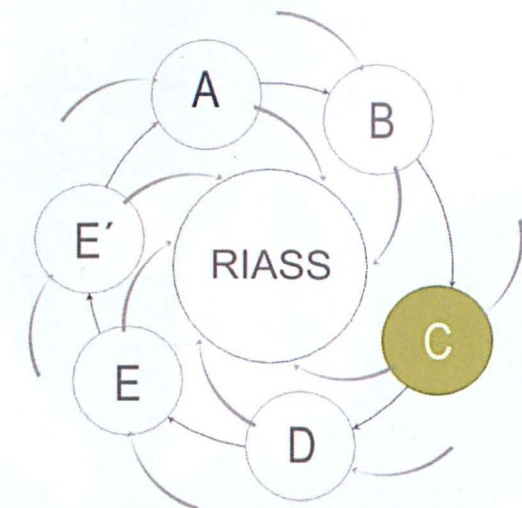
In stage C, Issues of Scarcity, the questions: 'What are the local conditions and features that make the development of ScarCity possible without an architect's intervention?' or what can be learnt from an understanding of existing features, *Issues of Scarcity* of communities developed informally or semi-Formally? will be addressed. The aim of this exercise is to explain through visual means, why such issues are productive in each context and what are the main conditions that allow its success. The target is to help the reader get the gist of how citizens under the condition of scarcity have been breaking boundaries not playing by the rules of the traditional architectural practice, in order to afford their basic housing and consolidate their communities. To achieve this aim three typical case studies in the city of Morelia are analysed; vernacular, informal modernism and semi-Formality modernism. Identifying the main features of its non-prescribed design process will allow us to speculate later how such lessons can be used as set of renewed design tactics to impact future architectural practice. The outcome lessons will be collected in the *Catalogue of the Issues of Scarcity and Design Tactics*.

Issues of scarcity beyond its forms

It has been discussed principally in Chapter 5, that common understanding of the informal modernism phenomenon is mainly discussed from a historical or aesthetics perspective by traditional discourses. From a viewpoint still embedded in conventional architectural values accustomed to homogeneity, cleanness and civil order, the ScarCity's model can be seen as a chaotic approach where a set of tectonic features such as irregular forms, mutations, disorder and variety of tropical colours can be identified. However after revising various critics' arguments mainly from postcolonial, poststructuralist and vernacular schools of thought it is possible to have a deeper understanding. As a result, a full set of intellectual ideas can give support to a critical framework of analysis an action to recognize the *Issues of Scarcity* beyond its forms. Consequently, from a renewed perspective a full set of additional features start to emerge later making sense of additional social, economic, technical and environmental factors of the non-prescribed process of design and practice. These lessons are the direct result of a more critical appreciation of existing conditions of scarcity as a determinant part of the project. Looking at the context of ScarCity architects should understand the immense potential of this process which goes beyond an aesthetical technique (See conceptual representation of the Issues of Scarcity C.1) In this case this exercise will explore visible, but also invisible content of a site/case studies and allow it to be brought to bear a proposal. To achieve this aim four phases were carried out. The phases are: first phase; defining levels of analyses, second phase; analytical, exploratory and conceptual drawings to identify issues of scarcity, third phase; defining classification system of first identified issues of scarcity and fourth phase; development of the full catalogue identifying the most representative issues of scarcity in three selected case studies.

The first set of visuals of this stage C, Issues of Scarcity are:

- C.1 Conceptual representation of the Issues of Scarcity
- C.2 Different layers of the Built environment
- C.3 20 year consolidation process of informal settlements in Mexico City
- C.4.1 The evolution process of a low income Housing Street in Morelia, Mexico over 10 years
- C.4.2 Detailed evolution process of a low income housing street in Morelia, Mexico over 10 years
- C.5 Comparative speculation of a frozen scheme transported to one open to modification
- C.6.1 Understanding the indeterminate routes of Semi-informal housing evolution
- C.6.2 Detailed process of the route of indeterminate low income housing evolution
- C.6.3 Selecting one route of modification for deeper analysis of low income housing evolution
- C.7 Modelling the example of the design and construction process of a selected housing route modification, identifying its Issues of Scarcity
- C.8 Classifying the Issues of Scarcity



Lessons & Preparation

C Issues of Scarcity
Mapping

Conceptual
Analytical
Exploratory
Drawings



ScarCity

This Drawing show the conceptual interpretation at the beginning of looking at the *Issues of Scarcity*. Commonly from a perspective still embedded in traditional architectural values which are accustomed to civil order, ScarCity, can be seen as a chaotic model where only a set aestilistic features such as irregular forms or tropical colours can be identified. However, the next page express deeper understanding where the main set of features start to emerge making sense of the non-prescribed process of design and practice.

Tell how to find out what to do and then how

Start off the same, but all end up different to give them an individuality

Stupidity of Perfection

Different space

Link housing to longer urban system

Promote variety

Promote community

Kinetic

Mutation

Indeterminancy

Flexibility

Imperfection

Improvisation

Use the economy to fuel house building

Transculturation

Mutation

Decentralized

Yuxtaposition

Flexibility

Flexibility

Further social and economic process

First phase: Defining levels of analyses to find data/issues of scarcity

The **first** phase was to define different levels of analyses. A classification done by John Habraken in his book *The Structure of the Ordinary*, as he defined informality, was a good starting point to begin understanding the different layers of the built environment. Habraken identifies five main layers of the built environment and at the same time he argues that according to traditional practice each one has different designer actor which it is believe can enforce order and control. The five layers are: City- Urban designer, Sector/Neighbourhood - Urban Designer and Architect, Individual Housing - architect, Room -Interior designer, and Item - furniture designer (fig. C.2) ¹ Analyses of the selected case studies were developed using various Habraken’s layers/scales. The three different case studies are identified by different coloured labels (fig. 6.18).

TV Traditional Vernacular

TRADITIONAL VERNACULAR

IM Informal Modernism

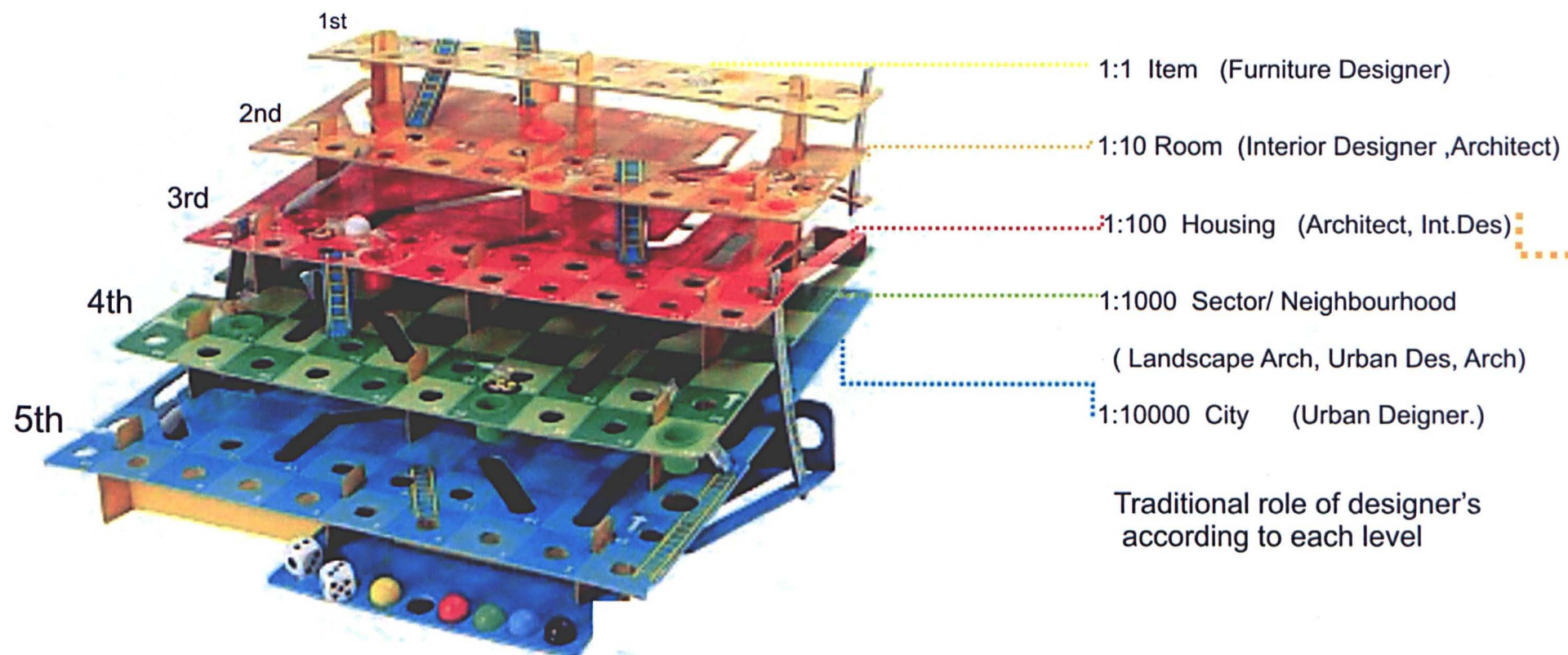
INFORMAL MODERNISM

SIM Semi-Informal Modernism

SEMI-INFORMAL MODERNISM

Fig. 6.18 Different colours labels of the three, main case studies

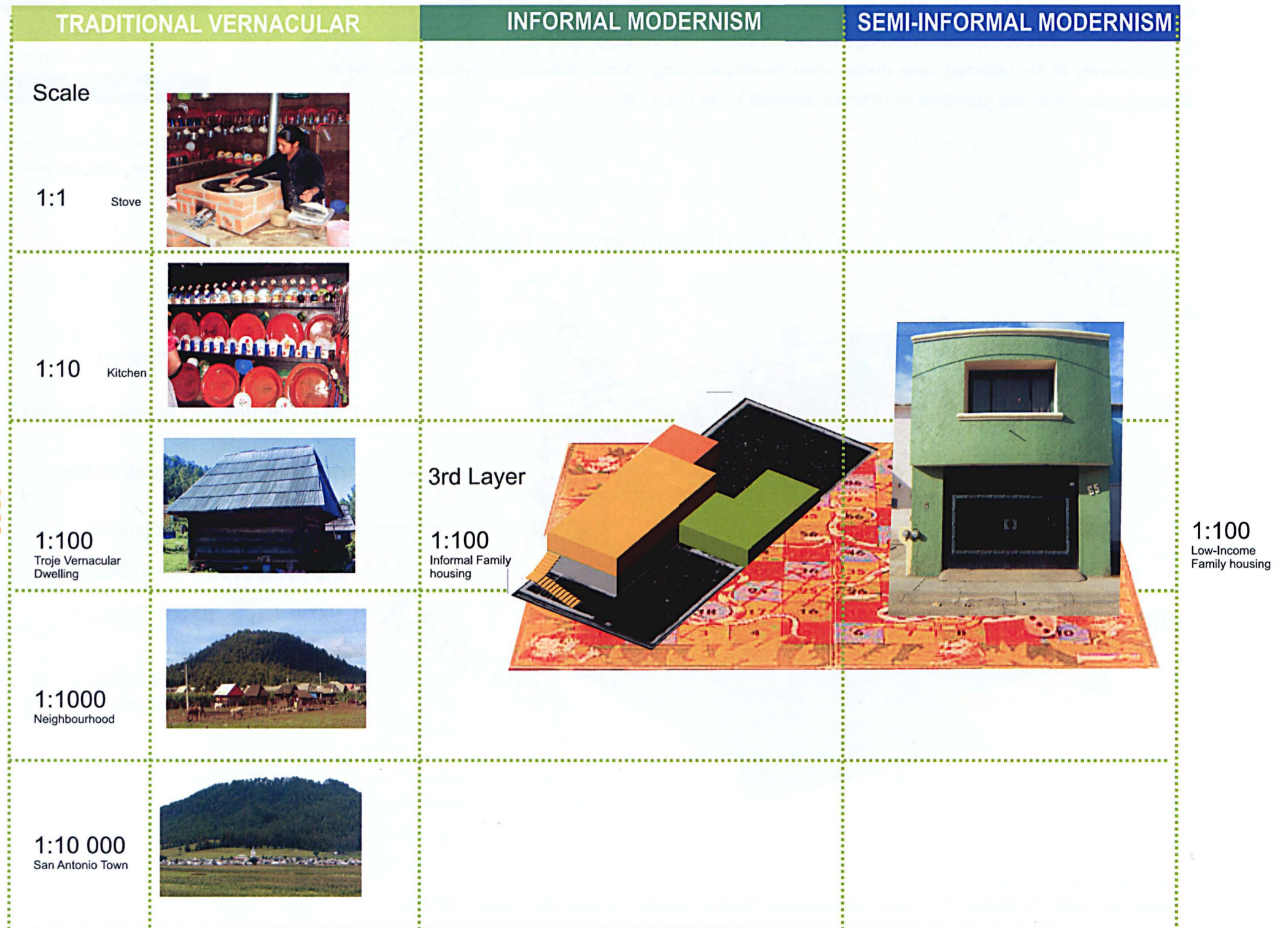
C.2 Five different layers of the built environment



¹ Habraken, N. J. (1998). *The structure of the ordinary : form and control in the built environment*. Cambridge, Mass.; London : , MIT Press, .

Architects are not clear enough, or do not want to be conscious, that cities are not produced by architects alone, instead cities are produced by society

Teodoro Gonzalez



Second phase: Analytical drawings to Identify Issues of Scarcity

The **second** phase was to develop different analytical, exploratory or critical visuals to identify and understand some samples of *Issues of Scarcity* according to different case studies using the defined levels of analysis. Also it is important to observe how the designer gap was addressed. At this stage it is essential to highlight that in order to recognise such issues; the analytical drawings freezes what is an ever-changing situation. In other words the need to freeze segments/momentums of studied communities' development in different scales is necessary to deconstruct the informal processes, analyse change and brought up important lessons.

Urban scale - Informal modernism

The first analytical drawing C.3 is adapted from the study of the informal settlement of *Colonia Santa Ursula* in Mexico City courtesy of Jorge Andrade, Rodolfo Santa Maria and Alfonso Govea. Using an urban scale they analysed a period of approximately 20 years of evolution and consolidation process of this settlement from 1954 to 1974. Also it is presented a parallel explanation of how a single housing unit was evolving according to common circumstances of family grow. In this case different periods of the house are presented along to increase size of family members which is the main driving factor and motivation of permanents house evolution. This visual analysis points out issues of the scarcity condition of its owners. They were forced to develop their housing little by little in different periods rather to do it by conventional practice which commonly develops the whole housing in one phase. The main reason is limited amount of economic resources and inaccessibility to obtain a bank mortgage. In this way the majority of every single units of *Colonia Santa Ursula* evolved to integrate today one of the most consolidated and populated informal developments of Mexico City which passed from about 1500 inhabitants in 1954 to 38,000 inhabitants in 1974.¹

¹ Jorge Andrade and his team studies are presented in *Ibid.* Also see Andrade, J. (1999). *El territorio compartido en la vivienda popular Mexico*, Division CAD, UAM.



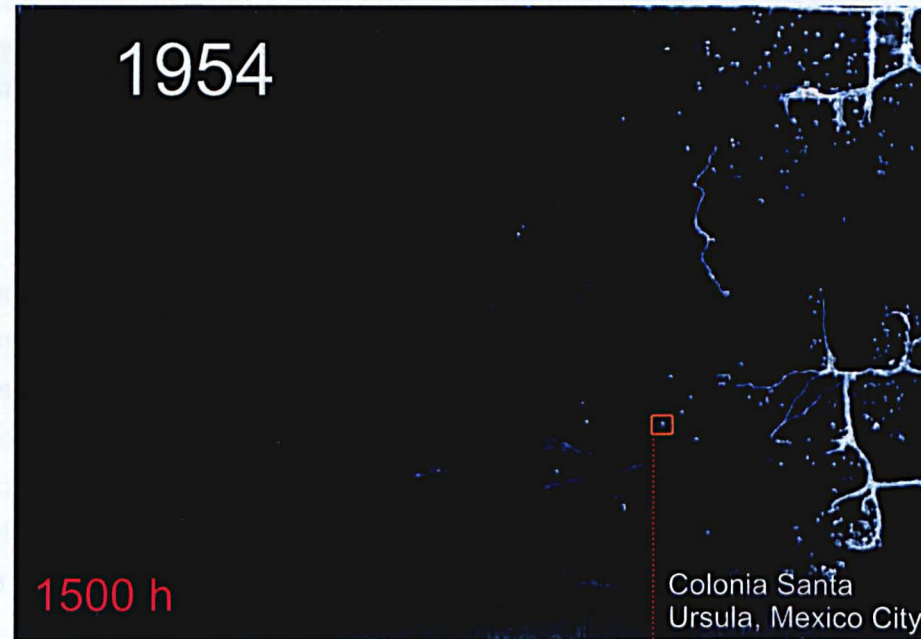
95%
No Architect
Intervention

Panoramic view of informal fabric area in Mexico City



Consolidated housing

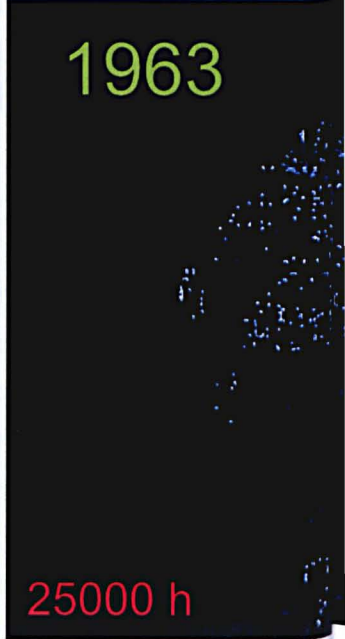
Main
Actors
Users
Builders



1954

1500 h

Colonia Santa
Ursula, Mexico City



1963

25000 h

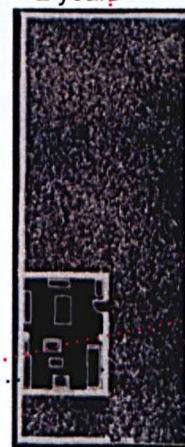
Sc 1:10000

Sc 1:100

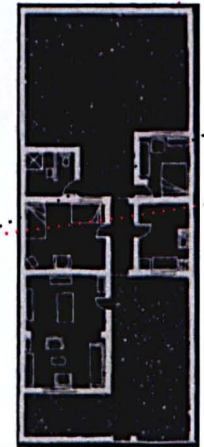
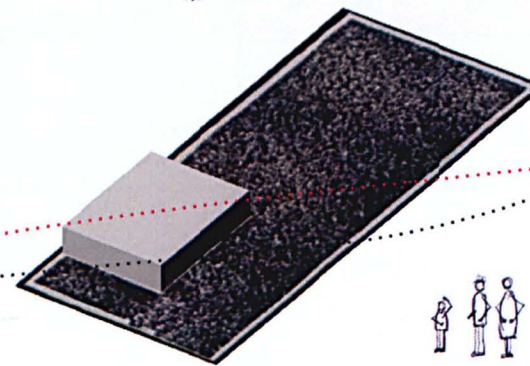
2 years

9 years

1954

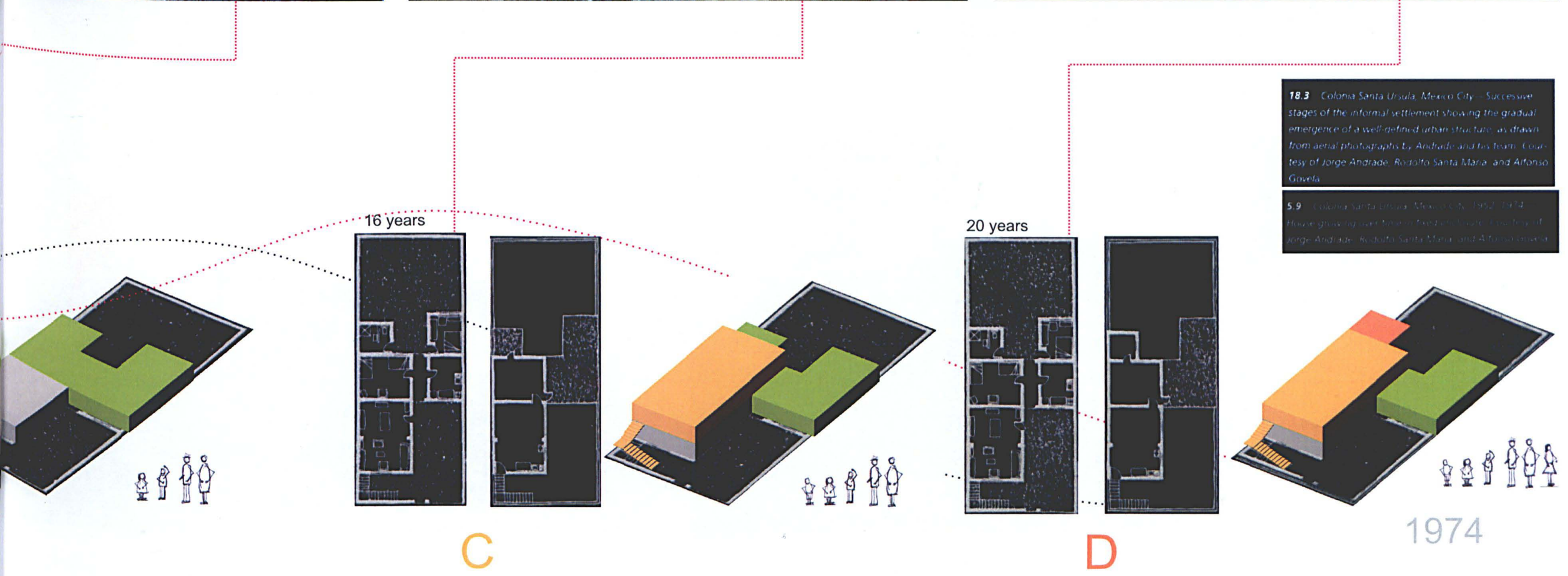


A



B

C.3 20 year consolidation process of informal settlement in Mexico City



18.3 Colonia Santa Ursula, Mexico City—Successive stages of the informal settlement showing the gradual emergence of a well-defined urban structure, as drawn from aerial photographs by Andrade and his team. Courtesy of Jorge Andrade, Rodolfo Santa María, and Alfonso Govea

5.9 Colonia Santa Ursula, Mexico City, 1970, 1974. House growing over time in fixed structure. Courtesy of Jorge Andrade, Rodolfo Santa María, and Alfonso Govea

C.4.1 The evolution process of a low income housing street in Morelia, Mexico over 10 years



Morelia, Mexico



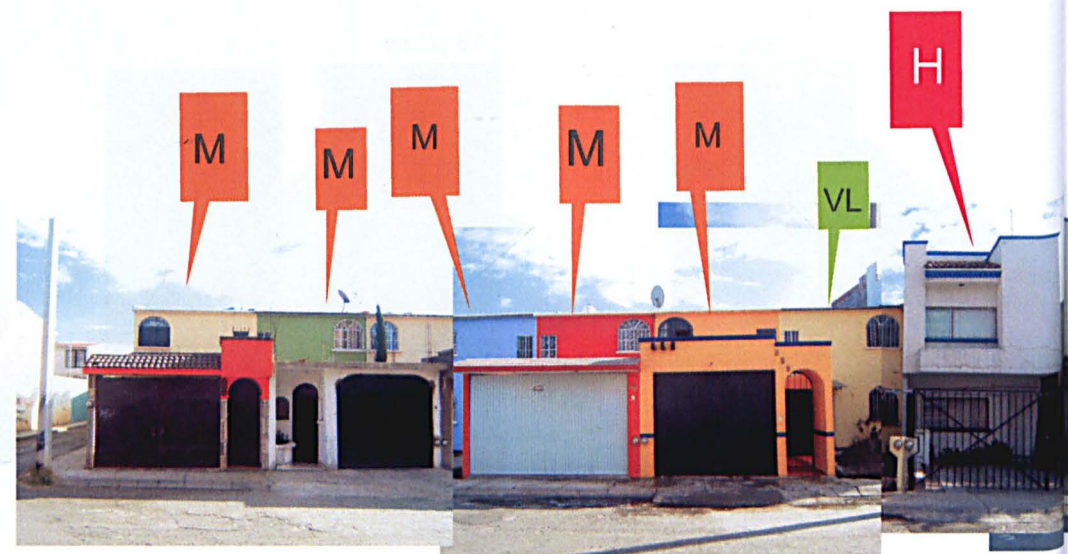
Sc. 1:500



Previous front line



Colonia las Higueras, Calle el Higeral Morelia, Mexico



Sc. 1:500

“ Architecture needs an elastic standardisation, where things start off the same but all end up different to give them and individuality”

Alvar Aalto



Jan 2008



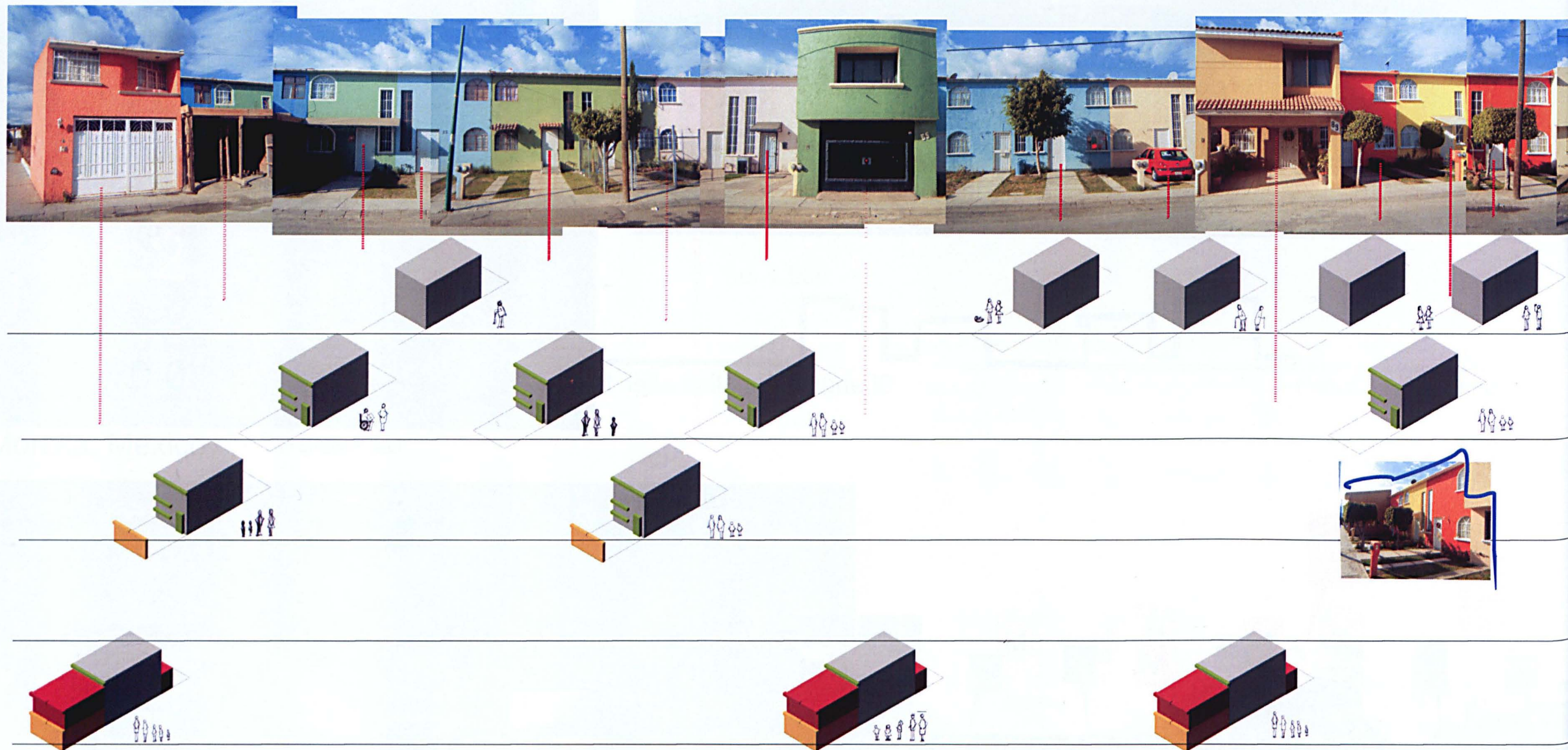
NM= No Modification	8.7%
VL=Very Low	17.4%
L=Low	8.7%
M=Medium	56.5%
H=High	8.7%
Hu=Huge	0.0%

Total housing =23



C.4.2 Detailed evolution process of a low income housing street in Morelia, Mexico over 10 years

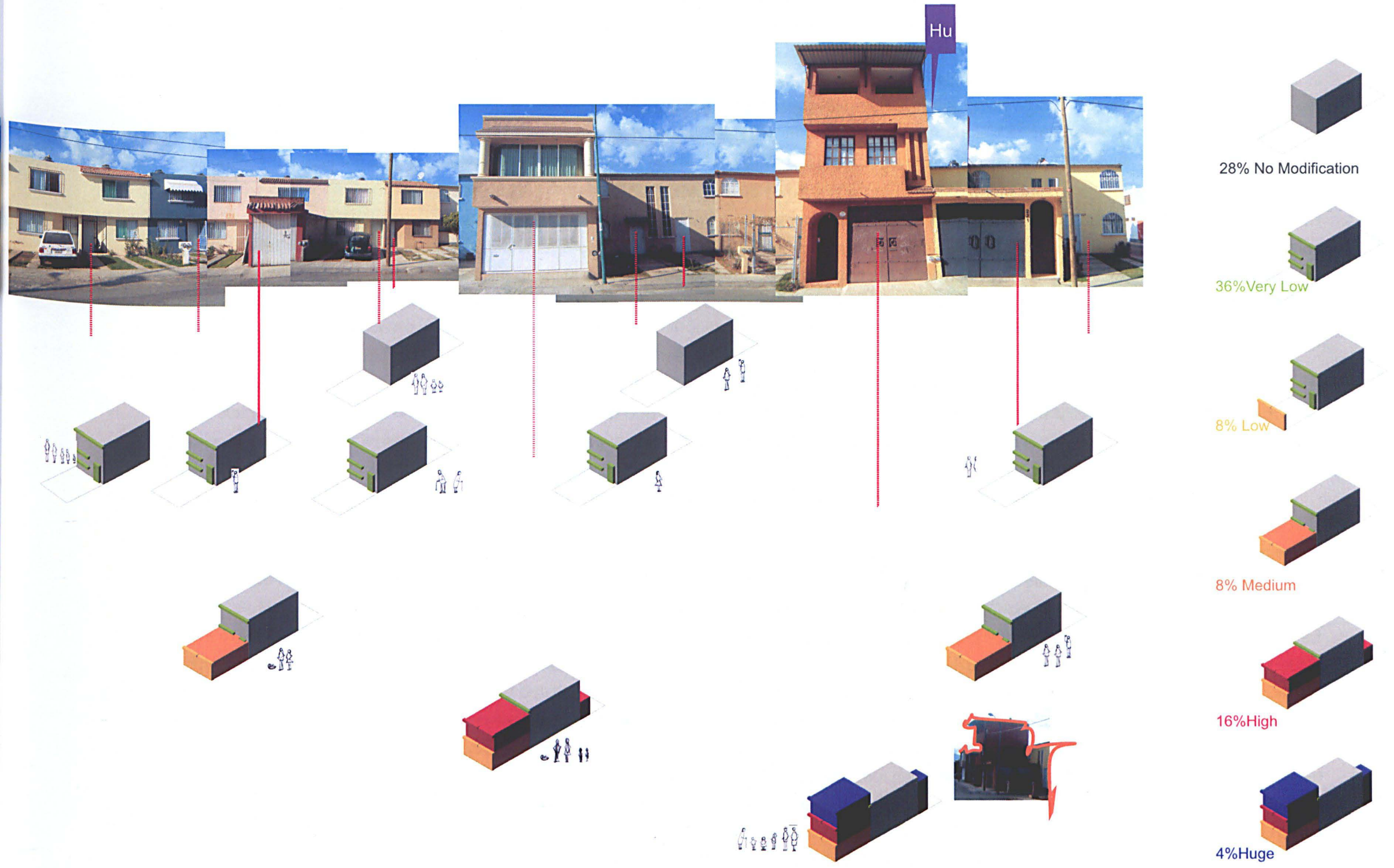
Sc. 1:500



Even so, the main structure of the above analysed dwellings seem to be quiet inflexible to grow in terms of Weston culture, the present example shows At the same time the framework including building regulations and policies present some level of indeterminacy that allows such "flexible" grow. from different perspectives. The final result is a vibrant community or organism in which every cell start homogeneous, but each one evolve according It means that such housing could be compared to a living organism, like a child growing up and evolving according to every day life.



After we receive our house it has been growing up with our children. Even when it was quiet limited 10 year ago, it was a good fist step and the only choice for us So, we decided to add a garage and master bedroom at the front. The extension was done in different stages supported by my wife and my savings. Commonly, we took action after every new year, At that time the Christmas bonus and the whole year's savings were enough amount to do something else.



evidence of how creativity is applied to modify them and fill each family gaps. In other words some building regulations are not really broken just interpreted to specific contingent circumstances developing its own particular individuality.

Neighbourhood scale - Semi-Informal modernism

Inspired by urban scale analysis, the previous drawing C.4.1 shows a street case study in Morelia called *El Higueral* which is occupied by low-income housing developed 10 years ago. In a neighbourhood scale this example shows evidence of different stages of modification an evolution of more than 90% of the units. This means that settlers with low income wages decided to take advantage of governmental programmes acquiring their housing by formal process. However in the majority of the cases these housing were not suiting all families' needs. As a result more that 90% of the owners decided to expand their dwellings progressively, but now by informal practice, taking action first and fixing documents later.

A more detailed evolution of the second part of *Las Higueras*, low-income housing street, can be seen in previous visual C.4.2. According to different circumstances of every single family, modifications can vary from **very low** that includes only a change in windows and doors giving certain individuality to **very huge** that includes expansions in the backyard, front yard and various new storeys to accommodate a larger family. In other words different housing units were deconstructed in order to freeze significant momentums of modification. One of the interviewed dwellers explains different issues that force him to use this progressive process. In his own words,

"After we receive our house it has been growing up with our children. Even so it was quiet limited 10 years ago; this house was a good first step and the only choice for us. So, we decided to add a garage and master bedroom at the front. The expansion was done in different stages supported by my wife and my own savings due to we were not able to obtain and additional credit from the bank. Commonly, we took action after every New Year, at that time, the Christmas and the whole year savings were enough amounts to do something else".¹

Referring again to Alvar Alto "an elastic standardisation where things start off the same but all end up different to give them an individuality" was involuntary made-up.² This exercise highlights a low-income housing structure that seems to be quiet inflexible for any modification according to prescriptive processes. Nevertheless, *Las Higueras* street shows evidence of how creativity is applied to modify and improvise each housing unit to fill different families' gaps. In addition, regarding to the legal framework which includes building regulations and policies, these presented some level of flexibility that allowed such indeterminate grow. In other words, it can be said that some building regulations were not really broken just were interpreted from a different perspective to allow a win-win situation. The owner extended his housing and the City council got additional income when it was legalised. The final result in metaphorical words is a live organism where every initial homogeneous cell evolves according to specific indeterminate circumstances to gain its own individuality. As the interviewed dweller argued, each housing cell could be compared to a living organism, like a children growing up and evolving according to everyday life (fig. C.4.2)

¹ Author's translation of an interview to Juan Rodriguez inhabitant of *Las Higueras*

² Aalto, A. (1998). Interview with Alvar Aalto. Alvar Aalto in his own words. G. Schildt, Rizzoli International publications. 3: 232

Visual comparative of a fully controlled scheme (UK) and non-fully controlled scheme (Mexico)

In order to understand further previously founded lessons some of the identified issues of progressive housing evolution were used to produce the visual comparative C.5. This exercise speculates about what would happen with one frozen and regulated scheme of one street of low-income housing in Sheffield, UK, if it would be transferred to the Mexican context. The selected street is Weston Street near to the Arts Tower of the University Sheffield, UK which presents one typical low income housing approach of 2-3 bedrooms developed in 1990s. According to British regulations this housing design could be considered as an inflexible scheme for future modifications.¹ Accordingly, after approximately 15 years of their construction, neither present significant modification in the front of any housing unit, however what would happen with the same design scheme in the Mexican context after 10 years of modification? This question can be roughly answered in surrealist words of the British architect Edwards James who said, "my house grows like the chambered nautilus, it has wings and sometimes in the dead of night she sings".²

Housing scale, Understanding indeterminate routes

To have a deeper understanding of the indeterminate routes taken by citizens of low-income housing, various visuals were developed using the traditional game "lathers and snakes" as a metaphor C.6.1-C.6.3. The aim of this exercise is to explain how individuality is given to each house through a set of different indeterminate routes. Traditional practice uses a determinate route indicating every step of design and construction process from the beginning until the end if someone is considering an expansion of his housing. In this case, the end is very clear and all the economic support is available to take action. However in semi-Infomal process, as well as, the indeterminate routes followed by players in the lathers and snakes game, settlers have a clear beginning position but they do not know exactly what is going to be the route to follow to reach the end. During this journey they acknowledge the ups and downs of every day life. In other words the low-income communities are one sector of the population more susceptible to contingency changes of actual socio-economic model of development. As a result they are challenge by this condition responding with an approach that in most of the cases could have an open end. Due to a limited economic condition or maybe due to different priorities they do not follow a traditional path; instead settlers take circumstantial decisions which have stronger relationship with issues of their own family's grow, specific economic situation, social condition, job opportunities, etc. This means even so aesthetic features of their housing are important, their decisions have a stronger relationship with economic, social and technical factors of every family. By implication every single housing unit is directly responding to these issues giving it individuality through the past of the time. Examples presented show evidence of five different routes followed during the 10 years time by settlers of *Las Higueras* to address their specific needs according to its singular conditions (fig.C.6.1). A more detailed deconstruction of the indeterminate routes of low income housing can be seen in visual C.6.2. Next, this exercise allowed selecting one indeterminate route for deeper analysis of low-income housing evolution (fig. C.6.3)

¹ Till, J. and T. Schneider (2007.). *Flexible Housing Amsterdam* ; London Architectural Press, Elsevier.

² Materialization of Edwards James living housing and surreal gardens approach can be founded in Parque Las Pozas, Xilitla near to San Luis Potosi Mexico. Edwards James decided to build his experimental surreal world in Mexico due to cheap, flexible, durable and explorative possibilities allowed in Mexico. Las Pozas park is included as heritage site candidate by the Unesco in 2009. See Hooks, M. (2005). *Edward James y Las Pozas. Un sueño surrealista en las selva mexicana*. Mexico, Turner.

C.5 Comparative speculation of a frozen scheme transported to one open to modification.



What would happen with the same scheme in the Mexican context after 10 years.



“My house grows like the chambered nautilus, it has wings and sometimes in the

Weston Street is a typical approach of 2-3 bedrooms housing in Sheffield. According to British regulations its design could be considered as an inflexible scheme for future modifications. After aprox. 15 years of its construction no modification is observed, but what would happens with the same design scheme in the Mexican context.



Frozen



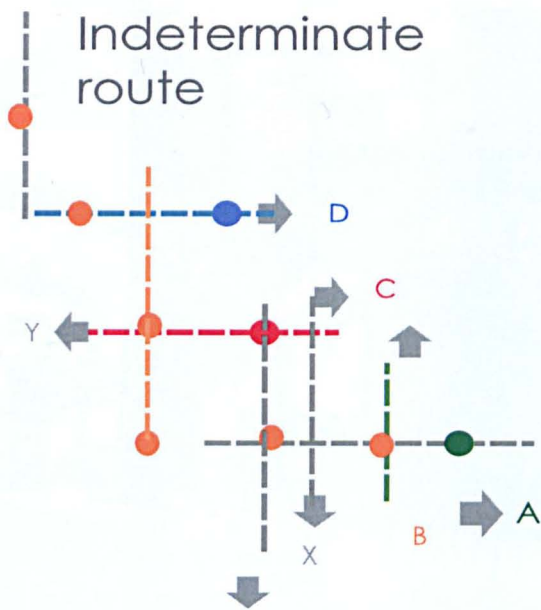
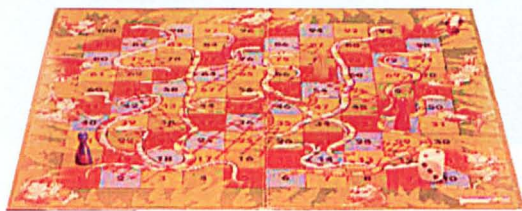
Open to Modification

dead of night she sings"

Edward James

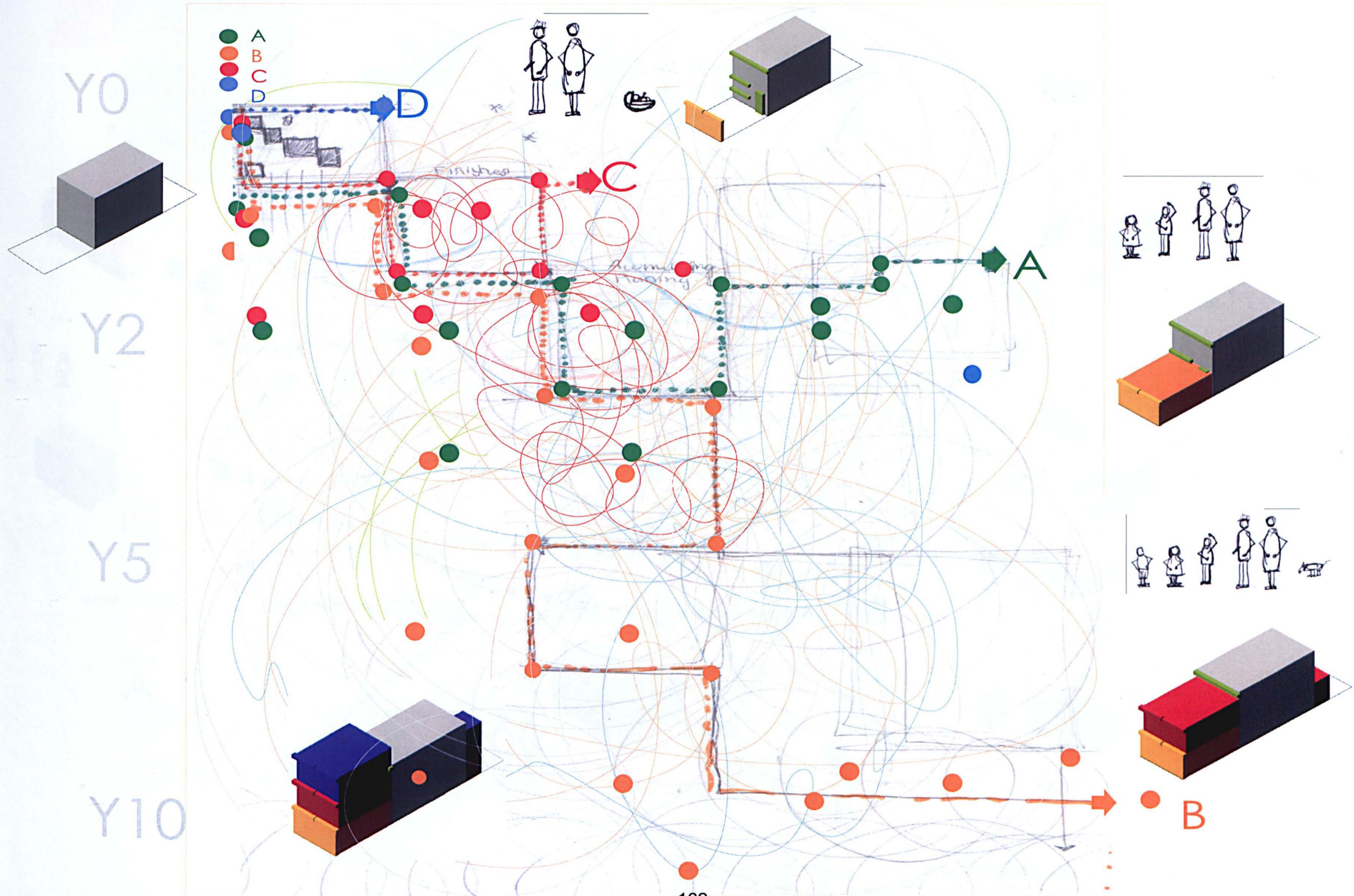


C.6.1 Understanding the Indeterminate routes of Semi-informal housing evolution

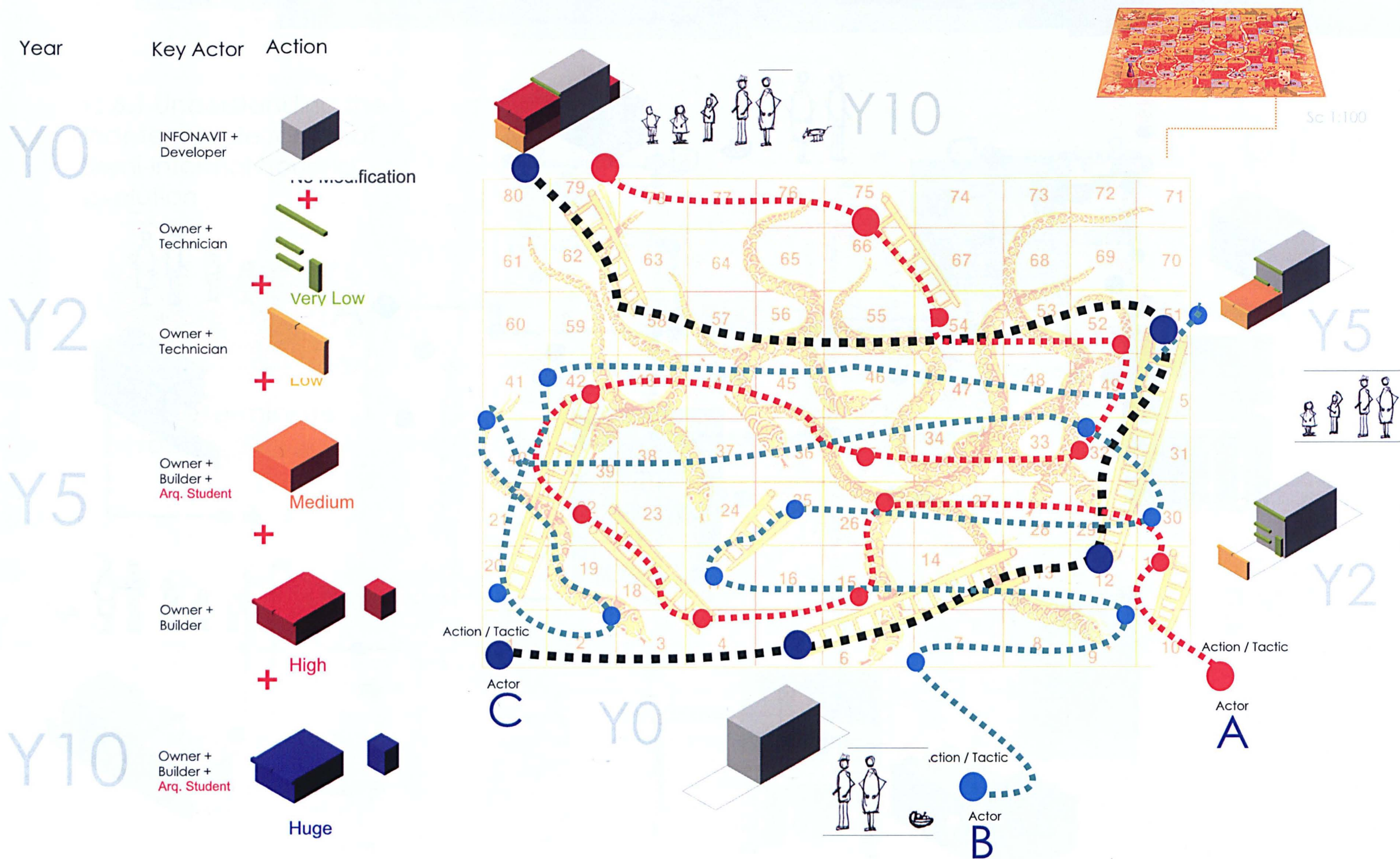


All the housing had followed a series of interventions according to different circumstantial stages.

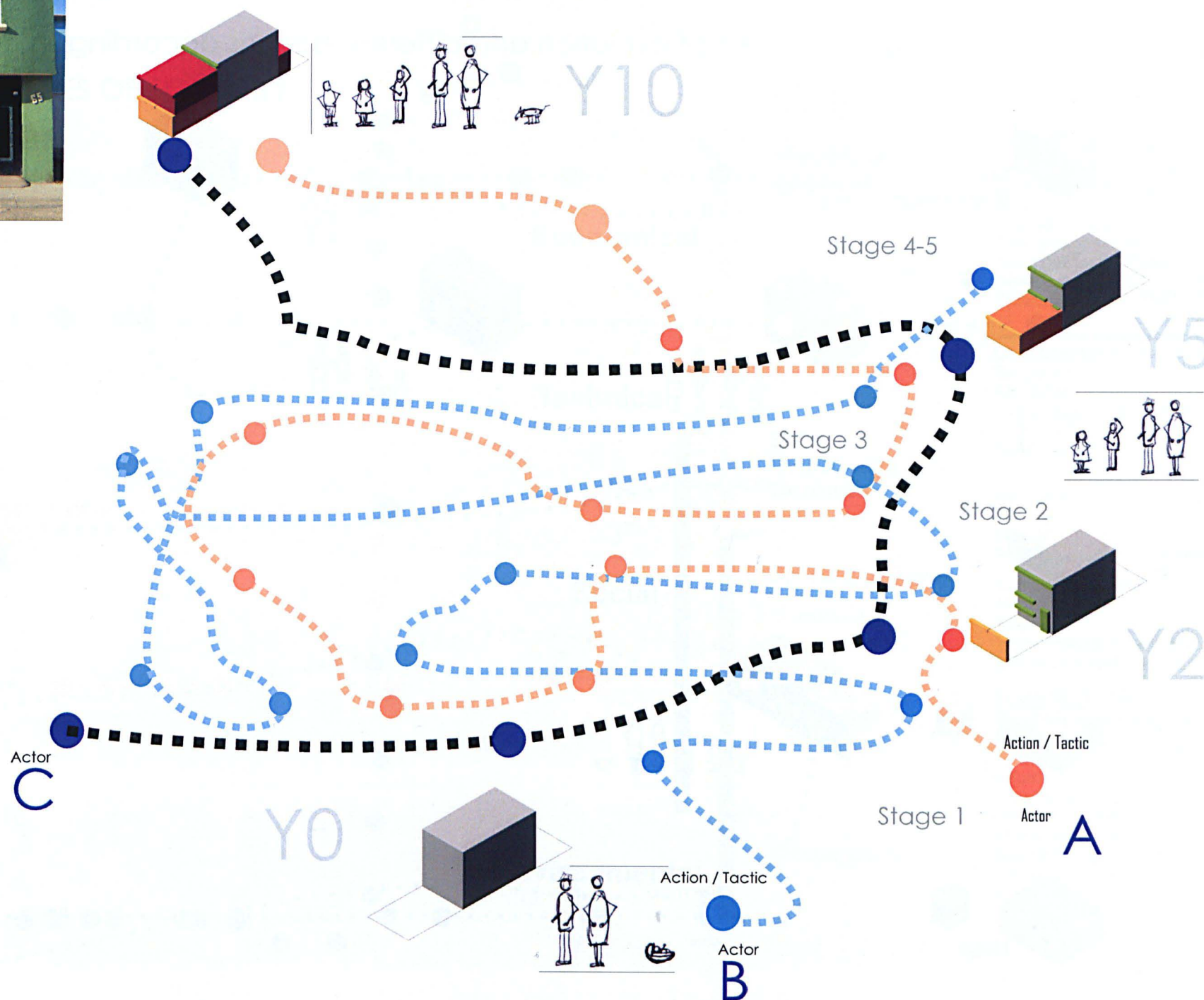




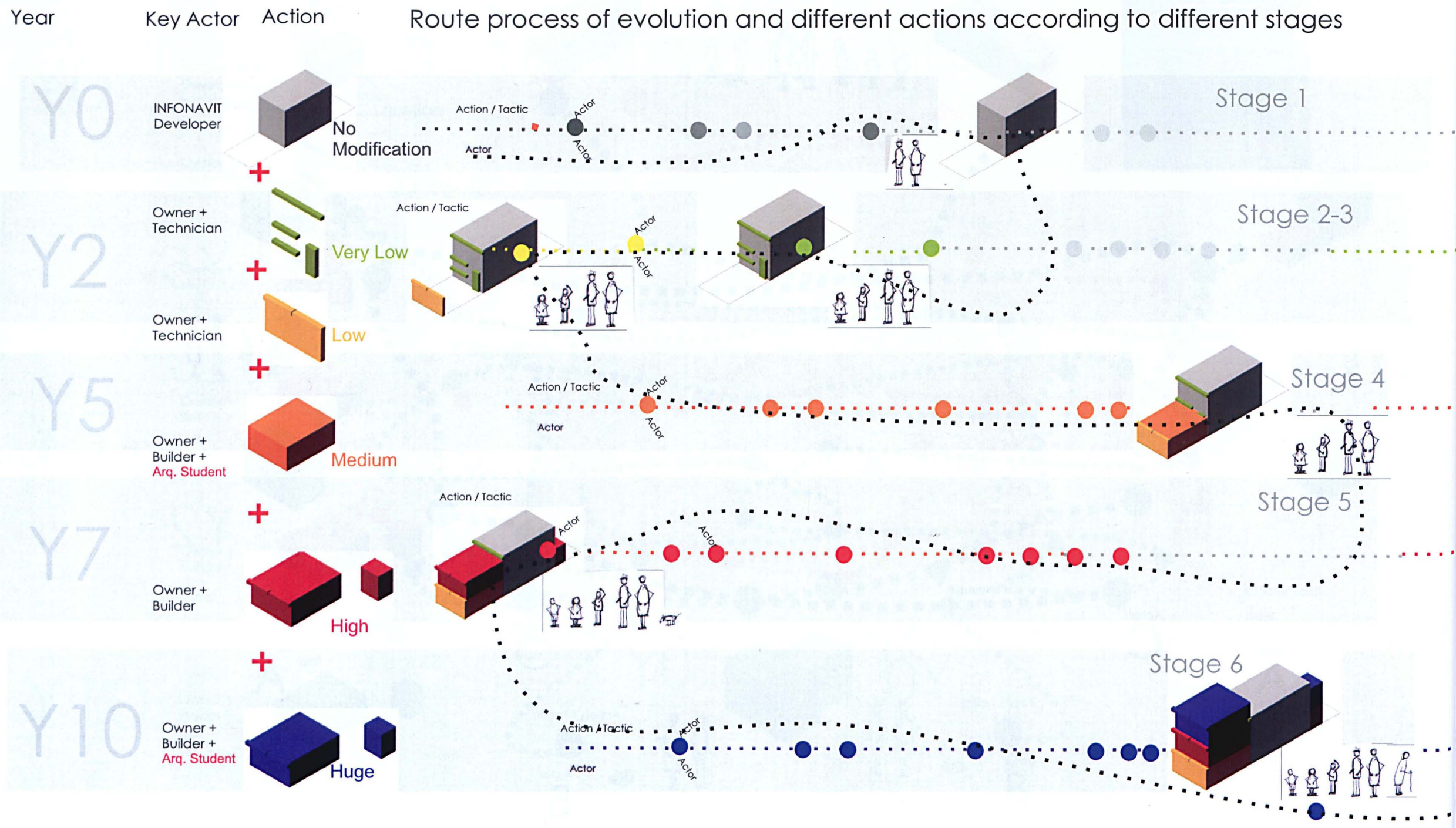
C.6.2 Detailed process of the route of indeterminate low income housing evolution



C.6.3 Selecting one modification route for deeper analysis of low income housing evolution



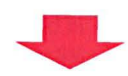
C.7.1 Modelling the example of design and construction process of a selected housing route modification, identifying its Issues of Scarcity



C.7.2 Process of extraction of the Issues of Scarcity

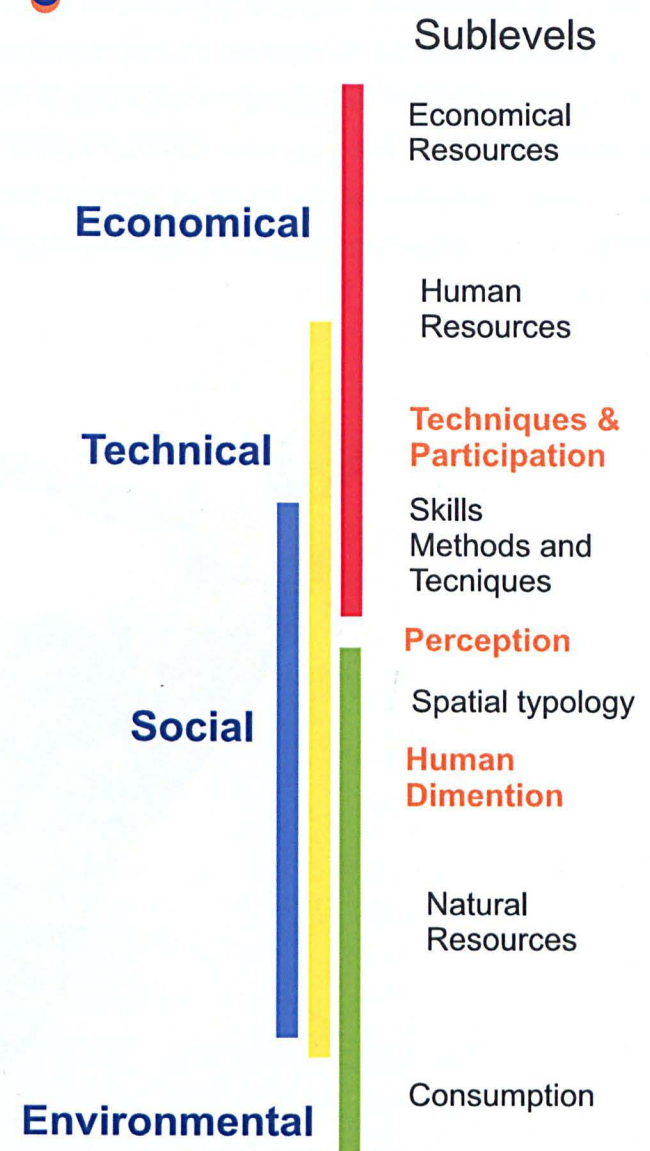
Critical understanding of existing conditions as a determinant part of the project is necessary. The main aim of this methodology is to explore the "invisible" including the non-physical content of a site and allow it to be brought to bear a proposal.

Processor of the issues of scarcity



To Catalogue of issues of Scarcity

EXTRACTION OF ISSUES OF SCARCITY



Sublevels

Economical Resources

Human Resources

Techniques & Participation

Skills Methods and Techniques

Perception

Social

Spatial typology

Human Dimention

Natural Resources

Environmental

Consumption

- Use of Governmental Credit and INFONAVIT savings
 - Progressive construction
 - Economically flexible
 - Upgrading stages
 - Capital acumulation
 - Group savings & Credit swift
 - Service exchange
 - Mutation
-
- Local habilities to perform the task
 - Simple techniques
 - Afordable
 - Low Energy consumption
-
- Self construction
 - Flexible space
 - Innovative
 - Original
 - Diversity
 - Star of the same, but evolves to give individuality
-
- Cultural Ethos response
 - Health
 - Education
 - Social Interaction and participation
 - Institutional participation
-
- Raw Material**
- Local raw materials for its construction
 - Non highly industrialised materials
 - Recyclable
 - Affordable \$
 - Remplasurable
 - Low Energy consumption materials
 - Low Energy consumption by use of natural light and ventilation
 - Locally produced
 - Water consumption
 - Locally recycled
 - Food

The use of resources is limited to the capacity for its regeneration % Waste assimilation

Identifying Issues of scarcity of indeterminate routes

Modelling the indeterminate design and construction route of low-income housing allows identifying its main issues. The conceptualisation diagram C.7.1 (previous pages) shows one example of analyses scheme to identify, actors, actions, stages and additional lessons. In other words deconstruction of the informal or semi-informal processes allows identifying the lessons beyond its forms. In this way the **actors** who substitute the role of the architect and are involved in designing and construction process are identified (owner, a builder or technician and even architectural students). A more detailed analysis of the actors is founded in next stage D: Appraisal. During this process different **actions** or tactics in this thesis entitled *Issues of Scarcity* are taken which can vary from: technical, economical, social and environmental. However, in most of the cases those are not founded in isolation, instead these are strongly linked to each other. Michael De Certeau argues to identify such actions, tactics or issues of the "practice of the everyday life" as he defined it to be evaluated and fully supported.¹ In other words, he claims for a more critical understanding of existing conditions as a determinant foundation of a new project. This is precisely the aim of this study and the way how different lessons of additional case studies were identified and extracted to inform the *Catalogue of the Issues of Scarcity*. Some examples of extracted issues and speculation of first categorization can be seen in visual C.7.2. Before presenting the full set of identified lesson it is important to explain the next step.

The second set of visuals of this stage C, classifying Issues of Scarcity are: Identifying the Issues of Scarcity and Possible Scarcity Design Tactics

- C.9 The Issues of Scarcity classification by subjects' colours
- C.10 Design of the cards of the Strategic Framework and where the Issues of Scarcity cards seat
- C.11 Catalogue of the Issues of Scarcity Cover
- C.12 Issues of Scarcity organic growth according to different circumstances
- C.13 The key to read every single card
- C.14 Example of interpretation to possible Design Tactics Programmes
- C.15 Design Tactics Programmes that will support the Strategic Framework
- C.16 Example of Environmental Design Tactics Programmes
- C.17 Design Tactics Programmes supporting the Strategic Framework within the Architecture of Scarcity Game

¹ Certeau, M. D. (1974). *The Practice of Everyday Life*. Berkeley, University of California Press.

Third phase: Defining classification system of first identified issues of scarcity

The **third** phase was the classification of funded lessons. In other words, after identifying the first samples of the main Issues of Scarcity the question was: how these are going to be classified? Different possibilities of classification were considered according to the founded data (fig. 6.19). The final classification of identified Issues of Scarcity was based on four main labels divided by subjects: social, economical, environmental and technical (fig. C.9) After deconstruction of frozen samples of non-prescribed design process through a different analytical drawings the four essential elements of the studied communities were identified. These elements include a group of citizens (social) who modify and take advantage of the resources available of specific space-environment (environmental) with their singular abilities (technical). Every single tangible or intangible product resulting from this process will acquire certain value (economical). According to Du Preez expert in socio-economic elements of development theory for traditional societies, the key elements of the field of community development are always related to combination basic social, technical, environmental and economic factors.²

C.9 The Issues of Scarcity classification by subjects' colours

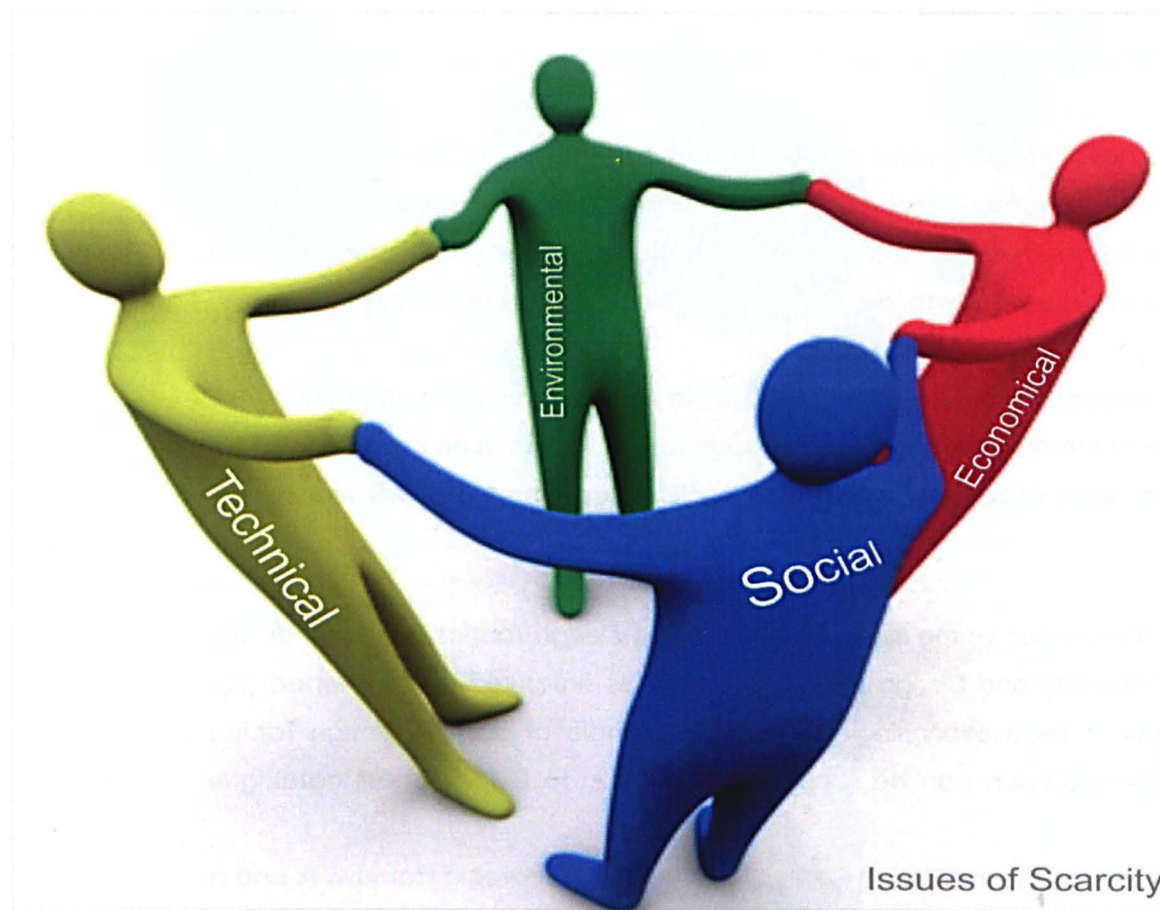


Fig. 6.19 Different possibilities of classification of the Issues of Scarcity

1.- By Topics

- ScarCity and its indeterminacy
- ScarCity and its Resources
- ScarCity and Its Transculturalisation
- ScarCity and its Time-space
- ScarCity and its Ethos of Environment

Integration

2.- By Tangible and intangible or Quantitative and Qualitative

3.- By level of impact or the most repetitive/ the top ten

4.- By time

- The past: the most traditional
- The present: the most innovative
- The new: future implications of the issues of scarcity

5.- By Subjects.

- Economical
- Social
- Environmental
- Technical

² Preez, D. (1984). "Basic socio-economic elements of development theory for traditional societies." *Development Southern Africa* 1(1): 36-55.

However it is important to highlight that frequently different elements are overlapped and intrinsically linked one another rather than be founded alone. In metaphorical words the gold (key element) is mixed with other elements, it is the task of the researcher to uncover the essence in order to be seen in pure dimension (fig. C.10)

Fourth phase; development of the full catalogue

The fourth phase to complete the full catalogue includes **first** identifying the most representative issues of scarcity in three selected case studies; San Antonio as vernacular, Lomas Del Punhuato as informal modernism and Villas del Pedregal as semi-Informal. **Secondly**, speculating how such lessons can be used as set of renewed design tactics programmes to inform the Architecture of Scarcity approach.

At this stage it is essential to emphasize the organic growth of the issues of scarcity (fig. C.10). This means that according to a set of characteristics of the specific place the Issues of Scarcity could look different. Also according to circumstantial changes of time the issues will be evolving to a variation, but the origin could be related. The best examples of this could be issues of Informal modernism practice such as self-construction which has their main roots on the Traditional Vernacular. In vernacular context self-construction techniques were linked to raw natural materials however in urban context the raw natural materials were substituted by cheap industrial materials and by implication its techniques. Nevertheless the issue of scarcity is still self-construction in two variables.

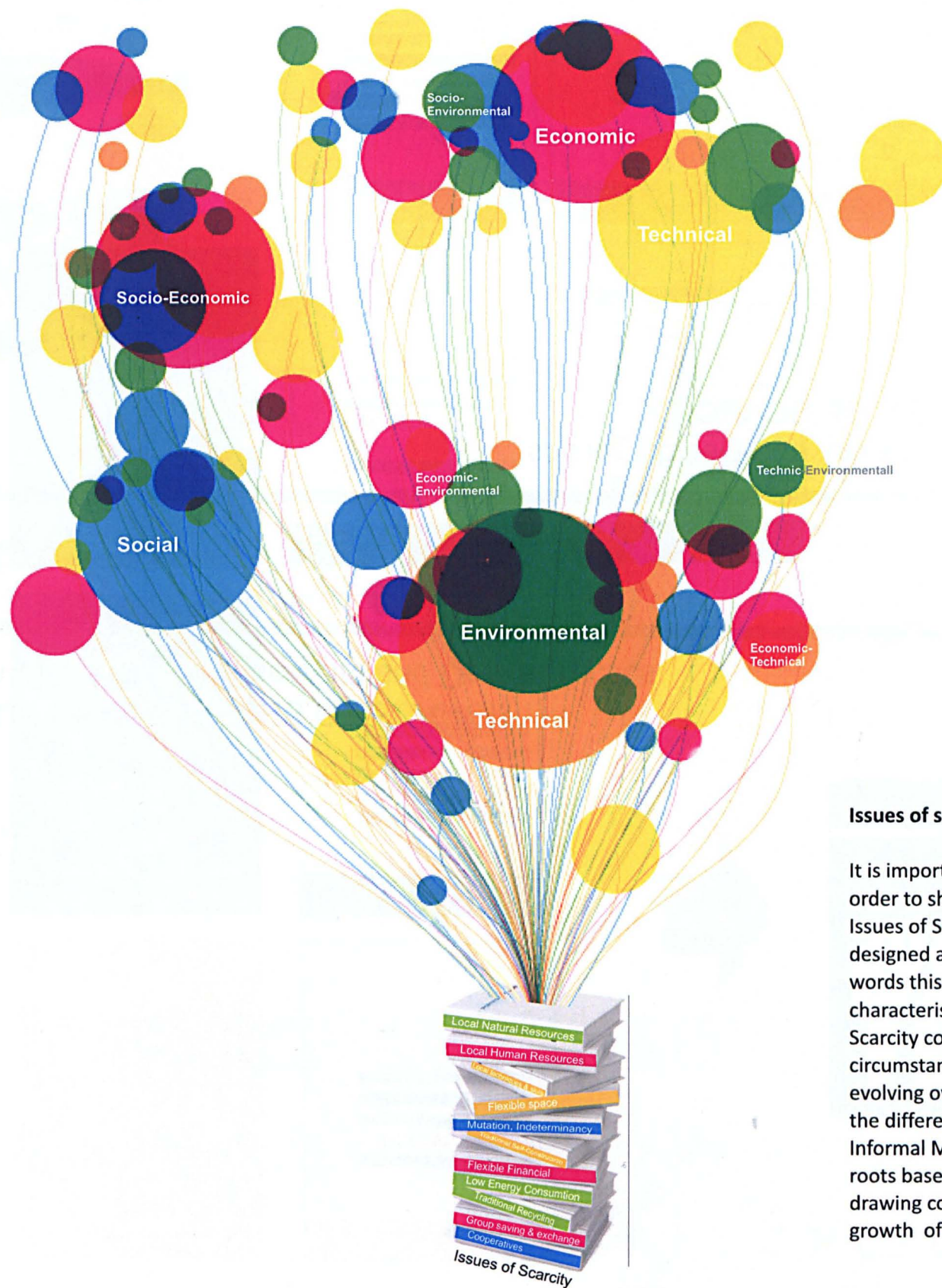
As a result this exercise will create just enough number of Issues of Scarcity cards in order to show the method of identifying relevant data and cataloguing rather than assume to identify all the universe of lessons which would be unfeasible. Hopefully interested professional can get the grasp of this method and develop further such lessons according to their own personal experience and particular projects. The following process was repeated in each case study to identify the most relevant issues of scarcity.

- Abstracting of at least the 18 most representative issues of scarcity in each case study to produce the final catalogue.
- Possible interpretation of the issues of scarcity within contemporary architecture design tactics for the three case studies
- Evaluation of applications and formalisation of the Issues of Scarcity as a design tactics programme that will support the Architecture of Scarcity approach.

Finally all the outcome lessons were amalgamated in the *Catalogue of the Issues of Scarcity and Design Tactics Programmes* (fig. C.11). The full set of cards of the Catalogue of Issues of Scarcity and Design Tactics Programmes structure was developed (fig. C.11.1). Example of the issues of scarcity cards, the key to read every single card and example of possible Design Tactics Programmes that will support the Architecture of Scarcity approach can be seen at visuals C.12 to C.13. (For full catalogue consultation see appendix 1 or The Agent Tool-Kit V2010).

Finally a visual showing where the Catalogue of the Issues of Scarcity and Design Tactics seats in the full Strategic Framework and a visual showing an environmental design tactic programme supporting the Strategic Framework within the Architecture of Scarcity Game can be seen in drawings C.14 and C.15

C.10 Issues of Scarcity overlapping and organic grow according to different circumstances.



Issues of scarcity overlapping and organic growth

It is important to create enough number of CARDS in order to show strong evidence of the practical use of Issues of Scarcity. However this framework is designed as a tool to generate diversity. In other words this means that according to a set of characteristics of the specific place the Issues of Scarcity could be different. Also according to circumstantial changes of time such issues will be evolving over time. It can be clearly seen between the different uses of Issues of Scarcity within the Informal Modernism which use to have their main roots based on the Traditional Vernacular. This drawing conceptualise the overlapping and organic growth of such issues which can be catalogued.

C.11 Organising the Issues of Scarcity



CATALOGUE OF THE ISSUES OF SCARCITY Abstraction of the issues of scarcity and Design Tactics

Architecture of ScarCity

Architecture of ScarCity



CATALOGUE OF THE ISSUES OF SCARCITY Abstraction of the issues of scarcity and Design Tactics

C.11.1 Design full set of cards of the different case studies





C:12.1 Example of the Issues of Scarcity Cards




SEMI URBAN | URBAN
Informal Modernism | Preparation
C. Issues of Scarcity
C1. Catalogue of the issues of scarcity

Socio-Economical

C1.3 Abstraction


Flexible and non for profit financial
Group Savings & Service Exchange



Flexible Financial

Traditional Self-Construction

The settlers of El Punhuato have developed their community since the origin by progressive self-planning. This means without a traditional master planning and full provision of services since the beginning. As a result the intervention of state agents and banks support is not an issue. Under this circumstances tactics such as group saving and service or goods exchange were stabilised as some kind of flexible financial. This means that different services such as plumbing, electrician, etc. are afforded by service exchange between neighbours. Also other tactics such as group saving and buying are used to afford raw materials. This activity is already well known as part of community's vernacular knowledge. Such knowledge has passed from generation to generation. Every settler recognises this path as flexible financials option.



Group Buying


1 Person = £5 + 0.5 credit fee charge + 0.5 delivery = £6

5 People (£1) = £5 paid in cash + 0.5 delivery = £ 5.5


5 People (£5) = £25 paid in cash + free delivery = £ 5

50 People (£1) = £50 cash in a wholesale store = 12 sacks + free delivery + fixed price for 5 coming times. Price per sack = £ 4.16

Total difference = £1.84 = 31% in savings



Service & Goods Exchange



Service & Goods exchange is a legal practice that allows settlers to avoid paying 15% of tax and quote fair exchange prices due direct friends providers.

El Punhuato


SEMI URBAN | URBAN
Semi-Informal Modernism | Preparation
C. Issues of Scarcity
C1. Catalogue of the issues of scarcity

Economical -Technical

C1.3 Abstraction

Indeterminacy of £. Force to have Flexible Financial of housing
= Flexible Space, space mutation and indeterminate space

Open to Modifications
Innovative
Not fixed to spatial labels



Flexible Financial = Flexible Space.

The settlers of Villas del Pedregal are commonly limited to low income wages, under this circumstances they had learnt to take advantage of the basic *low income housing* subsidised by the government. Next, they will extend it progressively in different stages according to different circumstances. In other words, due the necessity of economic financial they do not have another choice to afford a house. As a result, even when the housing is limited and the spaces are not highly flexible, spaces are used in different ways to allocate basic needs. Next, the entire dwelling is commonly modified over time and can be upgraded according to every day financial circumstances. Such proposal is interpreted by settlers with open end as part of their design tactics. It is understood as a provisional shelter that start of the same, but evolves to give individuality.

Low-income housing Evolution

1st. stage:	1 basic low income housing = 1 main room (living, dining, kitchen) + 2 bedrooms	1994
2nd. stage:	Idem with a change of windows, doors and addition of protections and front gate	1997
3rd. stage:	1 additional room = Living area 1 room = Dining + Kitchen	2000
4rd. stage:	2 rooms = Parents bedroom + children bedroom Idem in the ground floor + 1 additional toilet	2004
4th. stage:	1 Parents/new baby Master bedroom in suite toilet 1 childrens bedroom Idem in the ground floor 1 Parents Master bedroom in suite toilet 2 rooms = girls bedroom in suite toilet + boys bedroom	2007

15 years average time of consolidation


Villas del Pedregal

C.12.2 The key to read every single card

RURAL | SEMI RURAL
 Traditional vernacular | Preparation
 C. Issues of Scarcity
 C1. Catalogue of the issues of scarcity

C1.3. Abstraction

Environmental- Technical Use of Local Natural Resources



Local 

WOOD


Local raw materials for construction
 Non highly industrialised materials

Use of Local Natural Resources.



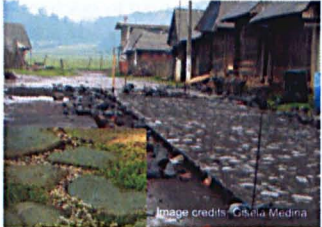
One of the main Technical- Environmental issues of scarcity is the use of local natural resources of San Antonio's inhabitants. The wood from the surrounded forest is commonly used to produce rustic furniture or to make new *trojes* and its reparations. The *trojes* are housing which are without doubt the most significant material element in the modern *Purepecha* culture. Wood is also exported to bigger cities. Commonly, wood workers, work long days producing raw materials.

Deciduous tropical forest are prevalent with *parota*, *guaje*, *casacalote*, *ciriam* and mixed forest with pine, oak, alder and fir.



STONE

San Antonio Tierras Blancas



Transfer to potential Design Tactics Programmes




C.13.1 Example of possible Design tactics Programmes



RURAL | SEMI RURAL
Traditional vernacular | Preparation
C. Issues of Scarcity
C1. Catalogue of the issues of scarcity

C1.4. Design Tactics

Environmental- Technical



Technical- Social

Maximizing use of local natural resources

The main design tactic consist in **maximizing the use of local natural resources -ie wood and stone-**. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

- Financial support/subsidies to encourage applications of well managed forest programme.
- Community Management of natural resources. It means local resources planning, monitoring, implementation and evaluation.
- Integrating of indigenous knowledge system into natural resources management.
- Promoting local raw materials for construction, furniture and alternative uses
- Additional tools, equipments or machinery to reduce waste and add value
- Keeping simple policy -Non highly industrialised materials

Maximising use of Local Natural & Human Resources

Local skills, abilities and personnel

The main design tactic consist in **maximizing the use of local human resources -ie local skills and techniques-**. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

- Use of local skills and simple traditional techniques
- Local people's traditional knowledge of construction
- Use of local raw materials for construction
- No highly industrialised techniques
- No highly use of machinery, special equipment or tools.
- Avoiding bureaucratic processes for approval

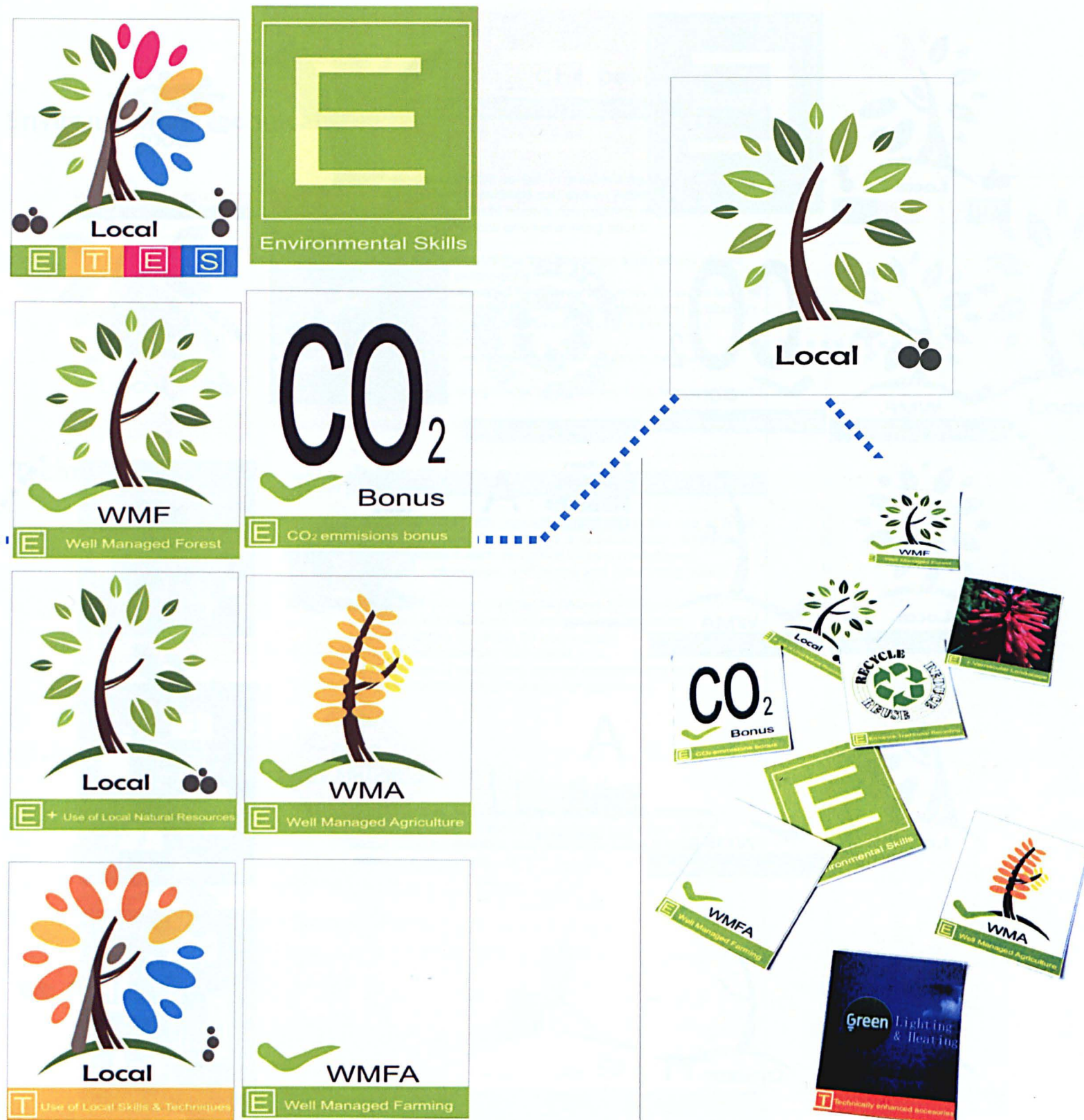
Wood workers, work long days producing raw materials. It could be better if instead to sell huge proportion of the wood as a raw material, they add some value producing different approaches.



C.13.2 Design Tactics Programmes that will support the Strategic Framework

 <p>Local</p> <p>E T E S</p>	 <p>Environmental Skills</p>	 <p>Economic Skills</p>	 <p>Local Economic Support</p>	 <p>Coop</p> <p>EAS Economic & Logistic Support</p>
 <p>WMF</p> <p>Well Managed Forest</p>	 <p>CO₂ Bonus</p> <p>CO₂ emissions bonus</p>	 <p>Enhance Traditional Recycling</p>	 <p>Enhance Flexible Design</p>	 <p>Economic Support</p>
 <p>Local</p> <p>+ Use of Local Natural Resources</p>	 <p>WMA</p> <p>Well Managed Agriculture</p>	 <p>Technically enhanced accessories</p>	 <p>Enhance Local Design</p>	 <p>Economic Flexible Financial</p>
 <p>Local</p> <p>Use of Local Skills & Techniques</p>	 <p>WMFA</p> <p>Well Managed Farming</p>	 <p>Technically enhanced accessories</p>	 <p>Enhance Local Techniques</p>	 <p>Logistic Support</p>
 <p>Local</p> <p>Economic Flexible Financial</p>	 <p>Organic</p> <p>Improve traditional techniques plant, seeds and animal breeds</p>	 <p>Enhanced Environmental Design</p>	 <p>Technical Skills</p>	 <p>Logistic Support</p>

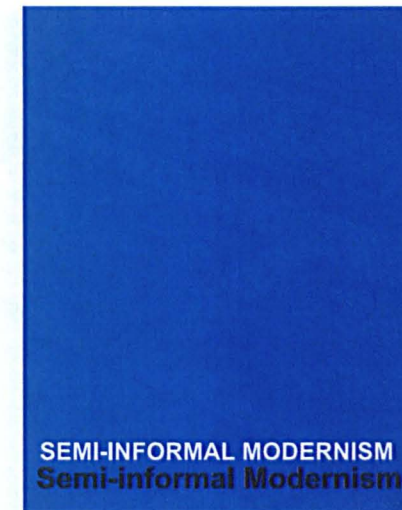
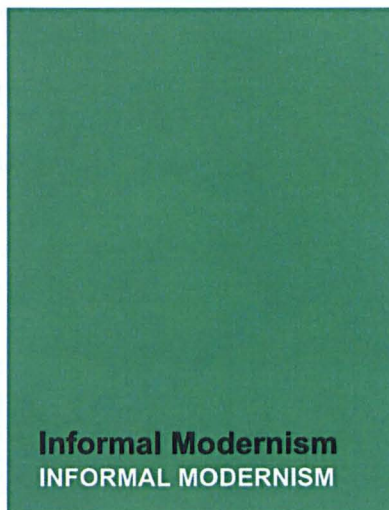
C.13.3 Example of Environmental Design Tactics Programmes



C.14. Where the Catalogue of IS seats in the full Strategic Framework which integrates the Agent Toolkit

B. Summary
B 3. Issues to be Addressed
(Design brief)

Traditional Vernacular



C. Issues of Scarcity
C. Catalogue of Issues of Scarcity
C 3. Abstractions of the Issues of Scarcity & C 4. Design Tactics for exploration and application of IS

Technical

Economical

Environmental

Social

Design Tactics

Design Tactics

Design Tactics

Design Tactics

Facilitate
Negociate
Consultation
Design



D. Appraisal
D 1. Institutions of support

C.15 Design Tactics Programmes supporting the Strategic Framework within the Architecture of Scarcity Game



Stage D: Appraisal, Design of the Strategic Framework to manipulate actual conditions & Networking

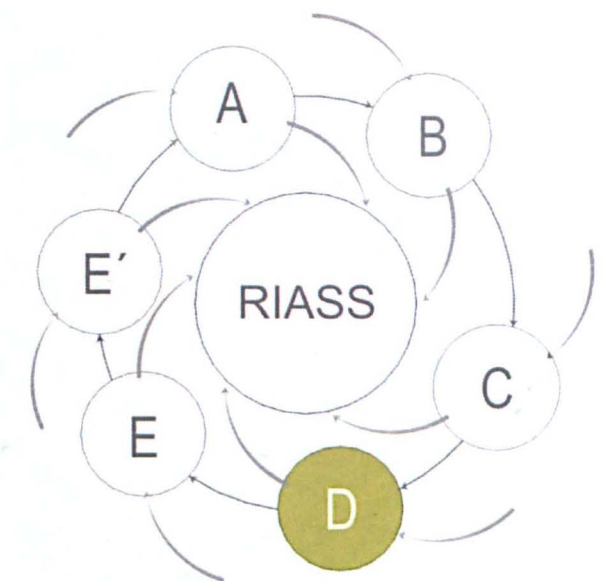
Appraisal: Demonstrating Cause and effect (why formality, informality or semi-Informality happened).

After identifying samples of the Issues of Scarcity in the last stage, the analysed case studies reveal eloquently the way in which settlers within informal and semi-Informal developments adapt to local every day circumstances. Citizens show opposing tactics to conventional practice; instead they easily appropriate the resources available according to their own need, breaking established boundaries. The following step for this stage is to demonstrate the cause-effect from a wider perspective. This means to address the question: why this happened? In the words of Kaliski,

"When the designer begins with the everyday reality and defines it as beautiful, existing situations become starting point rather than stumbling block. Reality, as opposed to utopian stability provides inspiration"¹.

According to Melanie Dodd, communities' active participation and active role in shaping the process of development and transformation is the key to survive under hostile conditions². Consequently, understanding the contrasting participation of dissimilar actors according to different cases was the next step. Comparing the dynamics of formal modernism practice to the dynamics of informal and semi-Informal modernism practice was important to identify different levels of architect participation and support. In the Informal and semi-Informal practice the architect participation is replaced by the high level of citizen's engagement in the built environment decisions. Dodd argues that this is the result of a lack of support and responsibility from the state with respect to welfare, housing, employment and healthcare. In terms of Dodd, in the informal city "the dweller is forced to react and adapt to circumstance in order to survive"³. In order to make sense of such differences of dissimilar input of actors, institutions of support and architect's participation. The appraisal used 3D visual models exercises to show the dissimilar shapes over the built environment which are:

- D.1 Levels of different actors' participation within formal modernism practice (Full architect's participation)
- D.2 Levels of different actors' participation within Informal Modernism practice (No architect's participation)
- D.3 Levels of different actors participation within semi-informal modernism practice (Little architect's participation)



Lessons & Preparation

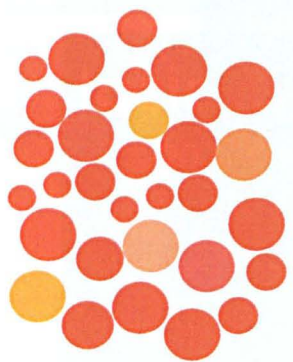
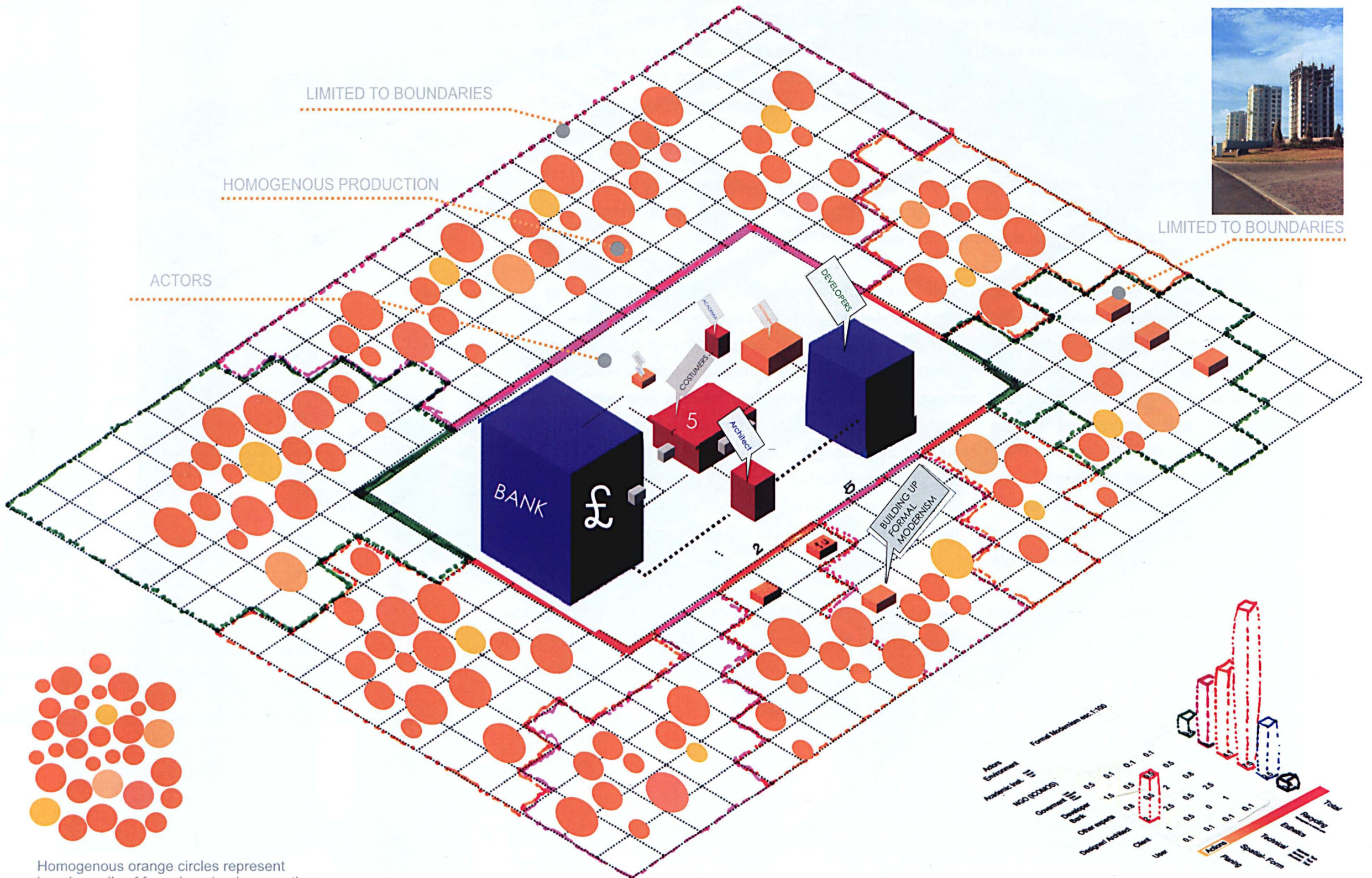
D Appraisal
Networking

¹ Kaliski, J. (1998). *The present City and the Practice of City Design: Everyday Urbanism*. New York, The Monacelli Press.

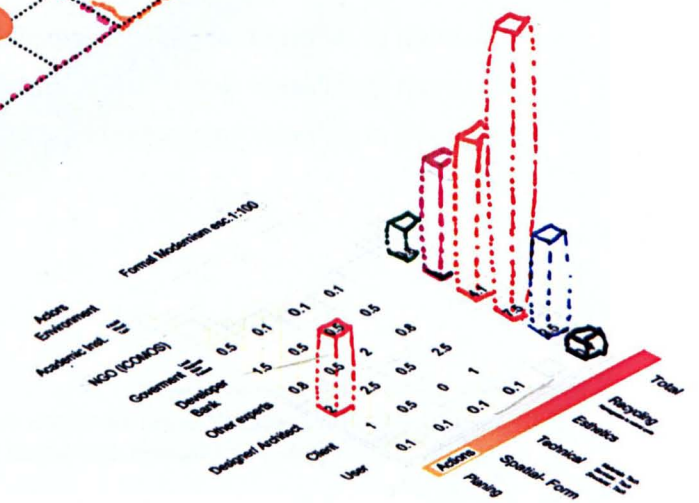
² Dodd, M. (2008). *Oportunistic Urbanism*. Oportunistic Urbanism. D. R. Lovering. Melbourne, RMIT University Press: p 127.

³ Ibid. p. 126

D.1 Levels of different actors participation within formal modernism practice
(Full architect's participation)



Homogenous orange circles represent housing cells of formal modernism practice. These are characterized by order, regularity, cleanness etc.



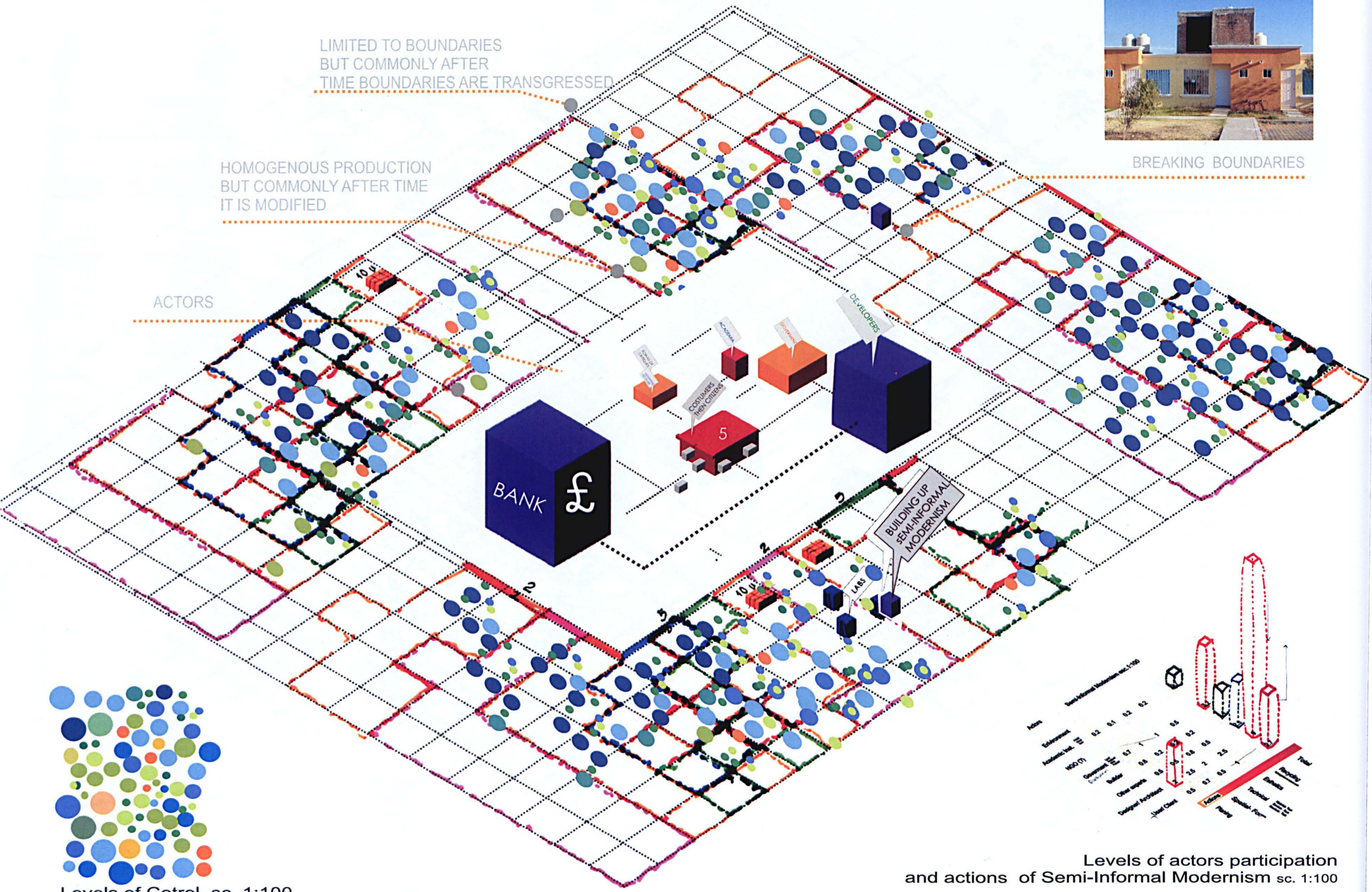
Levels of actors participation and actions of Formal Modernism sc. 1:100

SEMI-INFORMAL MODERNISM

D.3 Levels of different actors participation within semi-informal modernism practice (Little architect's participation)



BREAKING BOUNDARIES



Levels of Cotrol sc. 1:100

Levels of actors participation and actions of Semi-Infomal Modernism sc. 1:100

Design of the Strategic Framework to manipulate actual conditions

Subsequently to the appraisal (decision analysis), the design of Strategic Framework of Architecture of Scarcity approach was explored. In other words, an alternative-making process was developed, comparing options to produce a new objective. It is suggested the creation of a virtual Research Institute of Architecture of Scarcity Studies (RIASS) which has to work as a rigorous research centre focused on acquiring as much knowledge as possible in the field (fig. 6. 20). This model can stimulate manipulation of actual dynamics based on 'chance' through research of local conditions which inform an alternative design process. For this aim, it is also necessary a revised role of architect participation represented by 'Agencies'. It is expected that supported by research and the designed tools of previous stages, the new 'agent' will be able to understand more objectively conditions of informality that define this non-prescribed design process in the ScarCity context allowing him to encourage a more critical practice. To achieve such aim additional support from different institutions will be necessary. In short, this approach attempts to create a political *Strategic Framework* that gives solid foundations to an enhanced design process in a condition of scarcity (figs. D.4 & D.5).

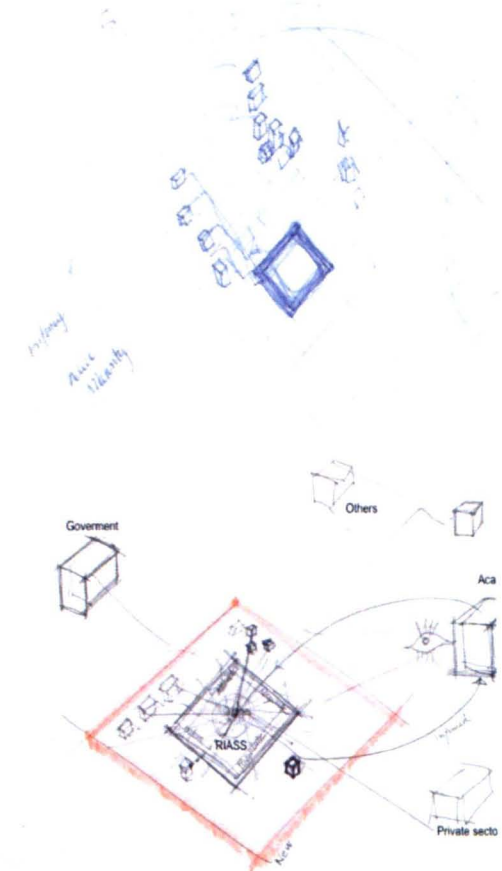
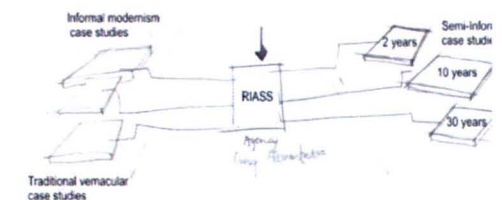
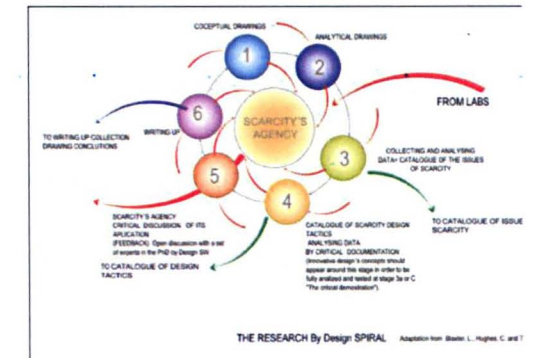
In other words the Architecture of Scarcity approach is suggested to manipulate the actual dynamics driven by 'chance' in informal developments in order to achieve a more balanced condition driven by 'strategy'. In terms of Jonh Habraken, "successful environments offer equilibrium...they are structured to avoid situations of imbalance, to ensure stability, while allowing for continuous transformation".¹ In different words Antony Giddens in his study *The Third Way: The renewal of Social Democracy*, argues for a new model whereby the state should develop an 'enabling' role for its citizens.² Giddens suggest a model entitled 'double reflexivity' which is a combination of bottom up civil action combined with top-down supportive policy (fig.6.21). The final aim is to encourage citizens and communities to practice an active role in problem solving and reflexive change according to their specific local circumstances.³ The most interesting issue after analysing the ScarCity's model, it's that, in many ways and involuntarily, due to the condition of scarcity, settlers of informal developments in Mexico have been forced to use some of the suggested tactics already. Dodd argues that informal settlers "are actually reflective of a high level of active engagement by individuality in their civil responsibilities"⁴. As a result, a certain level of citizen participation already exists, the key role as an architect interacting within this context is to enhance and support this 'vernacular' condition. This means that the Agency representing the architect needs to adopt a new role of tactical response to a condition already existent on the ground. Consequently, it has to bring a **Strategic Framework** to facilitate settler's action through Design Tactics Programmes which provide different support. It is within this dialogue that the new role of the architect emerges promoting a more critical practice. To achieve such an aim the architect needs additional skills compared to the traditional ones such as leadership in

¹ Habraken, N. J. (1998). *The structure of the ordinary : form and control in the built environment*. Cambridge, Mass.; London : , MIT Press, . Pg. 132

² Giddens, A. (1998). *The Third Way: The Renewal of Social Democracy*. Cambridge, Cambridge University Press.

³ Ibid.

⁴ Dodd, M. (2008). *Oportunistic Urbanism*. Oportunistic Urbanism. D. R. Lovering. Melbourne, RMIT University Press: p 127. p. 126



Figs. 6.20 RIASS sketches

order to make more holistic links. He also has to be the networker in order to get cooperation and negotiate funding for support. Michael De Certeau, in *The Practice of Every Day Life* suggest to link tactics utilised by individuals to create their own space with institutions or structures of power.⁵ This is precisely the same aim suggested in this proposal as the Strategic Framework supporting Architecture of Scarcity approach. Different Issues of Scarcity, translated to Design Tactics Programmes, are linked to a network of Institutions of support in order to recombine the rules and impact the products of the actual dynamics of informal practice based on 'chance', in a way that can be manipulated but not determined. An inspirational example of engagement with an approximate facilitating practice is the San Antonio's project in Michoacán Mexico. Gisela Medina the main coordinator of the project is developing a big network to support different projects assisting this marginalised community of indigenous settler 150 km away from Morelia, the state's capital. The main aim was to recover part of the traditional vernacular architecture that was disappearing, and encourage an integral development to change the actual dynamics⁶. Since 2004 Medina has been facing a lot of challenges transforming San Antonio; however there is still more to do. The key of her success has been that Medina has played an important connector role between the community and different academic and governmental institutions of support. In her own terms, Medina argues that probably she is not an expert in vernacular architecture; however she knows how to make the things happened due to her political background.⁷

Different visuals of 3d models such as: simulation of the actual dynamics and how the RIASS can be integrated, conceptualization of the RIASS links with institutions, Exploring possibilities of intervention through agencies, and model defining the three main case studies and conceptual integration of agencies intervention; can be seen respectively from visuals D.6.1 to D.7.2



Figs. 6.21 Model of 'Double Reflexivity' and enabling citizen's role inspired by Antony Giddens

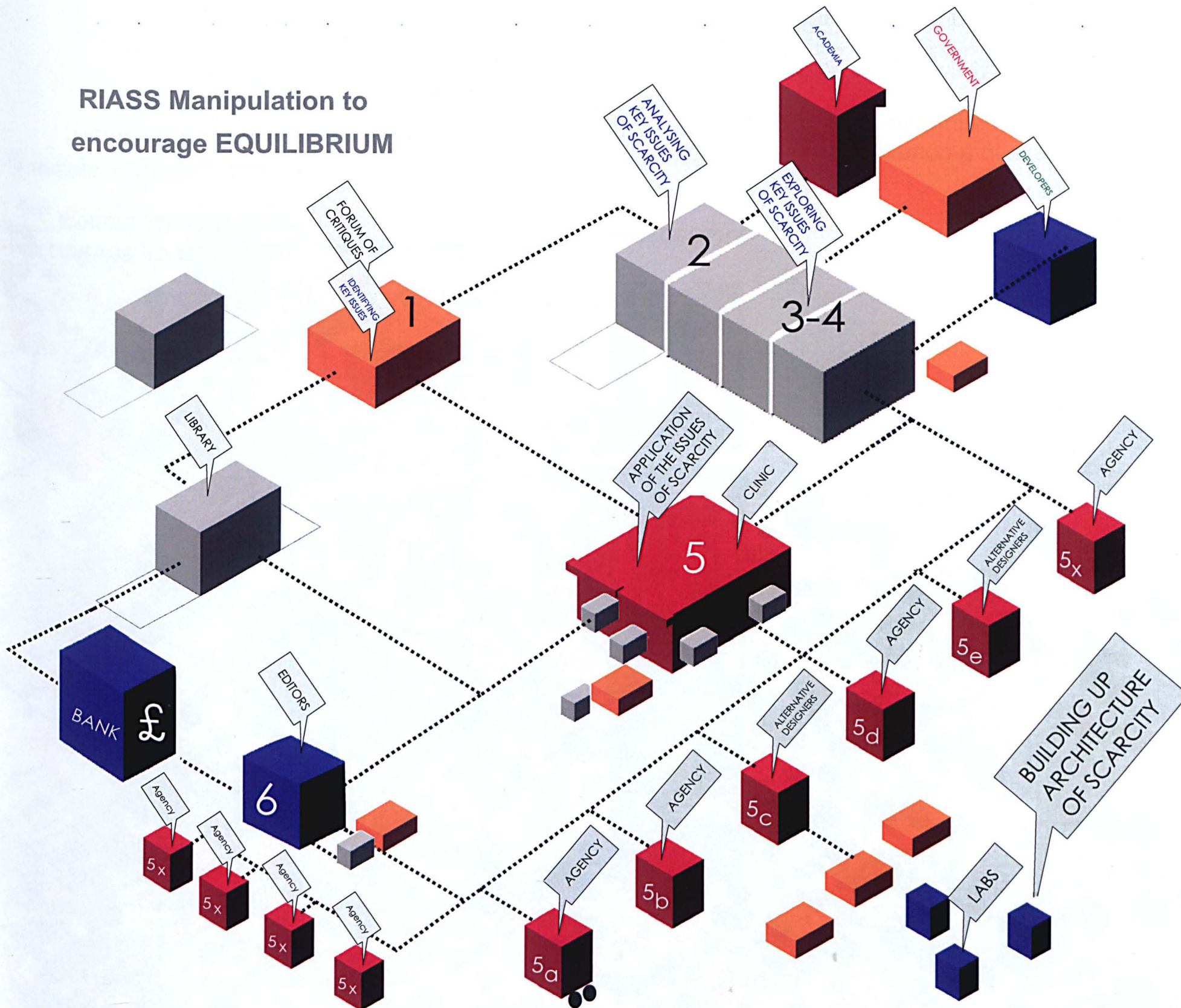
⁵ Certeau, M. D. (1974). *The Practice of Everyday Life*. Berkeley, University of California Press.

⁶ Prieto, V., Ed. (2006). *Proyecto de recuperacion de la arquitectura vernacula e impulso al desarrollo integral de la comunidad indigena de San Antonio*, Michoacan, Mexico Morelia Mexico, Departamento de publicaciones de la SECUM.

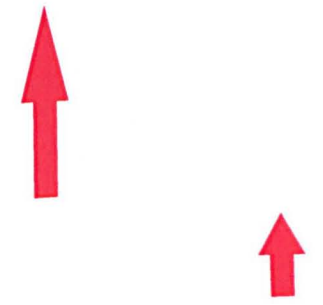
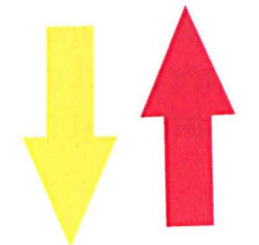
⁷ Medina, G. (2006). Interview to Gisela Medina: A coordinator of San Antonio's Project, Mich, Mex, . A. Becerra. Morelia.

D.4 Exploring a model to simulated how the actual dynamics can be manipulated

RIASS Manipulation to encourage EQUILIBRIUM



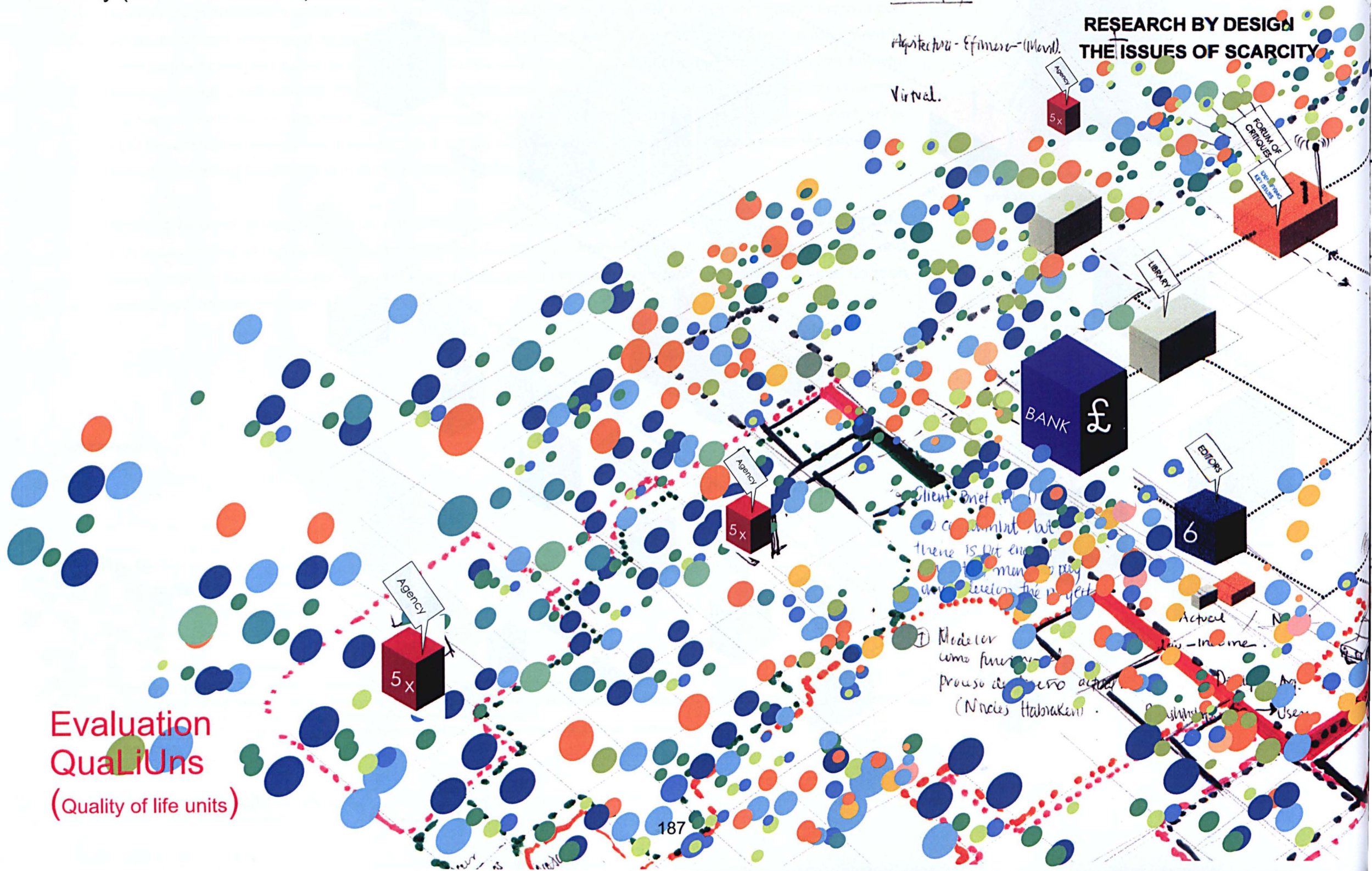
PHILOSOPHY



D.5 Conceptual drawing of RIASS in action, bringing a political framework through different Agencies to manipulate actual dynamics of informal and semi-informal developments

Political framework that gives solid foundations to an improved or alternative design process in a condition of scarcity (limited resources)

Political Framework that gives solid foundations to an improved or alternative Design Process (in a situation of scarcity)



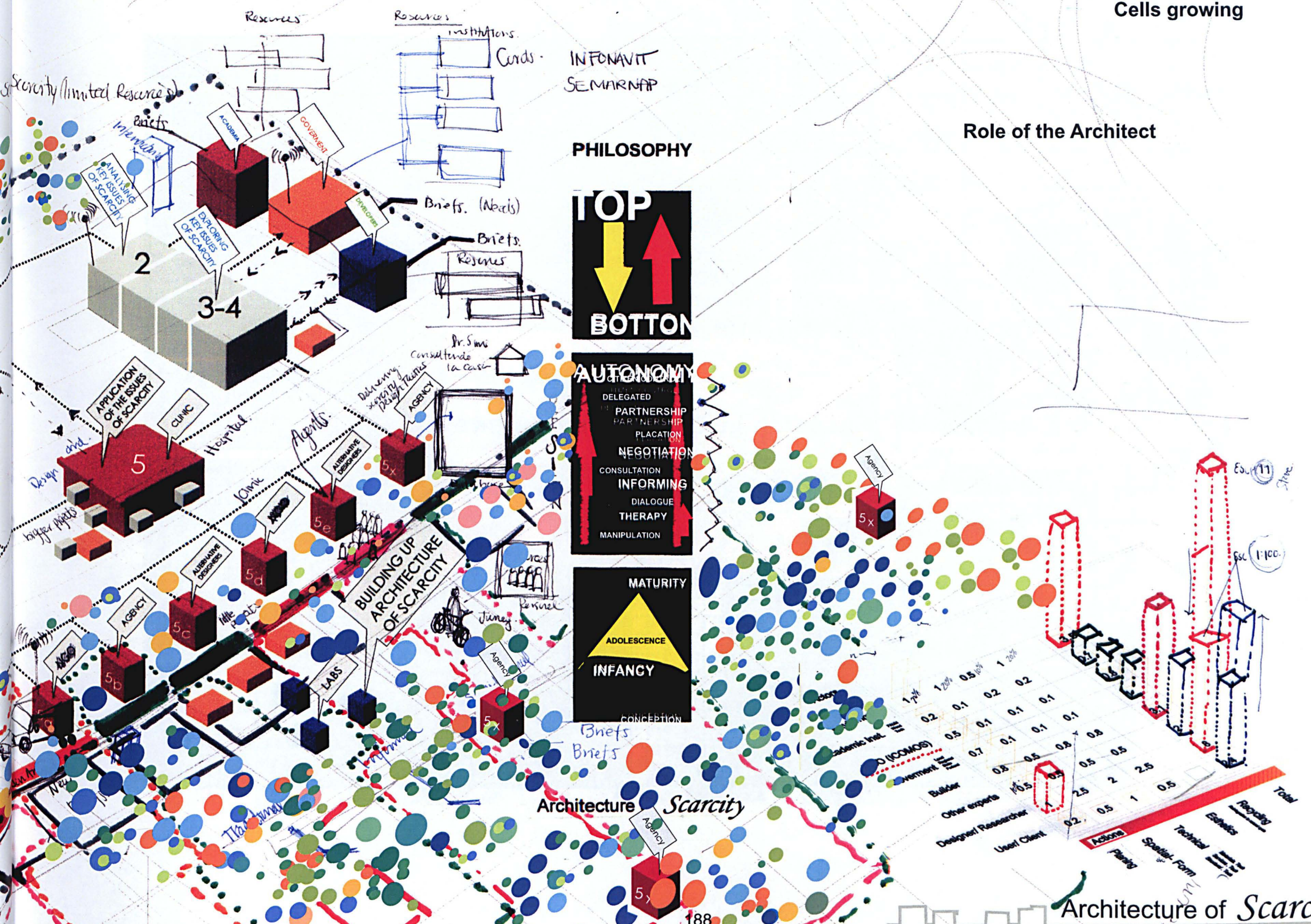
Evaluation
QuaLiUns
(Quality of life units)

"Successful environments offer equilibrium...they are structured to avoid situations of imbalance, to ensure stability, while allowing for continuous transformation."

John Habraken

Cells growing

Role of the Architect

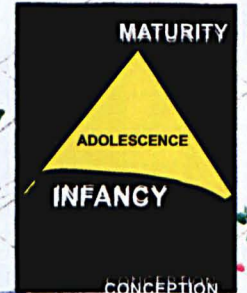


INFONAVIT
SEMARNAP

PHILOSOPHY



- AUTONOMY
- DELEGATED
 - PARTNERSHIP
 - PLACATION
 - NEGOTIATION
 - CONSULTATION
 - INFORMING
 - DIALOGUE
 - THERAPY
 - MANIPULATION



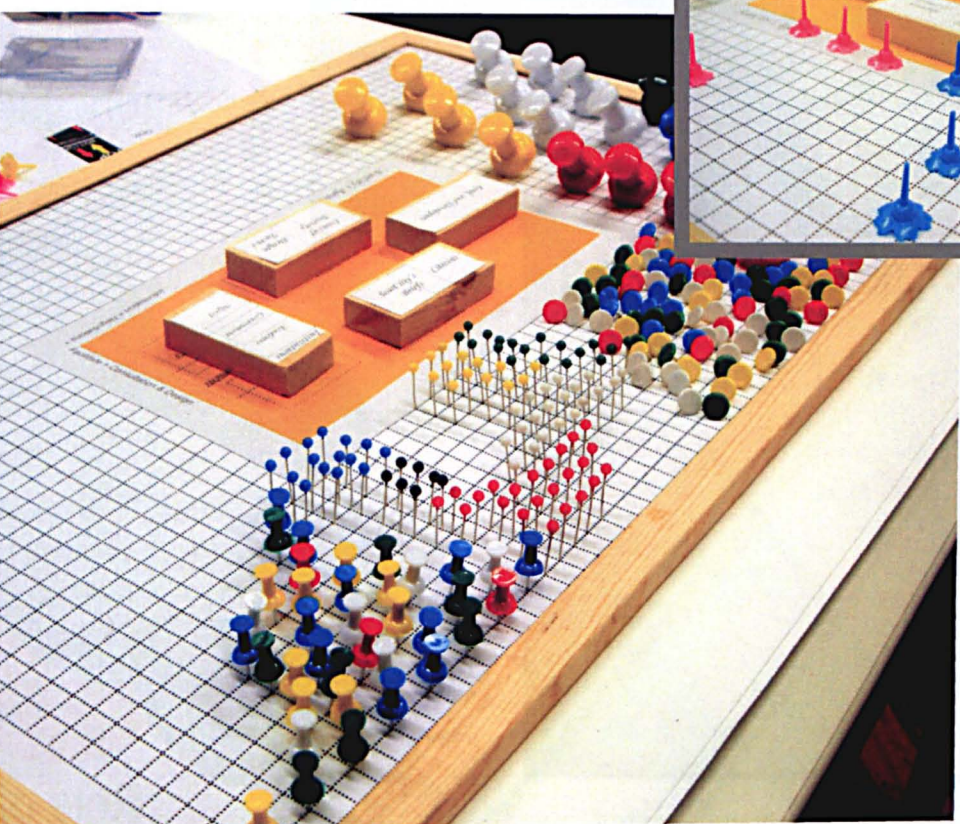
Architecture Scarcity

Architecture of Scarcity

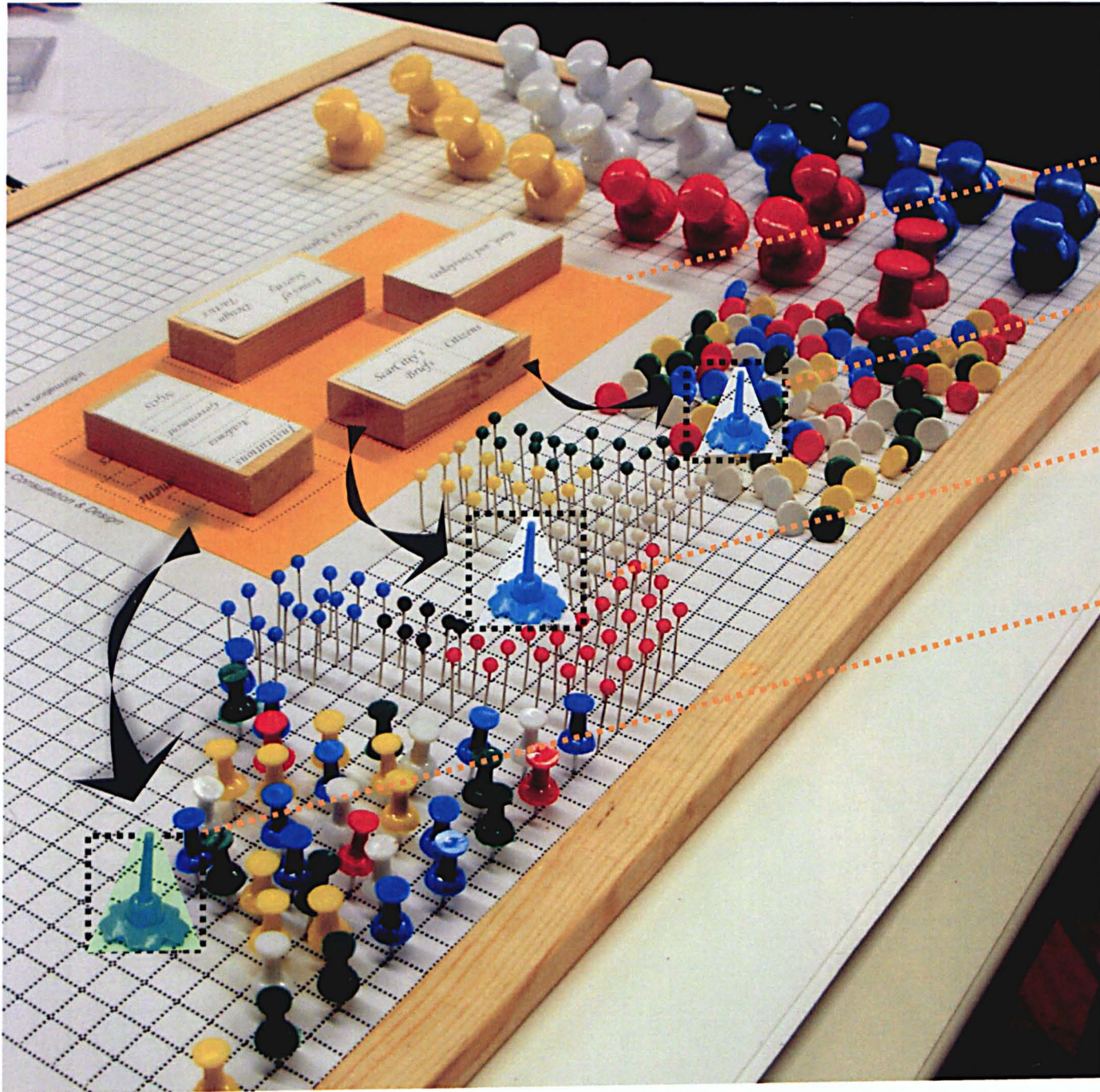
D.6.1 Exploratory model simulating the actual dynamics and how the RIASS can be integrated



D.6.2 Exploring possibilities of intervention through Agencies



D.7.1 Model defining the three main case studies and different Agencies of intervention

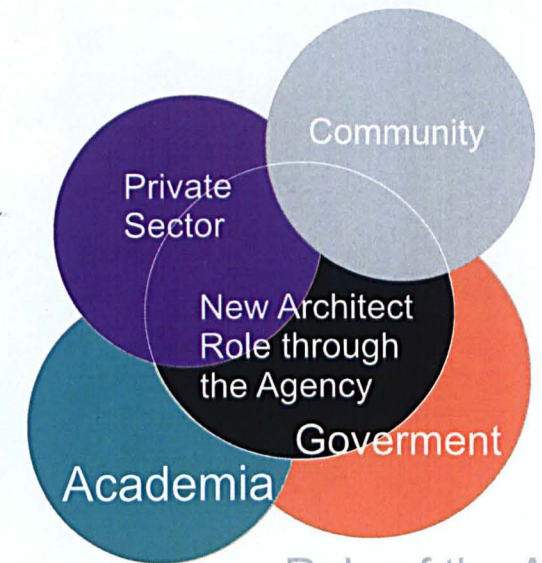


RIASS

Agency to TV

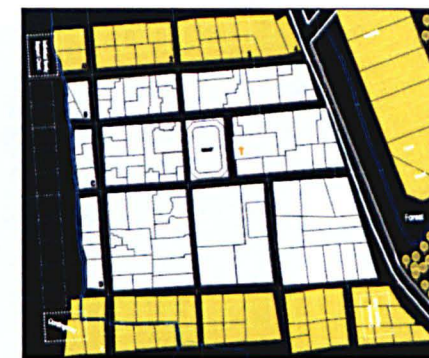
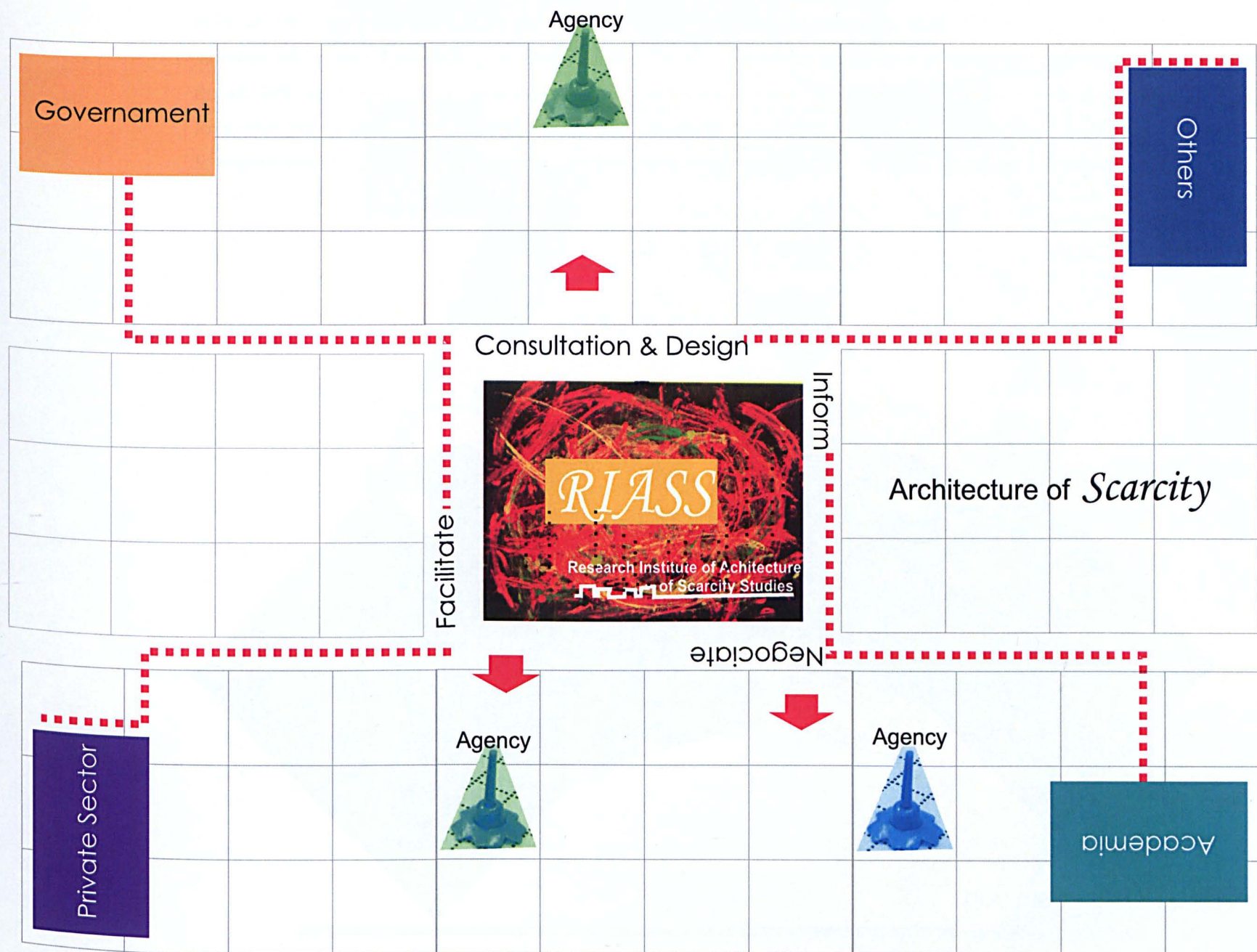
Agency to SIM

Agency to IM

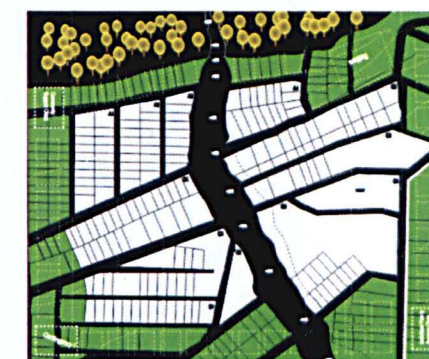


Role of the Agency

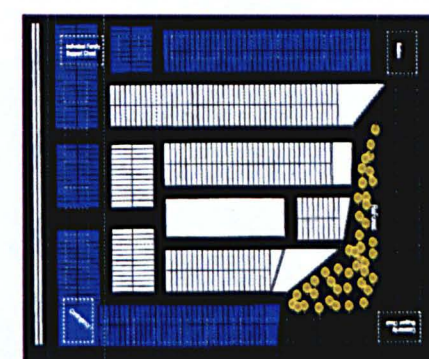
D.7.2 Conceptual interpretation of Agencies intervention on the three main case studies



TRADITIONAL VERNACULAR



INFORMAL MODERNISM



SEMI-INFORMAL MODERNISM

Networking: Chasing Institutions of support & formalising its participation

Accordingly, the next step of this stage and key question to address is: where the economic support will be coming from to fund such interventions through Design tactics Programmes? Networking is a very important part of this stage; data bases from a group of interconnected Institutions are amalgamated in a catalogue. The first step was to make assessments of supportive Institutions, and to then it is assumed contact them and offer participation. Finally the collaboration agreement can be signed. The Catalogue of Institutions of Support is classified according to a wide variety of characteristics. It provides a general overview of some types and categories which in generally match with Design tactics programmes classification such as environmental, technical, social or economic. Also the cards of institutions present the basic components of grants application. This network will allow the RIASS, along with its agencies and Institutions to communicate with each other and to share resources and information. The visuals exploring the previously mentioned issues are presented as follows: D.8 The Catalogue of Institutions of support cover, D.9 Example of Institutions of support cards and D.10 Where the Catalogue of Institutions of Support seats in the full Strategic Framework. To see the full catalogue of Institutions of Support consult appendix 2.

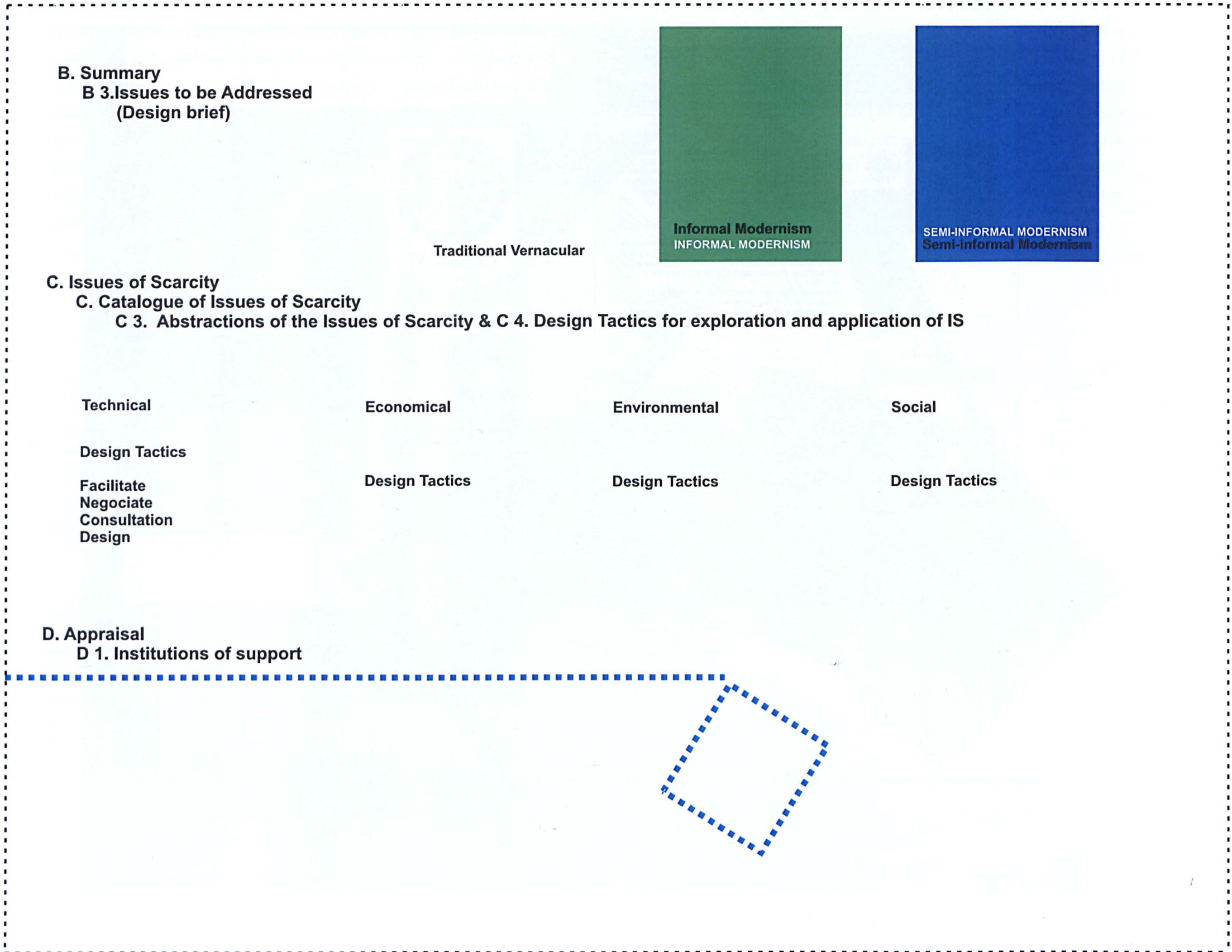
D.8 The Catalogue of Institutions of support.



D.9 Example of Institutions of support cards.



D.10 Where the Catalogue of Institutions of support seats in the full Strategic Framework



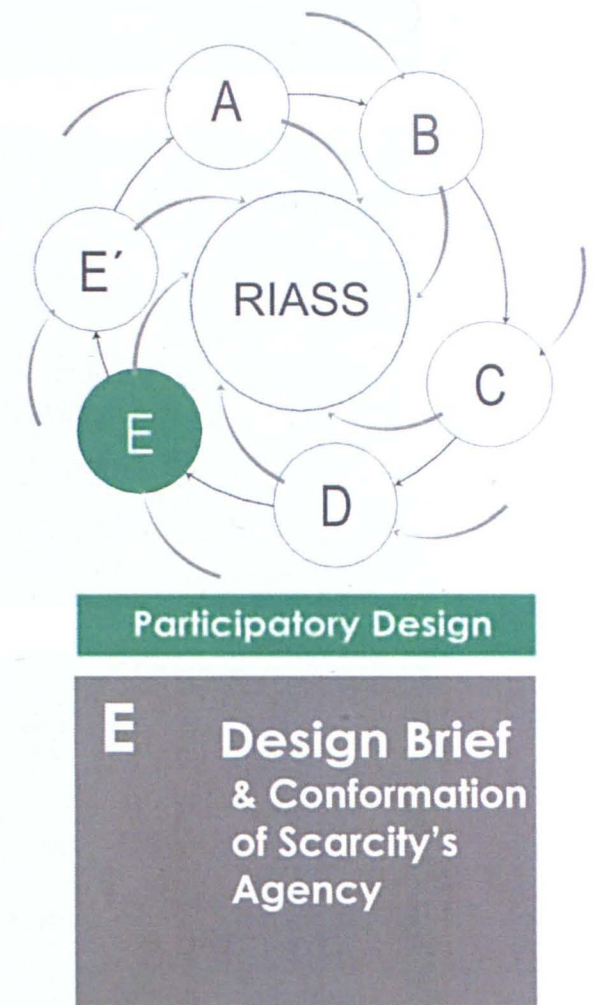
Stage E: Design Brief: Analysing Design priorities, assessing the Design Tactics Programmes with more potential & Conformation of ScarCity's Agency according to each case study

The design brief stage is the dynamic process assessment of possible application of the Strategic Framework of Architecture of Scarcity approach. Developing design priorities through workshops and assessing the Design Tactics Programmes by all the parties involved is necessary. The design brief has the aim of defining the main vision of a specific intervention, outlining the aims, objectives and milestones of the Strategic framework (economic, technical, environmental and political). It is important to have representatives' attendance from each and every sector involved (community, RIASS, institutions, etc.) This is a critical forum that will discuss constraints and potential of the area. An articulated design brief is a critical part of this design process. It aims to help to develop trust and understanding between the representatives of the community involved, and representatives of RIASS and participant Institutions. It also serves as an essential point of reference for all involucrate parties. Above all, the design brief ensures that knowledge about design issues is considered and questioned by the Agent, before its Agency is established and starts work. The final design brief will be focused on the desired results of the intervention – not aesthetics. The most common tasks include:

- Summary of key issues to be addressed (Technical, Environmental, Economic and Social) according to the specific case study.
- Design of the Strategic Framework according to each case study. This means analysis and selection of the Design Tactics Programmes with the most potential according to each case study.
- Defining initial Priorities/a provisional statement of requirements into the design brief with citizens involved, institutions, RIASS and the Agent.
- Selecting different institutions of support according to selected Design Tactics Programmes

Individual Family Design Chest cards and Community Support Chest


Additional design tools to create participants' debate and engagement in design were developed. It was identified that two main supportive design chests were necessary for each case study to define priorities. Firstly families need an individual support and later they need communal design strategies to consolidate their community. See E.1 Examples of the *Individual Family Design Chest* cards and E.2 Examples of *Community Support Chest* cards. Both Family design support chest and community design supports chest are only the starting point of a list of issues to address at studied communities. Next the community's critical forum shall negotiate between all its members organising the issues to address in order of priority, values and capacities. Further, simulation of specific programmes that could have more impact and enhance local conditions was considered, so as to stress the added value of Agency participation.



E.1 Examples of the individual family support chest cards

Basic Troje

2 blocks of wood roof
4 blocks of wood
1 stone base
2 skills **TT**
= Basic Troje




Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

Basic Furniture

2 blocks of wood
2 skills **TT**
= Basic Furniture



Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

Composting Toilet

1 block of wood roof
2 blocks of wood
2 skills **TE**
Agency Assistance
= Composting Toilet




Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

Improved Patsari Stove

2 units
2 skills **TE**
Agency assistance
= Patsari Stove

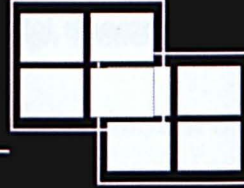


Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

Double Glass Windows

4 units
2 skills **TT**
Agency assistance
= Patsari Stove



Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

Organic Food & Farming

Land
1 unit per animal or
10 sqm of food
2 skills **TE**
Agency assistance
= Organic F or Fa




Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

Biodegradable Paint

2 units
2 skills **TE**
Agency assistance
= Patsari Stove




Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

Bycicle

4 Units
1 skill **T**




Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

Solar Water Heating

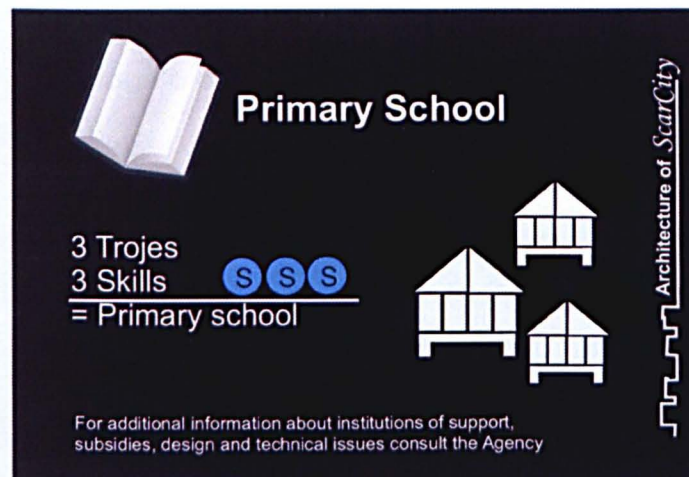
10 units
2 skills **TE**
Agency assistance
= Patsari Stove



Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

E.2 Examples of Community support chest cards

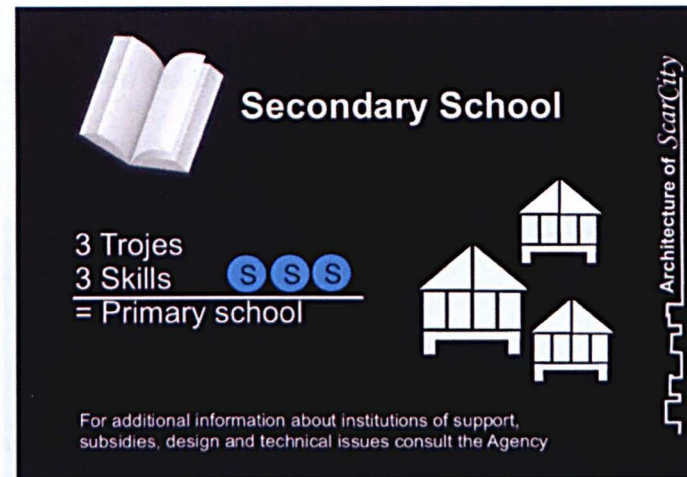


Primary School

3 Trojes
3 Skills **S S S**
= Primary school

Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

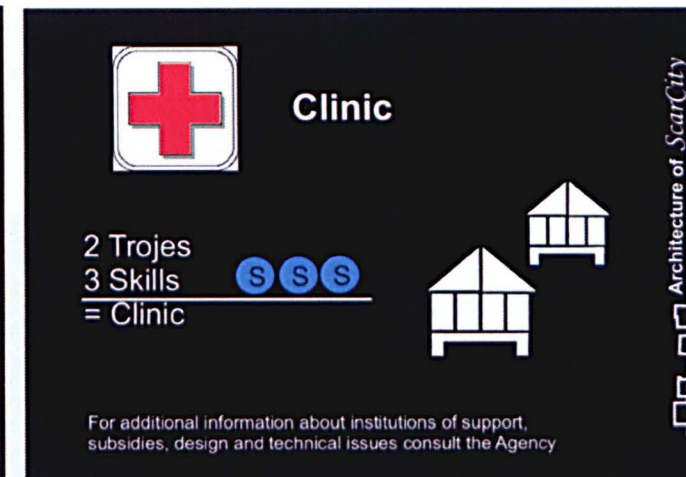


Secondary School

3 Trojes
3 Skills **S S S**
= Primary school

Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

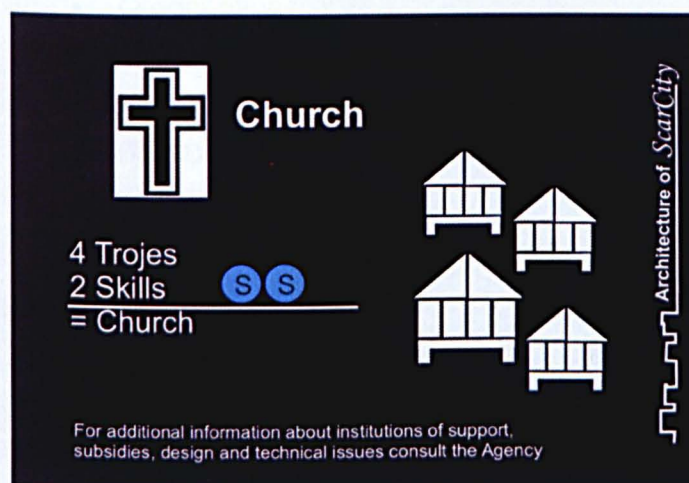


Clinic

2 Trojes
3 Skills **S S S**
= Clinic

Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

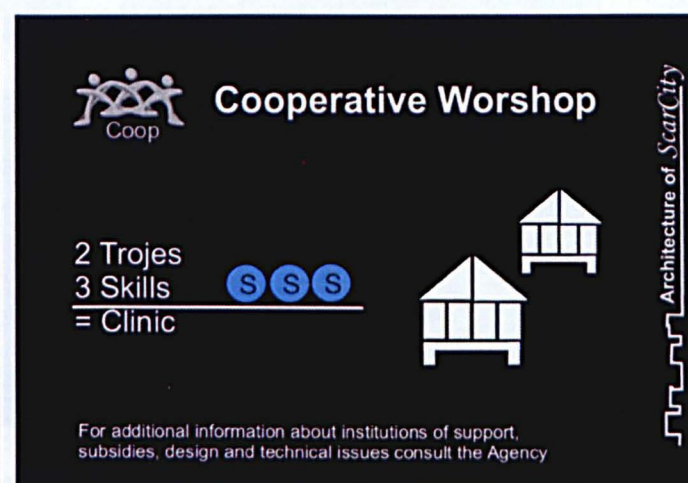


Church

4 Trojes
2 Skills **S S**
= Church

Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

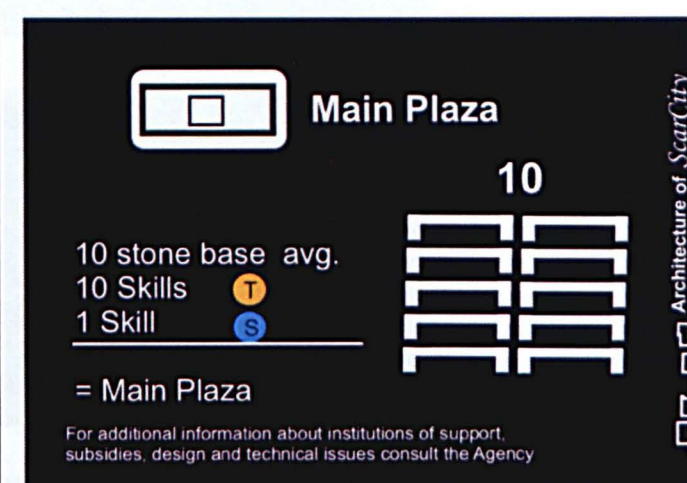


Cooperative Workshop

2 Trojes
3 Skills **S S S**
= Clinic

Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency



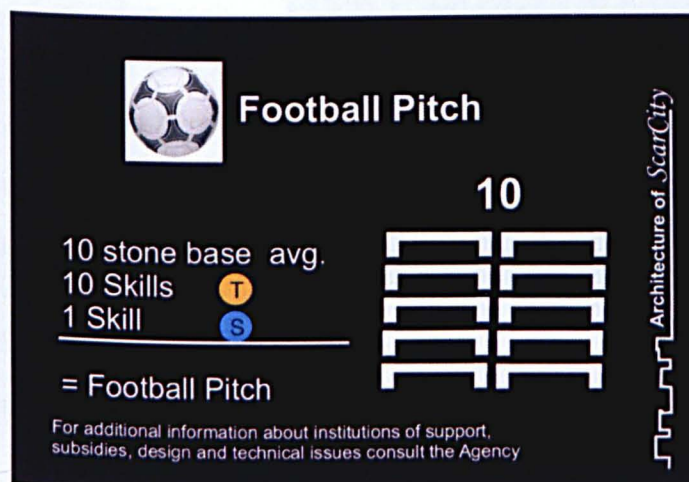
Main Plaza

10

10 stone base avg.
10 Skills **T**
1 Skill **S**
= Main Plaza

Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency



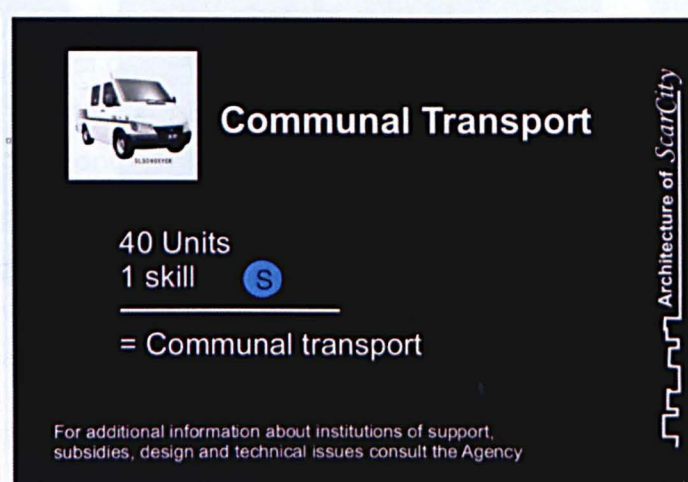
Football Pitch

10

10 stone base avg.
10 Skills **T**
1 Skill **S**
= Football Pitch

Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

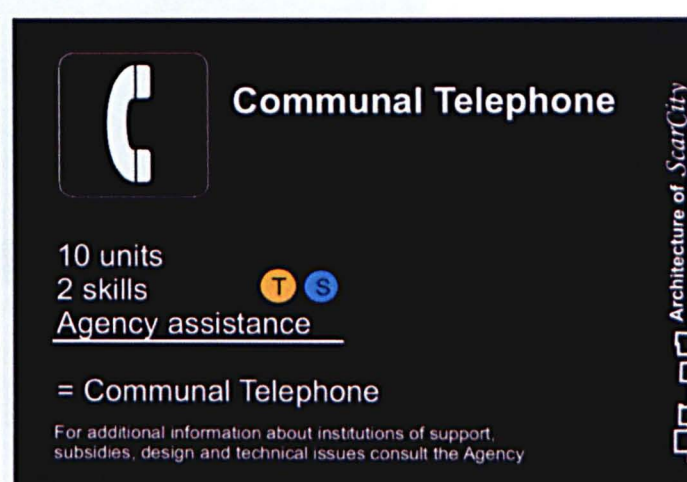


Communal Transport

40 Units
1 skill **S**
= Communal transport

Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency



Communal Telephone

10 units
2 skills **T S**
Agency assistance
= Communal Telephone

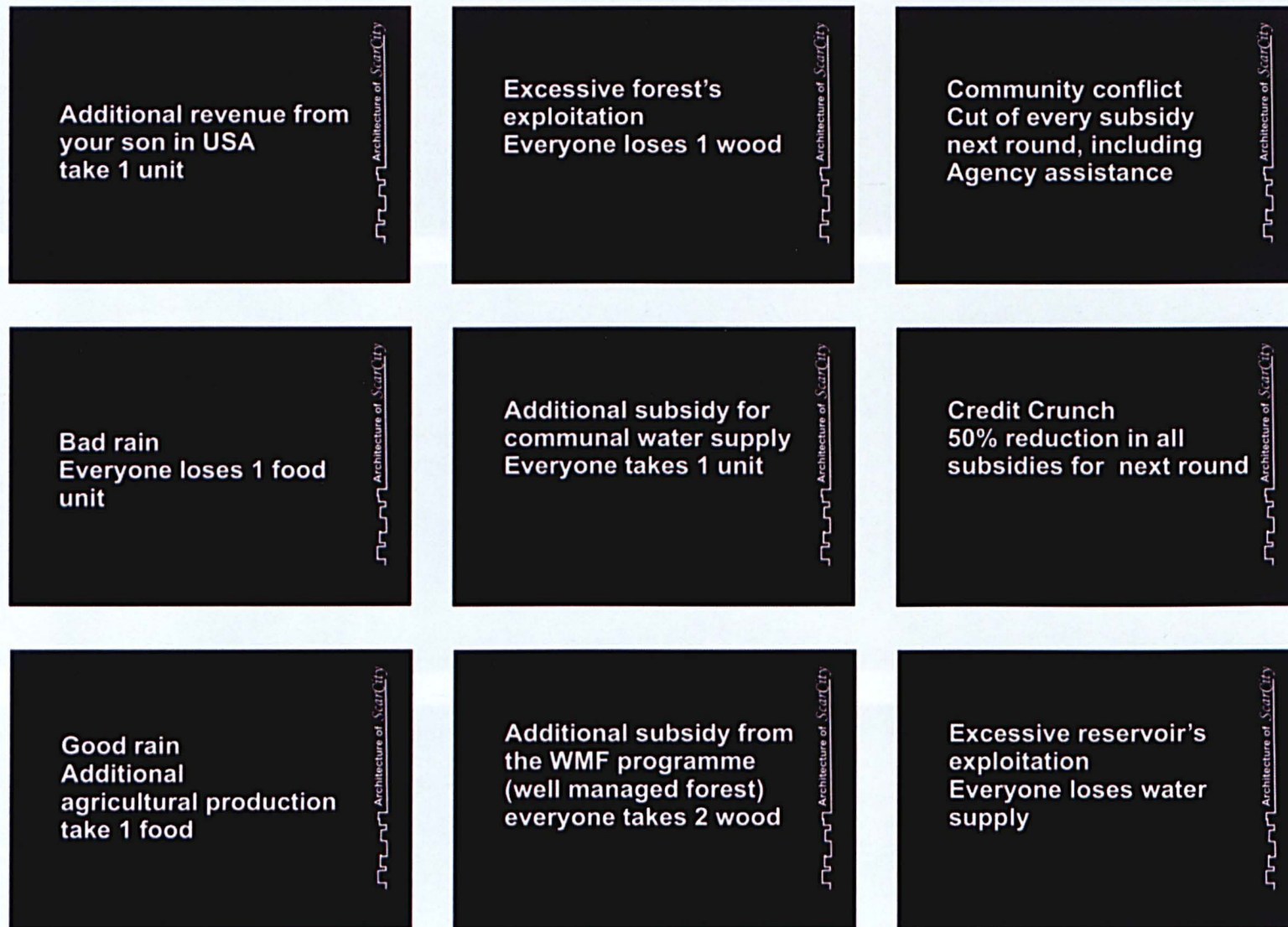
Architecture of ScarCity

For additional information about institutions of support, subsidies, design and technical issues consult the Agency

Contingencies cards

At the same time the most common contingencies of a survey within the community were analysed and organised in a series of cards. The aim was to prepare proposals to tackle and be ready for unpredictable positive or negative situations. See E.3 Examples of Contingency cards

E.3 Examples of Contingency cards



Agent Tool Kit V2010

The tools developed as part of the research process in previous stages C and D such as The Catalogue of the Issues of Scarcity and Design Tactics Programmes, The catalogue of Institutions of support and the tools designed in this stage E such as Family design Support Chest, Community Design Support Chest and Contingencies cards are integrated as part of Agent Tool Kit V2010 to support the revised role of the architect through the Agency who will encourage a participatory Architecture of Scarcity design. See visual E.3.1 Tools integrated as part of Agent Tool Kit V2010.

Other final issues of this stage that have to be considered before establishing the Agency on site are:

- Prospective agent confirming key requirements and constraints
- Confirming his role within the selected case: Appointing "the Agent" main coordinator
- Defining the best procurement method according to the specific issues of scarcity involved. Organisation trial with participants
- Organisational structure, range of participants, confirmation of institutions and others to be engaged for the project
- Signature of collaboration contracts if it is required.
- Final Database of participants organising agenda, meeting times.
- Agency opening days and services provided.
- Agency is ready to be established

Two variable scenarios speculating what could be the scenario without intervention and what are the possibilities to impact built environment with agency intervention can be seen in visuals E.4.1 and E.4.2

What's next?

After the conclusion of all the stages of the Research spiral and tools design of the Pre-Agency stage the following question was: how to test the strength of the researched lessons and tools. In this case, the further developing understanding of the Architecture of Scarcity approach and testing the validity of the identified lessons and tools amalgamated in the Agent Tool Kit V2010 will be tested through a second stage, **Speculation of Architecture of Scarcity Practice or Post-Agency**. These aims were simulated in an interactive abstraction of reality entitled The Architecture of Scarcity Game. The method for testing preparation is fully explained in Chapter 7. The outcome of this stage, after involving participants in the test, is presented in Chapter 8.

E.3.1 Tools developed as part of the research are integrated as part of Agent Tool-Kit V2010



E.4.1 Two variable scenarios: What would happen without intervention



E.4.2 Possibilities: Speculation of what could happen with Agency intervention



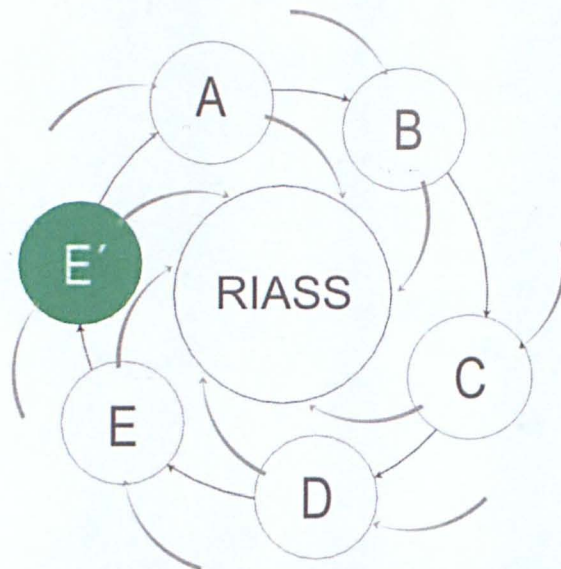
Issues of Scarcity Programmes



Stage E' Writing Up.

In Stage E', Writing Up, documenting of all the aforementioned process entitled –Pre-Agency stage- is collated. This activity is performed in order to shape the first part of the Provisional Outline Plan of Work of the Architecture of Scarcity Design and Practice.

It is important to mention that the writing up stage presented has been already informed by the speculative test fully explained in Chapter 8. In order to organise the writing up, the Plan of work of RIBA¹ was consulted as inspiration to display the researched issues.



Participatory Design

E Writing Up
Formalising
the Pre-Agency
stage of the
Plan of Work

1

(Provisional) Outline Plan of Work of Architecture of *Scarcity*

(Plan for Alternative Architectural Design & Practice)

The Outline plan of Architecture of *Scarcity* proposes the process of managing, designing and construction development of projects under circumstances of scarcity. As a result under such circumstances the traditional approach result useless calling for an Alternative Architectural Design & Practice Process.

Work Stages -	PreAgency	Description	Examples of (visuals)	Part of Game or toolkit designed	
<div style="writing-mode: vertical-rl; transform: rotate(180deg);"> Pre-Agency — Research — Design by Research — Participatory Design </div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"> Diagnosis — Lessons & Preparation — Participatory Design </div>	A	Documentation Mapping Conceptual Drawings	(Tool A) Intro case studies Abstraction of case studies layouts Polarisation Time scale? Additional Mapping	Data base card Abstraction of layout for the board Abstraction of settlers (recover my stories) Add little story of the settler to now more about him/her	
	B	Summary Analytical Drawings	Tool QualiUn System Mspectrum Architects Role	Contingency cards?	
	C	Issues of Scarcity	Level of intervention Tool Conceptual D Analytical D Exploratory Abstraction D Design Tactics Catalogue of IS	Depends of the context. Catalogue of Issues of Scarcity programmes for application and (little logo cards)	
	D	Appraisal Design of Strategic Framework Networking Chasing Institutions & formalizing its participation	The Appraisal (decision analysis/decision project) is an alternative-making process comparing options to produce a new objective. It suggest a model to simulate how the actual dynamics can be manipulated, evaluating the new role of architect participation and additional support from different institutions. It attempts to create a political strategic framework that gives solid foundations to an enhanced design process in a condition of scarcity (limited resources). The appraisal aims to manipulate the actual dynamics driven by 'chance' in informal developments to achieve a more balanced condition driven by 'strategy'. Two? variables/scenarios: What would happens with out intervention What would happens with Architecture of Scarcity intervention Community Rep	Tool Cards - Dbase Strategic Framework Design drawings... Main sides according to specific conditions.. Little cards playing Tools to evaluate scenario 1 scenario 2	Adding virtual framework to the main layouts based on 4 main topics Exploratory drawings of little cards before playing institutions of support cards Little institutions logos Keeping stronger contact with government and additional institutions Promotion and looking for economic resources.
	E	Design Brief & Conformation of Scarcity's Agency	Defining initial Priorities . The design brief stage is the dynamic process assessment of possible interventions, developed through workshops by all the parties involved. It has the aim of defining the main vision of a specific intervention, outlining the aims, objectives and milestones of the Strategic framework (economic, technical, environmental and political). It is important to have representatives' attendance from each and every sector involved (community, RIASS, institutions, etc.) This is a critical forum that will discuss constraints and potential of the area. An articulated design brief is a critical part of this design process. It aims to help to develop trust and understanding between the representatives of the community involved, and representatives of RIASS and participant Institutions. It also serves as an essential point of reference for all involucrate parties. Above all, the design brief ensures that knowledge about design issues is considered and questioned by the Agent, before its Agency is established and starts work. Sign of collaboration contracts if it is required. Final Database of participants.Organising agenda, meeting times, Agency opening days and services provided. Agency ready.	Brief Individual Family Desig support chest Community Design support ch Methods of application Organigram tray & task Contracts Agenda & Times	Individual Family Support cards Community Support cards Institutions of Support Catalogue Organigram try design for intervention

Design of the Game or alternative design process

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The Architecture of Scarcity Game: Testing preparation



"Why are you trying to study the community in Mexico as if they were something exotic or how will they behaving? When Foster or Hadid build something do they do simulations in their dinner table?"

PhD Student, Medical Science

Introduction

Previous Chapter 6 suggested and explored a methodology to identify *Issues of Scarcity* already emerging in the marginalised areas of the Mexican context. These can often provide an alternative approach for architects, engineers and builders who have been trained in a model of architectural education embedded with Western traditions and have mainly developed their arguments from this perspective. Three examples of the most significant case studies were reviewed: Traditional Vernacular, Informal Modernism and Semi-Informal Modernism. Experts in the field focusing on theory, education and practice in this essential sector of architecture have demonstrated increased interest in the lessons of the vernacular. They suggest that it could help to formulate solutions to the environmental, disaster management and housing challenges facing the global community today¹. In terms of Lindsay Asquith and Marcel Vellinga,

*"The importance of vernacular architecture studies now and throughout the twenty-first century, not as a study of past traditions, but as a contribution to new methods, solutions and achievements for the future built environment"*².

As a continuation, this Chapter 7 and also Chapter 8 will return to that very point, but from a practical perspective, developing further understanding of the condition of scarcity, testing the validity of researched lessons and speculating about a revised role of the architect within ScarCity's context through a game which involves participants in abstracted reality of informal practice. Chapter 7 will explain in more detail the methods of testing preparation whilst next Chapter 8 will present elements, instructions and testing results of the *Architecture of Scarcity Game*.

The aim of this exercise is to explore the *Architecture of Scarcity* approach through the production of experimental design. After identifying some examples of the *Issues of Scarcity*, and designing a set of different tools amalgamated in the Agent Tool Kit V2010 the following research questions are: How can someone use the designed tools? This means how identified lessons –*Issues of Scarcity*– and the suggested design tactics could be used to inform an alternative architectural design process? Is there any opportunity for the architect to intervene? How might he make sense of such complex context including additional contingent forces? What can be the new role of the architect within this context? Is there a real need to support the actual dynamics of the building process or is it another attempt to impose a complex theory? How can one simulate different variables of non-prescriptive design process including chance within the studied context? Is it necessary to have clear strategies, defined priorities and institutions of support before live intervention happens?

¹ Asquith, L. and M. Vellinga (2006). *Vernacular architecture in the Twenty-First Century*. London, Taylor and Francis.

² *Ibid.* pg. xv

What is the Architecture of Scarcity Game?

In order to speculate about previous questions this study has chosen to do this through the design of a board game entitled the *Architecture of Scarcity Game*. This means exploring and representing the nature of the dynamics of this informal design process through the Game. The simulation through a game offers a useful tool to demonstrate this non-prescriptive process. It gives the possibility of incorporating different elements of the conditions of scarcity, which intervene to shape this environment. Examples of these conditions that can be incorporated through 'instructions' in the game are: Informality involving elements of limited resources + chance + contingency, the simulation of unpredictability, and simulation of the contextual forces taking advantage of local conditions. However, the most important issue is to speculate about the added value of that an architect could possibly bring. How can an architect make a contribution? It seems that the game also offers the possibility to highlight different strategies to manipulate actual conditions that are mainly driven by chance. It gives the possibility to simulate the application of different Design Tactics Programmes, which can lead informal developments to be driven by strategy + opportunity + chance. Traditional design processes largely ignore or neglect these other social factors of the design process. Nevertheless, a game is a way of speculating how recognising them as intrinsic part of design process. In short, the board game is a tool of research to involve different participants in series of experimental design sessions aimed of making sense of the concept of *Architecture of Scarcity* in practice.

Limitations and opportunities

It is important to stress that because this tool is a game artefact it has certain limitations. The main limitation relies on the game as a simulator of situations found in real life dynamics which rely on the action of chance and unpredictability in their operation. Although the game uses elements and information coming from precise research to simulate potential real conditions, it is important to remember that chance and contingency cannot be fully replicated. As a result it cannot be guaranteed that everything happening within the game will be taking place in live projects. However it can be measured as an accurate approximation that allows understanding this phenomenon from a wider perspective to make sense of the complex condition of scarcity's life. In other words it can be a training tool to be ready for live interventions. Understanding the game from this perspective also offers additional opportunities. Due to participant's collaboration, it can be used as a metaphor than can be compared to reality. In this sense the game has a life beyond its mechanics. This other life challenges the participant to exploit the possibilities of breaking the actual boundaries. The result is a tool to stop controlling everything by a prescribed design process. It confronts the rules that professionals in this field take for granted. The game simulates a 'fake' reality by exploring in different ways with surveyed information. As a result participants do not have anything 'real' to lose. Instead they have all the freedom to innovate.

To achieve such goal the main aim-message of the game is to let the participants know that *Architecture of Scarcity* is not principally about building up physical architecture but it is about a methodology for developing a non-prescribed design process of working in a *Strategic Framework*. The *Strategic Framework* implied in the game is also about

promoting the participants' capacity of reflection, organization and decision. In this sense, this game first explores the building up of social networks, environmental links, technicalities and a series of actions to achieve later physical architecture in a community. In short, the game aims to un-lock collective consciousness about people's capacity to generate, claim, change, participate and transform the built environment eliciting specific local possibilities. If the *Architecture of Scarcity* Game can reflect these issues and transfer them to the participants through a test we will have achieved our goal.

Aim & objectives of the game

Having defined the main aim of the game as a tool of research, the following step was to define its final intended objectives. Different objectives were identified during the research process however four are the most relevant to highlight and only 3 to explore further.

1st Objective

At the **beginning**, the main inspiration of the game was to develop an author's tool to understand the complexity of different layers of the context of scarcity by which Scar-City comes into existence. In other words the **first objective** of the game was to design a tool to demonstrate-simulate the process of scarcity communities' development and understand its actual dynamics of hybridism. Next, having understood and identified the main features -*Issues of Scarcity*- of this informal process, it was also a useful tool to un-lock possible strategies -Design Tactics Programmes for a potential intervention by an 'alternative' design process and by implication a revised architect's role. In synthesis, **firstly** it was designed as a practical tool for **thinking** and generates ideas (Scenario 1).

In metaphorical terms the first aim was to design a tool to create ideas for possible future battles. Many kings in medieval times used similar methods. More recently Napoleon Bonaparte used war games to un-lock new strategies for each new combat. He played to see how many new ideas he can create to beat the opponent. In contemporary times, this method is still used by army comrades to create strategies of how to attack. In other words it is a methodology for brain training.

2nd Objective

Having the opportunity to get involved in the academia in the last few years with students of the 1st year and MArch of the school of architecture of the University of Sheffield due to the author's enrolment in the PCHE (Postgraduate Certificate in Higher Education) was struck their interest in learning more about different design processes used in the global south. As a result, it opened up the opportunity for **a second objective** which is to use the game as a research tool for further developing understanding of the conditions of scarcity by involving different participants. In other words to observe if the game communicates to participants a clearer sense of the complex condition of life, the



Fig. 7.1 Cut the Carbon Game. Source: <http://www.cutthecarbon.com>

realities, and difficulties of living under limited resources in Mexico and identify what additional factors were recognized by participants involved?

As a result the first stage of the test game experience uses different *Issues of Scarcity* as part of the main design principles; participants are invited to play on typical abstractions of real case studies such as Traditional Vernacular, Informal Modernism and Semi-Informal Modernism. Participants adopt randomly the identity of different settlers living everyday life in this community and through chance begin to develop a way of living communally with the resources available. In short, **the second objective** of the game is as a practical tool for further developing understanding of the **condition of scarcity** by demonstrating the dynamics of the informal design process (Scenario 2a).

3rd Objective

Enrolment with students also opened up the opportunity for **a third objective** which is **a tool for testing the validity of founded lessons and designed tools** developed in Chapter 6 as support of alternative practice development and revised role of the architect. As a result the second stage of the test game experience introduces an Agency to mobilise more resources into the community. Next, participants have to interact with a proposed Agency which supports and encourages sustainable architectural production. Through this process participants are persuaded by an Agent to use different strategies such as organising themselves to design, plan, build and consolidate their community. Such strategies are supported by Design Tactics programmes and different Institutions. In this sense it is suggested that development of Informal or semi-informal communities has not only be driven by chance, but opportunity and strategy are key elements to manipulate actual dynamics (Scenario 2b).

Several games have been designed for similar purposes in this field before becoming commercial. One interesting example is the game of *Settlers of Catan* designed by Klaus Teuber who thought of making a didactical board game as a hobby, albeit a lucrative one. His main inspiration was to demonstrate how participants would slowly discover an uncharted island by flipping over tiles, and then establish colonies using the indigenous natural resources. The game incorporated elements of Viking tactics for developing a new village which Teuber was working on. By doing his exploration, Teuber always said "I felt like I was discovering something rather than inventing it,"³. Unfortunately the final versions had been driven more by commercial purposes than the original didactical ones. Another interesting game related to issues of sustainability is *Cut the Carbon* designed by the environmental consultants Cath Hassell and Simon Corbey (fig. 7.1.) The game explains the connections between global warming, CO2 and our lifestyles. Its main aim is to enable pupils and teachers to become more carbon literate⁴.

At this point it can be said that from a wider perspective the *Architecture of Scarcity Game* is a tool of further understanding the critical theoretical framework of analysis of the condition of scarcity revised on the part 1 and 2 of this thesis. Also testing a speculative model inspired by some critics of how influence the forces that shape the traditional and neo-vernacular practices in Mexico in order to facilitate its development. Speculation about such theory

³ Curry, A. (2009). Monopoly Killer: Perfect German Board Game Redefines Genre. *Wired Magazine*: 4.

⁴ Corbey, C. H. a. S. (2008). "Cut the carbon: improving carbon literacy in schools." Retrieved 12 July, 2009, from www.cutthecarbon.com.

and testing resulting tools will allow post-rationalising and informing the outcome Provisional Outline Plan of Work for Architecture of Scarcity Design and Practice which can support future live projects.

4th Possible Objective

After some pilot tests with students, academics, and professionals they also observed the potential for a **fourth objective** which is to use the game further as practical tool **to un-lock communities' reflexion, debate, engagement and participation**. This means as a tool to support **professionals** in alternative architectural practice (Scenario 3). Effective engagement has many benefits for facilitators of projects involving community and other stakeholders, including: better project outcomes and relationship with the community involved, networking, partnership and increasing economic prosperity just to mention some examples⁵. However in this test this objective is not included for testing. Further refinement and additional specific test has to be designed if this objective would be verified in the future.

In this field an interesting design tool is *Urban Gallery* suggested by CHORA, a group of architects and urbanists based in London. The Urban Gallery is a non linear open source prototype planning tool. It is designed to develop the co-evolution of urban prototypes. It suggests urban strategies for designing and planning before a master plan can be arrived at. It helps to create discussion, ideas and to figure out methods/processes for carrying things out. According to Raoul Bunschoten a founder director of CHORA it is, "a peripatetic instrument that supports the planning of complex environments in which many different parties and interests intertwine"⁶. Bunschoten argues that, Urban Gallery should promote,

"A fluid form of public space that evolves in time, generating different definitions of public space and different ways of participation in it".⁷

The Urban Gallery has been used as a didactic tool in several higher educational institutions, including the Architectural Association in London, The Berlage Institute in Rotterdam, Tokyo University, and the University of Xiamen (China).

One more interesting example is *The Building Futures Game* produced for the RIBA London training 2008. Building Futures is the RIBA's think tank on issues affecting the future of England's towns and cities. The aim of the game was to create a speculative action plan from five distinct team scenarios that brings together core objectives for addressing the Bankside area over the next ten years. The same methodology is planned to be applicable in other areas to speculate about planning. This Game was developed in partnership with CABE, the Commission for Architecture and

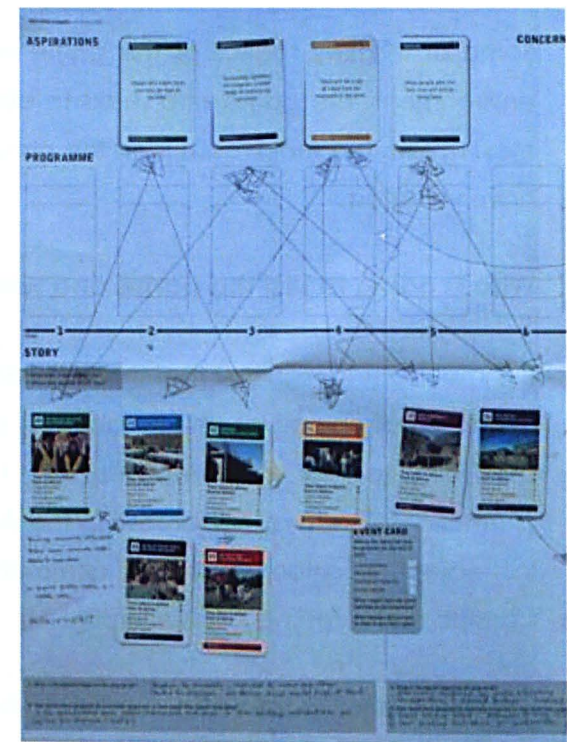


Fig. 7.2 Impressions of The Building Futures Game
Sources: RIBA London Training 2008

⁵ For more about effective engagement see Environment, D. o. S. a. (2005). Book 1: An Introduction to engagement. T. C. E. N. R. a. R. S. Division. Melbourne, Australia Department of Sustainability and Environment. Environment, D. o. S. a. (2005). Book 2 - The Engagement Planning Workbook. T. C. E. N. R. a. R. S. Division. Melbourne, Australia, Department of Sustainability and Environment, Environment, D. o. S. a. (2005). Book 3: The engagement tool kit. T. C. E. N. R. a. R. S. Division. Melbourne, Australia, Department of Sustainability and Environment.

⁶ Bunschoten, R. (2005). "Raoul Bunschoten ANC Architecture and Culture." (No 268): pp 86-161.

⁷ Bunschoten Raoul, T. H., Helene Binet (2001). Urban Flotsam. Rotherham, 010 publishers.

the Built Environment, and AOC, an architecture practice committed to exploring the broader relationship between people and the complex, messy world around them. AOC ethos is based on working with people, rather than for them, their aim is to make things happen through a variety of responses and proposals, some of which may include buildings⁸ (fig. 7.2)

Another final example is Polyopoly an *Urban Cultivation Game* designed by AOC, a practice of architects, urbanists and interpreters, established in 2003 by Tom Coward, Daisy Froud, Vincent Lacovara and Geoff Shearcroft (fig. 7.3.) According to AOC members, Polyopoly is a game of possibility, a thinking tool, and an agent of change. In their own words,

"Polyopoly is designed for play by all implicated in an urban regeneration project, it offers an instantly familiar terrain on which proposals can be creatively articulated, explored, even challenged. Appropriating the model but subverting the logic of a well-known board game, Polyopoly swaps hard cash for time, skills and knowledge, and production-line hotels for a collage of opportunities. Players imagine their way around the board, adapting the landscape as they go".⁹

Some of the key tactics of the game aim to generate conversation, negotiation and open questions about the environment. The game also seeks to demystify development processes, encouraging alternatives to the top-down masterplan. The main focus is on the process rather than object. This is precisely the same as in the game of scarcity I have invented.

Who is going to test the game and why?

It is important to highlight that the Architecture of Scarcity Game is going to be a research tool to test only the first 3 of the 4 overall objectives. This means that according to the aforementioned intended learning objectives, the game is used as a tool for a thinking (scenario 1), a tool for further developing understanding of the condition of scarcity (scenario 2a), and a tool for testing the validity of founded lessons and designed tools (scenario 2b) Nevertheless, the last objective, a tool to un-lock communities' reflexion, debate, engagement and participation (scenario 3), is not considered for testing in this exercise.

Consequently, the following question to address was: who is going to participate in the game sessions to test the first 3 intended objectives?

If the test would have been only designed to assess the 1st objective, a tool for a **thinker** (scenario1), the test would have been designed to simulate the direct application of alternative design principles by the author in different case studies. This would probably conclude with a series of guidelines or recommendations through the catalogue of scarcity's design tactics that others can use in the future. However by this choice the dependence on the researcher

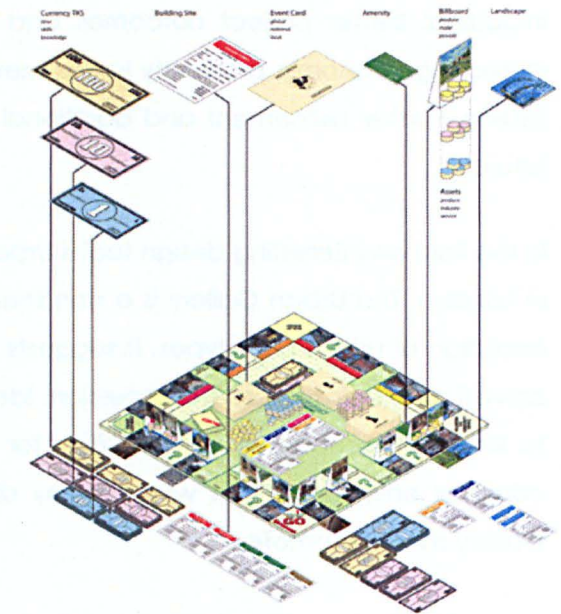
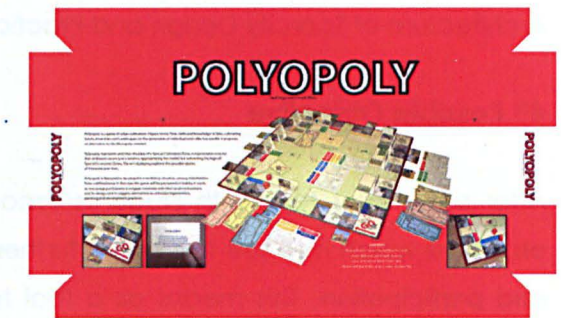


Fig. 7.3 Impressions of Polyopoly . Source: <http://www.theaoc.co.uk/>

⁸ RIBA (2008). *The Building Futures Game*:RIBA London Training 2008. London, RIBA: 12.

⁹ AOC. (2008). "Polyopoly: An Urban Cultivation Game." Retrieved 12 July 2009, from www.theaoc.co.uk

in charge is very high. Also there is a high risk of losing objectivity and of the author controlling the results. Finally it is missed the opportunity of further understanding and post-rationalising the main identified issues.

As a result, the answer was to design the game test to assess the first 3 objectives in combination. This means that in addition to the test the 1st objective of author's tool for thinking, the test was mainly designed as a tool for further developing understanding of the condition of scarcity (scenario 2a) and a tool for testing the validity of founded lessons and designed tools for alternative approach (scenario 2b). In other words, the test is designed to assess if participants can make sense of non-prescriptive informal design and construction processes and encourage participants' personal interpretation and additional thoughtful of the different principles (*Issues of Scarcity*) of the complex condition of life of ScarCity settlements in Mexico. In addition the game is designed to test the practical use of identified lessons as a source to inform an alternative design process. In other words the test attempt to address the following questions: how such lessons and suggested design tactics can be interpreted by an architect to offer an alternative? And what can be the revised role of the architect within the ScarCity context?

The advantage of testing scenarios 2a-2b, instead only previous scenario 1, is that by simulation with different students the outcome of the game remains independent of the author. If the author is involved in the test, he can pass to play the role of agent-coordinator rather than taking control at every single step. This role could pass to a proficient participant or a participant who wishes to test his skills as an agent-coordinator. This means that in the end the author can only be a spectator and the proposal can be tested more objectively. As a consequence of student's involvement, new variables never founded in the research by design stage (Chapter 6) can come into play due to the different character and unpredictability of each participant. In order to evaluate intended objectives, an additional tool, based in statistical analyses data such as participants' questionnaire was also designed¹⁰.

Consequently this test requires the involvement of the author as a coordinator and the students as the main participants in the test design simulation.

Why first use students and not those linking in the condition being explained?

It is worth mentioning that if the 4th objective would have been necessary to test, this means a tool for a **professional** practice which involves those linking in the condition being explained, a common practice in social science studies i.e. social physiology or sociology which are close to this study, is to begin a first stage of testing with students' participants in the field in early stages before testing takes place with real users. Next, a second stage is necessary to keep improving the proposal with the same students before a third stage of testing with real actors of the context takes place. Commonly time of this third stage can take up 3-4 times of previous stages to develop a systematic series of steps and requirements¹¹.

¹⁰ Lovie, A. D., Ed. (1986). *New Developments in Statistics for Psychology and the Social Sciences*. London, The British Psychological Society and Methuen.

¹¹ Rennie, L. (2009). *Testing in Social Science*. A. Becerra. Sheffield.

In the design of this test, involving participants from the communities concerned is not at this time part of the objectives to be tested for practical reasons. The testing of this additional 4th objective is appropriate in the future, it will be considered as a Post Doctoral research having as a foundations the results of this dissertation. Consequently, a specific test according to community participant's characteristics has to be designed. The same applies in future tests with other students from different background. It is observed that different audiences will learn different objectives from the game tool. As a result different inputs and different methods of evaluation are necessary. However it could be mentioned that by implication of testing the initial 3 objectives, the first and second stage of the 4th objective -a tool for a professional practice- are also covered.

In addition, one of the main reasons for testing the proposal with students of architecture is that; it is believed there are many crucial ways in which the architectural theory, education and practice in developing countries such as Mexico and even in western countries, such as England (in this example), could learn from aspects of *Traditional Vernacular and Informal Modernism practices used by many people in Africa, Asia and Latin America*¹². As previously mentioned, one inspirational argument of this argument is Rem Koolhaas' case study of the African City of Lagos. Koolhaas argues that one can learn from its anarchic-chaotic organisation, empirical logic and functionality rather than by its folkloric authenticity¹³. One criticism of Koolhaas' theory is that it is not strongly reflected in his architectural designs practice. Maybe it is because his understanding of non-western architecture is still embedded within Western traditions of Architecture. As a consequence, it is argued that it is necessary to explore methodologies which make clearer the non-western path of design process and create a stronger link to its practical application.

In this case, the availability and enthusiasm of students of the school of architecture of the University of Sheffield were a key factor in choosing them as participants to explore alternative methods of the non-western path. Nevertheless, before designing the final test for testing the aforementioned objectives, it was first important to understand briefly participants' background. In specific, how the industrial revolution had played a key role in the whole process of building construction transformation in western countries.

Background of participants in the test

As a result of the Industrial Revolution, the shift to urban and machine based manufacture led to the decline of non-industrialised skills in Britain compared to the prevalence of non-industrialised skills in the global south¹⁴.

At the same time, along with the loss of this tradition, other architectural processes were also lost including traditions of self-building and communal sharing. These have been replaced by huge advances in knowledge of materials and structural engineering and by specialisation in the building trades and professions, by increasingly complex and demanding regulations, and by a specialist housing market, serviced by an army of estate agents, solicitors and

¹² Ribbeck, E. and S. Padilla (2002). *Informal Modernism Spontaneous Building in Mexico City*, Heidelberg.

¹³ Koolhaas, R. (2004). "Case study of the African postcolonial city of Lagos."

¹⁴ Roderick Floud, D. N. M. (2004). *The Economic History of Britain Since 1700: 1700-1860* Cambridge, Cambridge University Press.

conveyors¹⁵. It is a process controlled by 'experts' which evolves more and more in its own bubble losing connection with the final users¹⁶. The concern is that these are the main forces actually defining architectural practice and as a consequence architectural education too.

It is demonstrably fine that in the present scenario the individual citizen for whom it is economically viable to become a player in the housing market has very little to say in the processes involved in housing. Typically, he/she is disempowered and kept at arm's length from these processes¹⁷. Typically, people are not involved in the design and building of their own accommodation. Furthermore, as for those who cannot afford a mortgage, they may well end up homeless or, at best, living in severely inadequate housing conditions. The present economic crisis of 2008-2009 has shown the vulnerability of the actual economic system as a 'perfect' path credit. Just four decades ago the affordability of a basic housing was higher than today, despite the existence of fewer banks and financial structures to support credit. According to the Department of Communities and Local Government the all-time high price for an average home in the UK was £219,256 in September 2007. This figure, even after adjustment for inflation, was over 60 per cent higher than in 2001 and four times that of the late 1960s (fig. 7.4).¹⁸ Self-building or other alternative movements such as the Portland's movement of the 1920s, and 1930s, for example, are today a very small phenomenon.

Moreover, in fact there is very little choice in the field of housing. We have seen standardised high-rise system-building solutions promoted by estate agents for urban housing needs which have also been adopted in the developing countries like Mexico. Today in Britain, some of these high-rise blocks from 1960s and 1970s are being demolished as they are now considered to be unsuitable for human habitation. This practice is becoming more common nowadays; as a consequence, the current society considers 'demolition' as normal architectural practice rather than architects' lack of long term vision. Creating flexible spaces that could be used to sustain future life style changes is commonly less well explored¹⁹. In addition, the typical housing unit has become a mere commodity as a result of huge land speculation. The well known 'box room' of a lot of housing is the best example of a vast decrease in space size standards. Similar arguments were pointed out by the selected team of the British Pavilion for The Venice Biennale 2008. One of the problems explored by the exhibition was the effect of the long-term domination of UK housing by private sector developers²⁰. Finally, in the West, where there are almost unlimited technical and economic options, there is also a lot of superfluous use of resources in construction and building performance. The building stock in England is actually responsible for 50% of energy consumption, emitting a huge amount of CO2 which is contributing to climate change²¹.

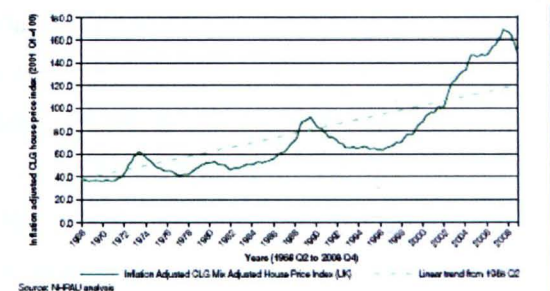


Fig. 7.4 Increase in housing prices in Britain from 1968 till 2008. Source: NHPA

¹⁵ Mitchel, A. B. a. M. (1992). Culture, Cash And Housing: Community and Tradition in Low-income Building, VSO.

¹⁶ Habraken, N. J. (1998). The structure of the ordinary : form and control in the built environment. Cambridge, Mass.; London : , MIT Press, .

¹⁷ Mitchel, A. B. a. M. (1992). Culture, Cash And Housing: Community and Tradition in Low-income Building, VSO.

¹⁸ NHPU (00). Affordability – more than just a housing problem. London, National Housing and Planning Advice Unit: Housing awareness for the future

¹⁹ Till, J. and T. Schneider (2007.). Flexible Housing Amsterdam ; London Architectural Press, Elsevier.

²⁰ Council, B. (2008). BD survey: Is the UK in a state of housing crisis? , BD's buildings editor

²¹ Smith, P. F. a. A. P. (1997). Building for the third millennium, London:Batsford.

For example, if one compares the field of architecture to the field of medicine in the last five decades in regard to their human/social contributions, architecture has a depth. While the field of medicine has increased people's life expectancy by 10 years, and made medicinal knowledge more accessible for the masses, architecture (even with a lot of technical improvements in the field) has allowed making the basic housing standards smaller and less affordable²². It is suggested that some of the aforementioned challenges should be added to the sustainability agenda to be addressed at the same time. Issues related to technical and environmental sustainability are included in the sustainable agenda, but missing are other important social and economic issues that take a more holistic approach.

In contrast to the industrialised western condition accustomed to a 'top down' pattern, civil order, urban law and 'perfection'. Since post-colonial times the Mexican context has reversed this trend in certain marginalised areas of the population due to its chaotic history. According to the Mexican critic Alejandro Ramirez Ugarte, after independence in 1810 and even so more after the revolution of 1910, "authority loses relevance and is unable to enforce the law, often due to lack of means and resources".²³ Ramirez-Ugarte goes onto clarify:

"The 'bottom' end of society obtains control of areas that are fundamental to their survival and welfare: urban commerce, land for housing, and productivity, and ways of avoiding taxation, to mention a few".²⁴

After Mexican industrialisation between the 1940s and 1970s, this condition has been exacerbated rather than reduced out. The biggest Mexican cities such as Mexico City for example became a refuge for migrant masses of the countryside, looking for new industrial jobs. Informality turned into the most common path of survival for immigrant communities. Present and future scenarios don't seem to be changing, instead it is predicted that informality will carry on increasing. Estimations suggest that in the coming decades 2035-2050 living and functioning within informality will continue to be the most common pattern in Latin American cities.²⁵

In this sense, the testing simulation of this context through the mechanism of a board game offers fertile ground for exploring such issues. Ramirez-Ugarte argues that rather than neglect and observe the informality with prejudice, the Mexican example offers a learning opportunity for students of western countries. This relays in the fact that informality can be approached from a foreign or contrasting view point which is not involved by local concerns. As a result the main issues can be identified.²⁶ In other words, there are valuable lessons to be learned from the experience of the global south that can have relevance to the global north.

Considering that this is ultimately a game it is important to highlight that it will not be possible to provide a proven 'formula' for success. Rather it offers an exploratory example of further understanding of the condition of scarcity settlements in Mexico and testing the strength of the research by design tools that may be useful in a revised form of

²² For a detailed set of statistics see Government, O. f. N. S. C. a. L. (2009). British Housing in numbers.

²³ Ramirez-Ugarte, A. (2008). Reflexion. Opportunistic Urbanism. D. R.-. Lovering. Melbourne, RMIT University Press. Pg. 7

²⁴ Ibid. pg. 7

²⁵ Ravallion, M. (2001). On the urbanization of Poverty. Washington, World Bank.

²⁶ Ramirez-Ugarte, A. (2008). Reflexion. Opportunistic Urbanism. D. R.-. Lovering. Melbourne, RMIT University Press. Pg. 8

architectural practice. Future challenges call for a new generation of architects capable of dealing with these issues by breaking down boundaries. Very few have broken the traditional architectural value system by looking towards non-west or undervalued environments in order to bring alternative solutions into practice.

The theoretical understanding of the design of this final test is inspired by a study of the Swiss psychologist Jean Piaget concerning human development called "*Intellectual development from the adolescence to adulthood*".²⁷ Piaget's main argument is *Extended Equilibration*, which attempts to explain what shapes cognitive development, where assimilation is balanced with accommodation. Piaget explains how new experiences are absorbed into current structures of understanding and how such structures have to change to make sense of the new experience. The interpretation of Piaget's theory inside the design of the test of Architecture of Scarcity can be understood as a necessity to explore the unknown, unvalued or marginalised context of the population in order to assimilate its lessons. It is assumed that such lessons should produce in student participants a confusion which they next need to allocate as a new kind of knowledge, reaching the stage of *Extended Equilibration*. After such stage a new mental construct should lead to an application of the lessons developing its contributions to the field. For this purpose or in other words for testing the 3 previously mentioned objectives the game tool and all its elements is considered to promote "Equilibration".

Designing the test

The proposal was considered applicable to the educational needs of the first year's students (K-100 class 08/09) and March student's (Studio 11- 08/09) of the school of architecture at the University of Sheffield. With respect to first year students the main assumption discussed with the coordinator was that according to his previous experiences, the majority of new students arrived at the school with a mental construction of the '*traditional hero architect*'. This means that those arriving wish to design monumental buildings inspired by 'celebrity' architects. Regarding to the majority of most senior students of the March, even so they are familiarised with non-western processes, they commonly understand this process as a set of features that inform a stylistic approach. One concern with this approach is the misunderstanding of more complex fluxes of the process which shape the built environment.

In this sense, the opportunity to test this proposal with both students was seen as an option to interrogate their personal mental constructions through cognitive processes of disruption and confusion. It is in this state of discomfort and confusion that the student can acquire some sense of what Piaget calls *Extended Equilibration*. As a consequence, it was believed that it is probably in this position that students can begin their own criticism- thinking in different ways beyond traditional boundaries. In addition, it was also considered an invaluable opportunity to obtain feedback from them which will later inform and evaluate the final proposal. In addition, some PhD students and members of the staff were also included with the aim of receiving additional criticism which would inform the final proposal.

²⁷ Piaget, J. (1972). "Intellectual development from adolescence to adult . Human Development." Piaget, J. (1999). "An Exposition of Constructivism: Why Some Like It Radical."

Methodology for testing

The exploratory design tests were planned into smaller groups of 4-8 students in order to make the sessions more manageable and personal. The main aim was to create a friendly environment for discussion which supported the changing of roles between the agent-coordinator and settlers-participants. Students were persuaded to take part in the session by expressing their own ideas. The number of selected students in each group was small enough to have a close and direct discussion but large enough to create an interesting exchange of ideas and criticism. The aim was to test the intended objectives with over 50 students. According to Jacob Cohen expert in statistical issues in physiological research, this kind of test can be tested with 10, 30 or 50 participants, small, medium or large respectively.

Jacob argues that the larger the sample of participants is the less error in variables exists²⁸. All the test activities were planned to be carried out over the minimum time of 75-90 minutes; however some participants kept playing an average of 30-45 additional minutes. The record longest session was 2 hours and 45 minutes. The test was designed for participants to play in two main stages plus introduction and conclusion.

Test stages

- a) **The introduction** of the session was composed of a 5 minutes visual PowerPoint presentation. It included a rich mix of quotations coming from the theoretical part of this thesis and visuals to set the context. Simple exercises were used as starting point to provide clarification of the theoretical concepts.
- b) **The first stage** and further developing understanding of the condition of scarcity settlements, also entitled "**Pre-agency**" addresses what can be learnt from the existing features of the architecture produced by a condition of scarcity? This stage helps the participants to understand why, even under the condition of scarcity, there is a huge amount of architectural production. In other words, this stage of the game aims to teach the participant some lessons –Issues of Scarcity- in building your housing or neighbourhood even when you do not have all the necessary funding to do it in one go. Even without state agencies, bank support, mortgages or huge savings. At the same time it is expected that participants develop or identify further lessons. This is a stage mainly driven by **chance** (fig. 7.5.) Between 15-25 minutes were required to cover these issues.
- c) **The second stage** and testing the validity of founded lessons and designed tools, also entitled "**Post-agency**" addresses how such lessons and suggested set of Design Tactics can be used to challenge contemporary architectural design process production. For example, this means the possibility of working progressively by "improvised or imperfect" processes. This stage introduces the participants to the revised architect's role inside these marginalised communities which is represented by the Agency. Participants learn how the condition of scarcity might inform an alternative sustainable design process. They can also learn how the Agency promotes the use of such lessons to alter the design process once collective resources are pooled. This stage tests if the Agency makes a difference to organisation, the power of collective endeavour, access to other types of skills & resources and economies of scale. In short, this stage also encourages the participant to question what can be

²⁸ Cohen, J. (1992). "A Power Primer." Psychological Bulletin 112(1): 155-159.

the added value of working with the Agency. What could make the built environment different with the Agency's intervention? What could be the Agency's main contribution? How could the Agency accelerate an alternative process? This stage also suggests accepting chance as part of design process however put forward **strategy as** the main new driver of intervention (fig 7.5). Between 35-40 minutes are necessary to cover this stage.

d) **The Questionnaire and final discussion** of the session was composed of 5 minutes at the end. In this stage students expressed their ideas and rationale behind their final Architecture of Scarcity's production. At the ending participants are asked to complete a questionnaire giving general perception about their experience. The questionnaire was designed as an additional tool to assess how the whole experience works and if the main objectives were covered. Students took an average of 5 minutes to complete all the questions.

The questionnaire

According to Bell a researcher in social behaviour in the field of built environment, one of the most effective ways to measure if objectives are transferred is by asking participants directly²⁹. Some authors suggest that it is through questionnaires and interviews that this process of gathering information can be achieved, and particularly when it is dealing with built environment evaluations where verbal descriptions are likely to be useful³⁰. This questionnaire was designed to be as uncomplicated as possible in order to make it easy and quick for participants to respond (fig 7.6.) The first part of the questionnaire consisted of multiple choice answers. The second included simple yes or no answers. Finally open-ended questions for suggestions were included³¹. The large amount of data generated will be simplified into a limited number of variables. Next, the answers will be evaluated through SPSS (Statistical Processor System)³². An example of questionnaire and resulting evaluation can be consulted at Appendix 7



Fig. 7.5 **Chance** was represented by a dice in the first stage. For the second stage **Strategy** was also represented by a new dice that leads to the introduction of different environmental, technical, social and economic programmes of support.

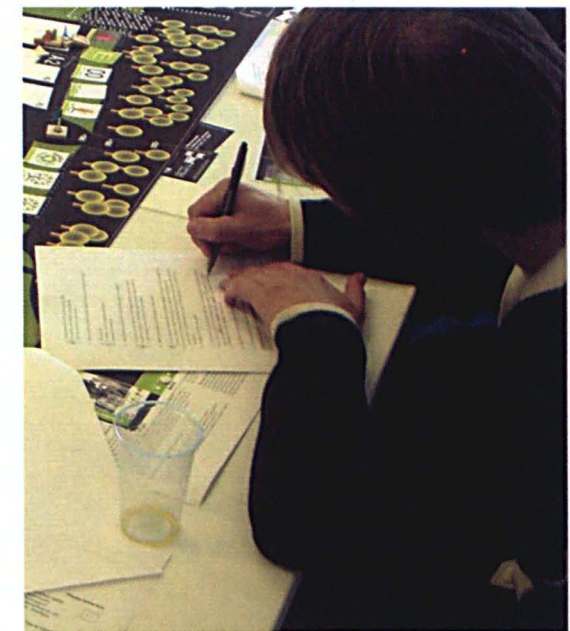


Fig. 7.6 Student answering the questionnaire after the end of one session. Photograph by the author

²⁹ Bell, S. (1999). *Landscape patterns, perception and process*. London, E & FN Spon.

³⁰ Stea, R. M. D. a. D. (1973). *Image and Environment. Cognitive mapping and spatial behaviour*. Chicago, Aldine Publishing Company.

³¹ Bradburn, S. S. a. N. M. (1983). *Asking Questions : A practical guide to questionnaire design*. London, Jossey-Bass Publishers.

³² Greene, J. (2006). *Learning to use statistical tests in psychology* Open University Press.

7.4.1 Final Plan of the Testing Session

The final plan of the session was presented as follows:

Type of activity	Testing Workshop
Title of the thesis	Architecture of ScarCity
Title of sessions	The Architecture of Scarcity Game
Expected no. of students	4-8
Length of session	75/ 90 min.

Aim of the session The main aim of this session is to introduce the practical application of the concept of Architecture of Scarcity in the field of architecture. Students will be encouraged to further understand the conditions in different undervalued areas of the Mexican population such as: Traditional Vernacular, Informal Modernism and Semi-Informal Modernism. Also participants will test the practical application of researched lessons and designed tools supporting suggested alternative design process.

Intended Learning Obj. To promote/ encourage

- Thinking beyond the actual values of architecture
- Critical observation of undervalued areas of the society and learning from them.
- An exploration of the limitations offered by a context of "ScarCity" as a fertile ground for creativity.
- Further developing understanding of the design process of Scarcity as an alternative for some of the challenges facing architecture today
- Understanding the possibilities for revised architect's role
- Testing the validity of founded lessons and designed tools
- Promoting Creativity through challenge

Equipment and Materials: PP, data projector, The Game of Architecture of Scarcity, Still camera, Video camera, refreshments.

Main activities.	Min
• Allocation of students	5
a) Introduction and signing of consent form	5
b) Pre- Agency stage	15-25
c) Post- Agency stage	35-40
d) Questionnaire, Final Discussion & Conclusions	10

Total 75-90 min approx.

Additional issues before final testing.

It is necessary to explain in brief the in-house process and previous arrangements involved in gaining approval for the final testing. These issues included preliminary pilot tests, ethical approval, consent of coordinators, recruiting of final participants and technical arrangements.

Preliminary pilot tests and refinement

The first act of exposing the first prototype to a larger audience within the school was done through friendly sessions (fig 7.7.) These were organised with other PhD colleges and random meetings with students of the school of architecture. Also friends and family members were helpful in testing the prototype. They would play along, but sometimes, in the middle of the session it was noticed that the game wasn't working properly. Another time the sessions were too long losing focus on the main issues. After each of these sessions, the author would haul the game back for further refinement. Some example of such modifications included: change of board layout, change of instructions, addition of new elements or instructions, elimination of some steps, etc. This process was repeated over the course of 2 previous months. This means that the proposal has been built organically -introducing a suggested element here, tweaking an element there- until it achieved a more balanced and refined experience to test the intended objectives.

Ethical approval

The School of Architecture has a procedure to evaluate proposals of research students who plan to undertake a research project which will involve people participating in research through its ethical approval department. The main aim of the process is to write all the details involved in participation and avoid any possible risk to participants³³. Also it aims to establish participants' consent for future use of the information gathered. The first part of the application includes the review of the ethical application form. On one hand this form clarifies the main issues of the research test such as abstract, aims and intended objectives. On the other hand, it explains that there is no potential for physical and/or psychological harm/distress to participants. Also it asks what measures will be put in place to ensure confidentiality of personal data, where appropriate. Finally it is also explained how the research involves the production of media such as audio and video recordings. Additional information of the package includes a sample of participants' questionnaire, participants consent form and information sheet³⁴. In this case a power point introduction was also designed to transfer the initial instructions. After four weeks of consideration and revisions, the ethical board finally approved the project (See letter of approval in appendix 4).

Consent session of coordinators in charge and recruiting of final participants

Before recruiting the participants, a session with coordinators in charge was delivered which gave their approval. The main participants of this project were 1st. year and MArch students of architecture. They were recruited through their

³³ For further information also see Council, E. a. S. R. (2008). Research Ethics Framework.

³⁴ Ethics, U. P. a. P. f. R. (2009). "University Research Ethics Application Form For Staff and Postgraduate Researchers", 2009, from www.shef.ac.uk/researchoffice/gov_ethics_grp/ethics/factsheets.html



Fig.7.7 Friendly session for testing one of the first prototypes at the room 18.1 of the Arts Tower of the University of Sheffield

main coordinator. Also members of the staff of the 1st year and MAch of the school of architecture of the University of Sheffield were recruited in the same way. Finally, a group of PhD students from architecture and other backgrounds were invited directly. All the sessions took place at room 15.D at the Arts Tower of the University of Sheffield.

The final calendar of participants and place for testing the simulator was as follows:

No.	May-09	Time	Participants	Expected Number	Final Attendance
1	6th	11.00-12.30	1 st year	6-7	5
2		1.30 (12.45-3.15)	1 st year	6-7	6
3		3.00 (3.30- 5.15)	1 st year	6-7	6
A	7th	11.00	Graphic designer	1	1
4		1.30-3.15	1 st year	6-7	6
5		3.45-5.15	1 st year	6-7	4
6	8th	12.00-2.45	MArch	6-7	5
7	18th	12.00-2.00	PhD Students	5-6	5
B	19th	10.00-11.30	1 st year Tutors	4-5	4
C		2.00-3.45	MAch Tutors	4-5	3+1
8	20th	11.00- 1.00	1 st year	6-7	5
9		3.00-4.45	MArch & 1 st year	6-7	4
D		6.30-8.00	March tutor	1	1

Total students= 48

Total members of staff= 10

Technical arrangements

Final technical arrangements included the proficient use of still camera and video camera to record different sessions. Also a data projector was necessary to present the Power Point introduction (fig. 7.8).

Additional key principles of the mechanics of the game

Additional key principles related to the mechanics of the game eg. Numbers of players in each session, the different boards and what the boards represents, what are the rules or instructions, pictures of the productions of the sessions, how is chance built into the game?, and in short general results are explained in detail the next Chapter 8



Fig.7.8 Technical arrangements ready to start the testing at the room 15.D at the Arts Tower of the University of Sheffield

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Testing the Architecture of Scarcity Game



"It is just a game, but a meaningful game"

PhD Student, School of Architecture

Introduction

After learning a set of lessons about the Traditional Vernacular, Informal and Semi-informal Modernism practices through the studied communities and designing various tools with them, a set of key questions arises. These are: how to address the issues that this set of circumstances give rise to? How such lessons –*Issues of Scarcity*– and suggested design tactics could be used to challenge contemporary architectural design process production? How a new breed of architect could operate and how possible contributions from this architect to this context could be tested. It seemed that the *Architecture of Scarcity Game* would be useful tool to demonstrate the actual dynamics of informal processes and at the same time speculate about interventions through the *Architecture of Scarcity* approach. In other words, the game not only gives the possibility to incorporate the different circumstances of the conditions of scarcity for further understanding, including intangible forces such as contingency, unpredictability and chance, but also gives the opportunity to explore, simulate, and speculate the possibilities of architectural contributions based on opportunity, creativity, strategy and playfulness. The game incorporates all of these other factors that are part of the world of design but which conventional design methodology had generally tended to erase.¹ A game is a way of incorporating additional forces and elements founded through research that finally intervene in shaping this built environment. This means representing, exploring and testing the validity of identified lessons of the informal design dynamics through the development of the game. It was initially first developed using one particular theme (The Traditional Vernacular) but ultimately two other case studies (Informal and Semi-Informal Modernism) were incorporated. Each one simulates an example of the most common spatial models of informal practices in Mexico. Even so, the spatial model is useful because it influences the final product through different kinds of buildings expressing informal structures. Actually, that is not the final point of the game. The point of the game is the simulation of the entire process of informal practice, including human dynamics of local citizens challenged by scarce local conditions of a specific spatial model. A further objective is to observe how this dynamic process controlled by citizens can be mapped and then enhanced by a revised operation of the architect. Additionally its purpose is to express how this dynamic process can be transferred to another similar context. For example, it can be also useful in other Latin American similar contexts or even in marginalised areas of developed countries such as UK for example. In short, the game is a simulation of dynamics of the 'kinetic' city² in Mehrotra's terms and the possibilities of a revised architectural process to speculate how strategic thinking of the architect can have alternative applications in a process which acknowledges citizens 'tactics'³ and everyday 'contingency'.⁴

Before explaining the first instructions given to participants on how to play the *Architecture of Scarcity Game*, it is worth explaining in brief its own design process in order to obtain a clearer understanding of what this game is about.

¹ Till, J. (2009). *Architecture Depends* Cambridge, MIT Press.

² Mehrotra, R. (2009). Foreword. *Rethinking the Informal City: Critical Perspectives from Latin America*. P. K. a. L. K. A. Felipe Hernandez. New York- Oxford, Berghahn Books.

³ Certeau, M. D. (1974). *The Practice of Everyday Life*. Berkeley, University of California Press.

⁴ Till, J. (2009). *Architecture Depends* Cambridge, MIT Press.

The journey through the design process of the Architecture of Scarcity Game

The journey through the design process of this game could in some ways be seen as having been developed intrinsically by a 'design process of scarcity', if one compares it to the 'traditional design process'. Expanding this point in more detail means that under -traditional design process- the architect works through a linear or determinate path. This means that the architect labours under the belief that she/he has systematic control of procedural rules to follow⁵. In the words of Sarah Wigglesworth "The traditional architectural inclination is to take a set of "raw" ingredients and produce his building design following a recipe".⁶

Secondly, the architect will probably simulate possible scenarios to predict different risks or outcomes, or maybe consult a related bibliography. Thirdly, he/she will develop his 'optimal' design without limitations. Finally he will claim all economic resources to afford all 'necessary' elements in order to develop his proposal exactly as it was designed. This is because architectural ideology holds the will of the creator (their creativity) to be sacred and something that should be allowed free reign.⁷ However, one of the main concerns as it has been argued in previous chapters is that under this perspective an excessive amount of resources are necessary to make this proposal feasible. Also, a level of limitations can exist due to the lack of consideration of additional issues related to the 'unpredictability' of the users' interpretation⁸. The main concern about this approach is that it confuses an original contribution with the capacity for control. In other words an approach produced by entirely controlled design process does not necessarily mean a new contribution to design knowledge.

In contrast, the *Architecture of Scarcity Game* was intrinsically developed under the 'design process of scarcity'. In this case a preliminary design stage was developed, although it only focused on understanding the basic elements of the design process rather than on the final product (fig. 8.1). This means analysing the spatial model of interaction, available human and natural resources, and the dynamics of its relationship.⁹ Additionally, the game was further developed by limiting the exploration to the available, recycled materials. Subsequently, through researching the issues that arose, they were examined and simulated until a satisfactory stage was reached (fig. 8.2). In other words, the key elements of the informal design process of traditional communities were identified providing the opportunity for them to be manipulated to affect the resultant outcome structures.¹⁰ At this stage the informal design process and possibilities of the architect's intervention were demonstrated. This was developed organically and with openness to modification. In this process, improvisation and imperfection were an integral part of the design tactics.

Explaining this point further, a set of improvised materials such as pins, pieces of wood, pennies, different empty boxes, recycled paper and magazines, etc. were used at the preliminary stage to identify basic elements, test key ideas of

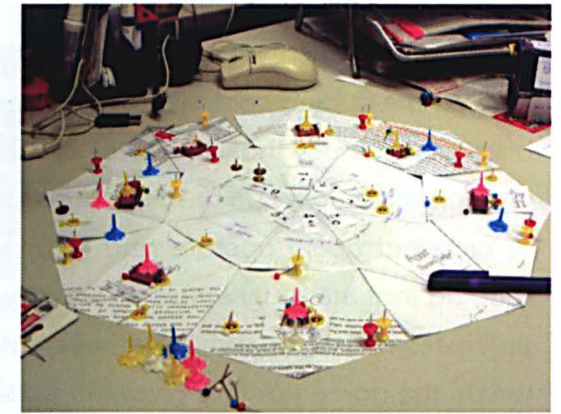


Fig.8.1 Prototype figuring out the first ideas of the process



Fig.8.2 Impressions of a more developed prototype



Fig.8.3 Basic materials were used to develop the first elements of the proposal

⁵ Jones, J. C. (1990). *Design methods*. London, David Fulton Publishers.

⁶ Wigglesworth, S. (2005). "Critical Practice." *The Journal of Architecture* 10(3): 335-346.

⁷ Habraken, N. J., Ed. (2005). *Palladio's Children Essays on Everyday Environment and the Architect*. New York, Taylor and Francis.

⁸ Till, J. (2006). *The architect and the other*. *Open Democracy*: 5.

⁹ Preez, D. (1984). "Basic socio-economic elements of development theory for traditional societies." *Development Southern Africa* 1(1): 36-55.

¹⁰ Ibid.

the process and produce the first prototype (fig. 8.3). Furthermore, recycled catalogues, magazines and cardboard boxes, materials on sale or that were accessible, refilled printing cartridges and donated paintings, were used to develop the prototype further. As a consequence, some sizes were negotiated between the design and volume of recycled materials, colours, types or what was available. Also, some pieces from older games were adapted. An aptitude for the reconciliation of contradictory elements was a compulsory skill. For example the use of mixed media modern-traditional was used; materials such as plastic were mixed with more 'traditional' ones such as wood. In summary, the designer was working with what was available rather than against it. Consequently, neither homogeneity nor any specific features of a specific 'style' appeared in the initial game sample. As a result, the first prototypes were probably seen as imperfect objects, not produced by a 'good designer'. However, the key concept of the process was understood (fig. 8.4). Finally, different prototypes were refined and tested by a process of filling in the gaps with the knowledge gained through listening to the questions and suggestions of critics and participants (fig. 8.5). Their opinions both about the physicality and the mechanics of the prototype were crucial to its development. Through doing this the proposal was able to evolve little by little. In the final analysis it became clear that the input of the participants proved to be indispensable to the evolution of the prototype and in turn, the creation of the final, improved artefact.

From a 'traditional design process' perspective, the aforementioned process could itself be viewed as a 'design process of scarcity' or of limited resources. It would be possible from this perspective to consider that this research simulator may have suffered from a lack of economic resources which would provide for all necessary materials for its development, or perhaps the designer's inability to follow a straight path. As a consequence this can be classified as an 'imperfect' 'chaotic' or indeterminate design process (fig. 8.6). This is especially pertinent if a designer cannot have control over all the elements that he is used in a determinate design process (fig. 8.6). Nevertheless, from a non-western perspective a 'design process of scarcity' can mean the first step of the design challenge using the limited and minimum resources available and secondly if there is the opportunity, to ask for more sophisticated resources if it is really necessary. It is possible in this scenario that the author was subconsciously suffering from the non-western tendency not to dispose of any material simply because it had stopped working as it was originally designed for. Instead, the first action was to try to find other uses for this considered 'waste'. In other words, the design process of the *Architecture of Scarcity Game* was intrinsically using a design process of empirical practice in Mexico. This experience highlighted the possibility of a non-predetermined process that has not total control upon all factors. It thereby demanded a methodology that had no clear end. Generally speaking from the perspective of the global south in these specific areas of limited resources, this process is part of everyday life and the only choice for their citizen.

As a result, the main aim of this speculative simulation is not to romanticise scarcity and its design process but, rather, to learn the main lessons of this challenge including how the process could be enhanced by introducing support from an agency. It is hoped that through this exploration some key principles will emerge.

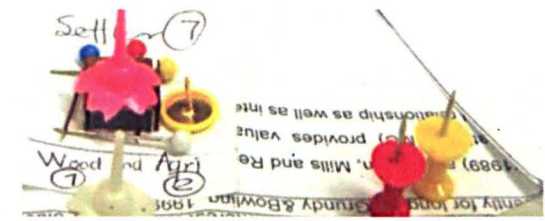


Fig.8.4 Impressions of the architectural production of the first prototype



Fig.8.5 Impressions of a more consolidated prototype

Conceptual Diagram Comparative between Indeterminate and Determinate paths of the design process according to different circumstances A, B, C, D or X,Y,Z

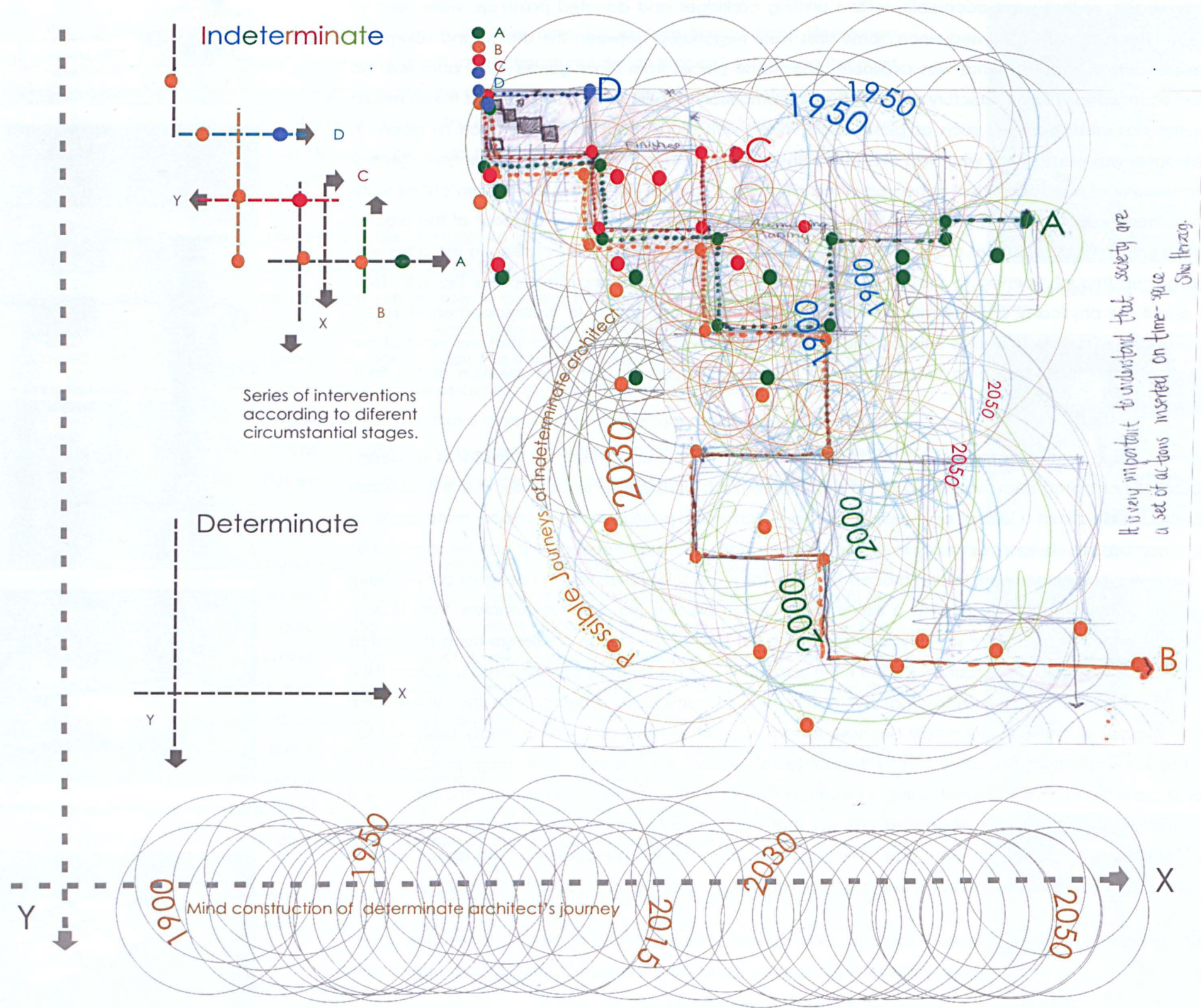


Fig. 8.6 Conceptual Comparative of the traditional process of design and alternative process which follows a series of interventions according to different circumstances.

The Experience Testing the Game

The following reflections have been written based on the research carried out in this field and the experience of testing the intended objectives through an interactive game as a methodology and medium for exploring different scenarios. It reflects upon the speculative approach that simulates the conditions of 'chance' in informal developments in Mexico and speculates about possible interventions. This experience has helped, critics, participants of the School of Architecture at the University of Sheffield and the author to understand further the design process of scarcity in communities in Mexico and test the practical use of founded lessons and designed tools.

In parallel to the game test experience presentation, the author has collated important information obtained from study of number of real life examples entitled 'the stories of itinerant architect journey' already explained in Chapter 6 (fig. A.3). This has two objectives; one is to set up real context and second shows evidence of the possible applicability of the Architecture of Scarcity approach into live projects. The elaborated case study, which the author has placed in the grey boxes below (pgs. 240, 241, 245, 284 and 285), is inspired by real interviews, research and observation done in the field; hopefully this will help readers to establish clearly real life context. In this way, the game could be seen as a metaphor for the settlers' 'game' that is intrinsic in the ongoing process of non-prescribed architectural design. Chance (or opportunity) is a fundamental feature of informal settlements and as a result, is the pivotal quality of the game. Participants shall learn this message and as the game goes on, it is hoped that through this metaphor the game may go beyond its own mechanics, helping us to understand the more complex dynamics of these settlements.

It is important to state that majority of the authentic data such as names, addresses, employment, etc. of the people presented in this chapter has been changed due to confidentiality and ethical requirements. The author gratefully thanks their openness and enthusiastic participation which helped to construct and share their stories. Finally it is also necessary to remember that everyone can have their own personal approach or interpretation to understand such issues. In this sense the aim in writing this chapter was not to provide a step by step guide to understand the non-prescribed design processes. Instead, it was to offer interested people a source of inspiration. It offers an alternative method of simulating design scenarios that do not rely on traditional models of professional control.

Different phases of the test

The key phrases of the game test sessions were: **a) Introduction, b) Pre-Agency stage, c) Post-Agency stage, d) Questionnaire & Conclusions.** The additional methods for interaction with the participants involved peer or group discussion and group exploration by creating challenging scenarios. This aimed to generate situations for breaking stereotypes or breaking down boundaries. Contrast and discomfort were used to challenge the participants to think in different ways and thus promote creativity through challenge¹¹.

¹¹ Parrack Livingstone Linda , P. L. E. a. C. G. R. (2002). "Promoting creativity through the logic of contradiction." *Journal of Organizational Behaviour*(23): 321-326.

a) Introduction to the Architecture of Scarcity Game session.

After having ready all the elements of the game to start the test session, participants were invited to take part filling in the ethical requirements forms such as reading the information sheet and signing of consent form (figs. 8.7). (See full version of Letter of Ethical Approval, Information Sheet and Participant consent form in appendixes 4, 5, 6.) Next, one of the most important issues in the introduction (first 5 minutes) was to make part of the 'heavy' theory easy to understand, especially for new students who do not have a huge knowledge of it. As a consequence, special emphasis was given to the introductory visual slides through a Power Point Presentation. These visuals provided examples of real conditions in live context i.e. photos of the concerned case studies. These examples were analysed in order to identify the key issues to explore by the game such as communities without adequate services and amenities. Also different quotes from the theoretical part were presented as a backup and to start challenging participants mind construction. For example George Batailles quote,

“While individuals and their economies are necessarily governed by **scarcity** and efficiency that living matter in general is governed by the steady and luxurious flow of energy from the sun, which must be expended either in growth or in some form of luxury”.

In addition, it was explained how different elements of the life context were abstracted in order to become part of the game. For example the layout of the traditional vernacular town of San Antonio, Mexico was carefully studied before to be abstracted as part of the game (fig. 8.11). Careful explanation was given to explain how other two main case studies inspired their different board layouts. At the same time the different elements comprising the game were explained (fig 8.8).

Later, the possibilities of a new architect's role and the potential contribution of his Agency were discussed. There were also some practical examples such as practicing professionals interacting with similar context. One interesting example was a project in Iquique Chile, designed by Elemental, who suggested a design of low-income housing with not clear end and open to modification (figs. 8.9) Elemental acknowledge the use of citizen's tactics as part of housing design evolution. Finally the participants were given the first instructions to start playing the game.



Figs. 8.7 Above: Architecture of Scarcity Game: Traditional Vernacular layout ready to start the session.

Bottom top: Participants of one of the Traditional Vernacular session filling a consent form and reading the introductory sheet.

Figs. 8.8 Bottom: Low-Income housing in Iquique, Chile by Elemental. Courtesy of Alejandro Aravena .

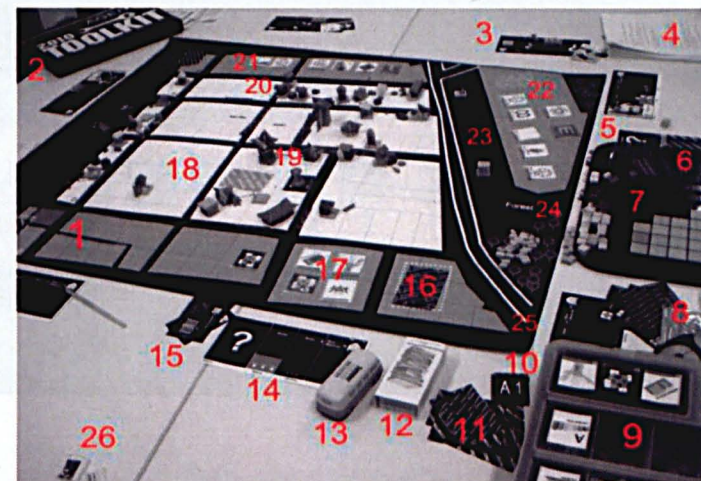


Different Elements of the Game (fig. 8.8)



1. Board Layout
2. Agent Tool-Kit V2010
3. Settler's base cards
4. Consent forms and questionnaire
5. Agent's card
6. Institutions of Support Tray
7. Locally available resources
8. Cards of Issues of Scarcity
9. Tool Box of available resources
10. Card of plot location
11. Cards of Contingencies
12. Catalogue of Design tactics
13. Itinerant office of architect
14. Settler's base card

15. Cards of Individual Family support
16. Cards of Community support
17. Socio-Economic programmes in action
18. Area of private land with one dwelling
19. Area of public land with various amenities
20. Participants production of Architecture of Scarcity
21. Environmental programmes in action
22. Technical programmes in action
23. River
24. Forest
25. Main road
26. Rubbish



The 3 boards

The *Architecture of Scarcity Game* was designed around three different board layouts in order to cover aims and specific intended objectives. The boards are abstractions of authentic areas in Mexico. Studies of these areas were used to invent the game's board layout. The first third (1/3) of the participants tested the Traditional Vernacular board based on the vernacular town of San Antonio Tierras Blancas, Mich. Mex. Next, the second third (2/3) of the participants tested the Informal Modernism based on the Informal settlement of El Punhuato, Morelia, Mex., and thirdly the Semi-informal case based on Villas del Pedregal, Morelia, Mex. was tested with the remaining participants. The boards are organised within 3 main zones. The 1st area corresponds to settler's zone, the 2nd area to the Strategic Framework and supportive tools of Design zone and the 3rd area is where the production of Architecture of Scarcity takes place. See the following figure 8.10



Process of development of layout boards



Fig. 8.11 Aerial photograph of San Antonio, Mich, Mex. The Traditional Vernacular case study. The main features of the town were identified through this layout.

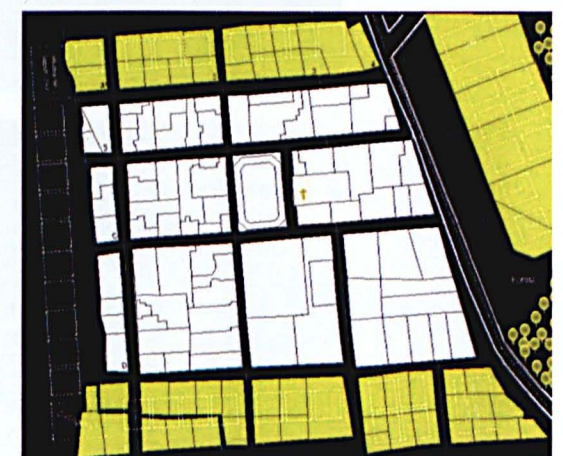
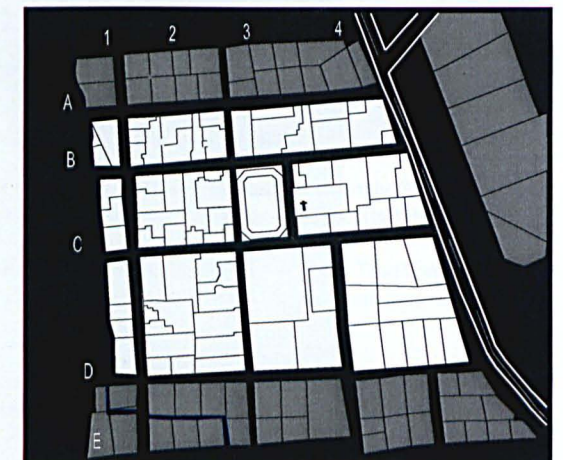
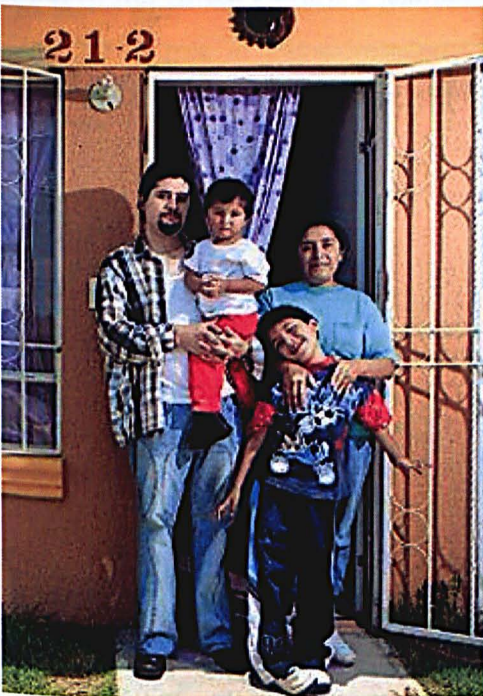


Fig. 12 and 13 Above: Basic layout based on settlement of San Antonio, Mexico identifying relevant zones and its translation to the board game.



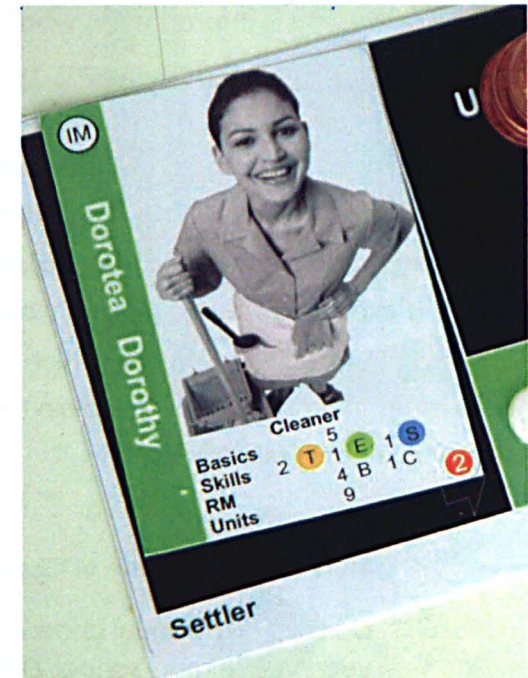
Figs. 8.14 & 8.15 Photographs of Settler of
One of the studied Low-income housing communities
Photographs by Roy Perez

Story part 1

Rolling the Die: Playing the Life Scarcity Game

In a metaphorical sense, every day millions of settlers of informal or semi-informal areas in Mexico are forced to play the life scarcity game. For instance every day, Dorotea (above right) a cleaner in a primary school and Miguel (bottom right) a taxi driver, both settlers of *Villas del Pedregal* a low-income housing community in *Morelia, Mex.*, have to deal with unpredictable conditions every day in order to get their basic needs. In addition, as their families grow they must cut back on other spending in order to be able to increase the size of their houses. In the case of Dorotea, her 8 month-old son still sleeps with her in the main bedroom. Therefore, in the next few years, she and her husband are considering expanding their basic one bedroom housing acquired through INFONAVIT, a government funding agency. To begin with, they are considering some finishes in the living area. In the case of Miguel, he is already expanding his one bedroom house to one with two bedrooms. The new space is going to be shared by the two sons of the family. Both families are already considering the 'informal' path for their extensions. They sometimes have to 'cheat' to win. This means that Miguel directly contracted Don Jeremias, a friend who is a builder in the local community. Later Miguel will sort out all the bureaucratic legal issues with the City Council. Dorotea is also planning to contract Don Jeremias in the future. As a result, their dwellings will be one more sample of the actual *Semi-Informal* hybridisation practice in Mexico.

Settlers of the Game



Figs. 8.16 & 8.17 As can be seen in the above pictures most of the settlers and its characteristics in the game were inspired by real settlers of the life scarcity game.

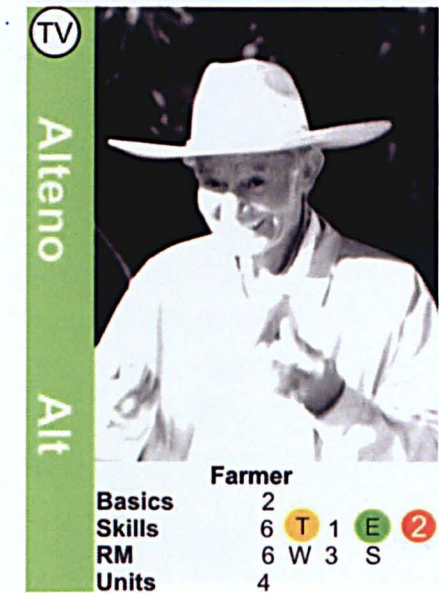
b) Pre-Agency Stage

The Pre-Agency stage has the objective of further developing understanding of the condition of scarcity settlements. This stage addresses the question what can be learnt from the existing features of the architecture produced by a condition of scarcity? This means helps the participants to understand the complex condition of ScarCity's developments in Mexico. At the same time participants will learn why even under this condition, there is a vast amount of architectural production. In other words, this stage of the game teaches participants to build small scale housing and their neighbourhood by straightforward scarcity design tactics even when participants do not have all the necessary funding to do it in one go. Even without state agencies, bank support, mortgages or huge savings. As a result it is expected that participants are challenged by this condition and develop or identify more lessons. This is a stage mainly driven by **chance** which is represented by the 1st die. Between 15-25 minutes were required to cover these issues. The next step is to explain the first set of instructions given to participants. In parallel, the story which set the live context continues below.

Story part 2. A Game of Chance: 'Choosing' Housing

Dorotea and Miguel choose their housing in very different circumstances. After working for 4 years in a primary school, Dorotea had enough rights to apply to the INFONAVIT fund. At that time, the first section of 3000 housing at Villas Del Pedregal – her dreamed of option- was 90% fully booked. Because such a small amount of housing was still available, the developer increased their cost by 30 %. As a result Dorotea had to choose from the second section. The advantages of the new section at that time were a promised green area in the front of her prospective housing. Also the master plan contemplated a primary school just 5 minutes walk away from their home. Sadly the green areas were superficially solved, only the spaces used for the inaugural event were covered by grass becoming now a rubbish tip due the lack of maintenance. The promised primary school has been delayed until next political budget cycle. Dorotea hopes that by then, the emergence of the school would not be too late for her son. Alternately, she has plans to take him to the area where she works, a primary school 2 kilometres away.

The case of Miguel is slightly different. One day whilst driving his taxi he meet Ambrosio, a factory worker, who requested and applied for one bedroom housing in the first stage of the same development. Unfortunately, Ambrosio's application was unsuccessful due to the fact that his salary was below the minimum wage. His dream of living closer to the factory where he works and avoiding the everyday 4 km commute vanished. As a result, Ambrosio was desperate to find somebody in his place and in this way recover part of the deposit. Miguel who has been living with his parents for the last 8 years saw this as a good opportunity. In fact he and his wife have been saving with this plan in mind for the last 5 years. Also their joint contributions to INFONAVIT allow them to have enough points for a successful application. Finally they acquired the house through paying Ambrosio's penalty fees. Miguel's main concern now is that his wife's work is now too far away from their new home. She works in a restaurant close to the city centre of Morelia around 8 kilometres away of Villas del Pedregal.



Figs. 8.18 Settlers' card



Figs. 8.19 & 8.20 Taking the Agent Card

First set of instructions

1. - Every player takes a settler card.

Participants were asked to take a settler card (fig. 8.18 & 8.21). Each card represents a different actor inspired by a real settler already living in an informal or semi-informal development. From the outset each settler has a different number of resources. These include basics such as food or clothes, diverse technical, social, environmental and economic skills and raw materials for their dwelling construction and varying amount of -units/pesos- the economic resources. The combination of different characteristics with the random personal interpretation by each participant will give every settler their own individuality at each different session. It is important to highlight that only in the case of semi-informal modernism will the settlers receive a finished basic dwelling which is commonly acquired through INFONAVIT governmental credit. This housing will be modified later using informal tactics.

The Agent Card

One of the settler's cards is marked as the 'Agent' (figs. 8.19 & 8.20). He or she is theoretically the architect with an alternative role in this community. It is speculated that he has to be properly trained with a Master degree in Alternative Arch Design & Practice but it is not essential. It is suggested that at the first stage of the game the coordinator should play this role. At the beginning the Agent has to be a good researcher to document and identify the main issues of the community under investigation. In other words, he simulates the research by design methods already presented in Chapter 6 to identify the main Issues of scarcity of the explored community. Later on as the test goes, added to the traditional designing skills of an architect, the Agent will be challenged by the dynamics of the game to develop additional skills. According to Gisela Medina a live coordinator of San Antonio's Project in Mexico, agents-coordinators have to be good leaders with all the implications that are involved. For example, in her own experience she argues that agents have to negotiate with different institutions and the community, he/she needs to have good communication skills in order to inform and organise, and act as a proficient consultant.¹² It is important to observe and identify additional skills and capacities of the Agent developed thought the game in order to be documented.

It will take between 2-4 rounds in the game, to establish the Agency. It is the time equivalent to the Pre-Agency stage, between 15-25 minutes after the introduction. In real life this time can be compared to a time span of 6 months to a 1 year period of rigorous research at the Research Institute of Architecture of Scarcity Studies (RIASS) attempting to understand the main issues in order to apply the theory. At the same time networking and negotiation with different institutions of support is necessary in parallel. This role can later be transferred to the Head Officer or a proficient settler of the community who will be properly trained and will retain support from the Agent and the RIASS. During the game this action can be also tested. The same dynamic can be repeated as many times is necessary during the game test to identify and un-lock additional lessons that can be later compared to similar real life situations.



Figs. 8.21 Settlers' card



Figs. 8.22 Cards of location of the plots

¹² Medina, G. (2006). Interview to Gisela Medina: A coordinator of San Antonio's Project, Mich, Mex, . A. Becerra. Morelia.

2. - Every player takes his/her plot card

Every participant picks a plot card (figs. 8.22). This card will have a code (letter and number) which is related to the board layout grid, e.g. A3. Next, the participants locate themselves on the board layout grid according to their selected code. The Agent has to be located on the public land if it is available. Otherwise he will have to take advantage of 'green' areas or use a mobile-itinerant office.

3. - Every player takes a settler's base card and his/her resources

The Agent will distribute resources in accordance with the profile of each settler such as economic (units-pesos), basics (food/clothes), different skills (technical in yellow, social in blue, economic in red, environmental in green) and raw materials (wood, brick, concrete (fig 8.23). The orange 2 in settlers' card will help to duplicate their resources.

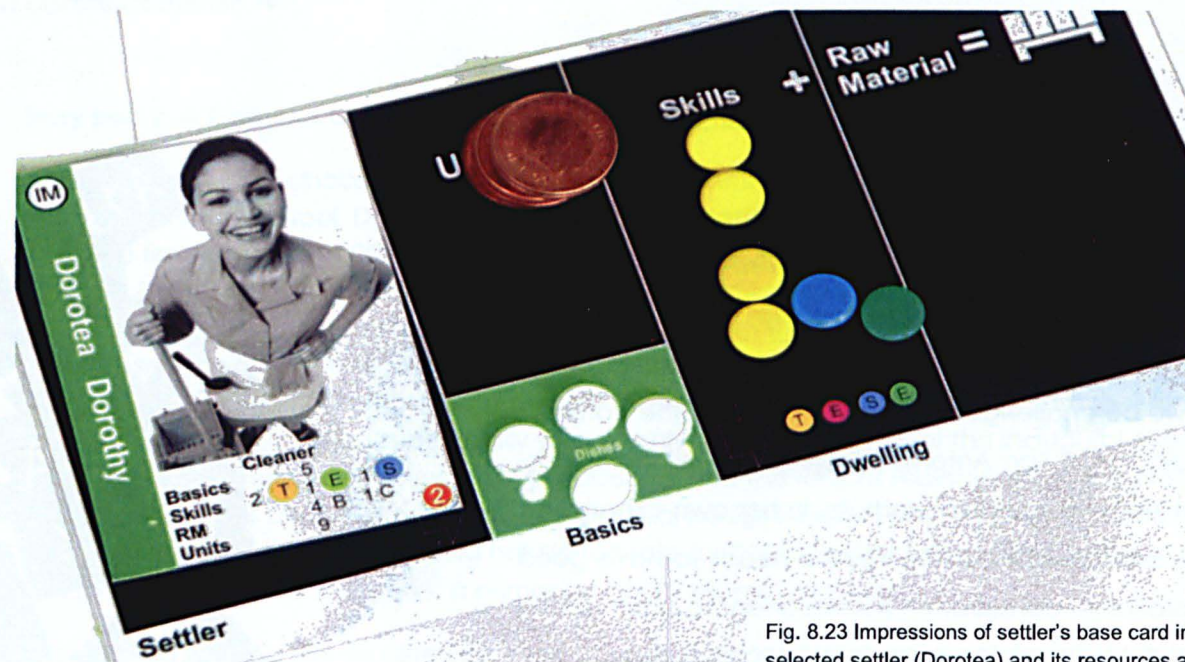


Fig. 8.23 Impressions of settler's base card including the selected settler (Dorotea) and its resources according to her profile

One of the driving factors of participants adopting different settlers at this stage is to understand that nobody has reliable access to all raw materials; nobody has the same skills and nobody has the same economic resources to develop or expand their basic dwelling (figs. 8.24). As a result they begin creating a lively and dynamic market, which works like any one of the streets or plazas in some of the studied communities. Later, by rolling the first die for several turns, settlers will win or lose some of their resources which therefore become more valuable to them and others become more abundant and worthless. Even in this, small-scale simulation, scarcity leads to challenge the participants to negotiate and use the available local resources.

Resources

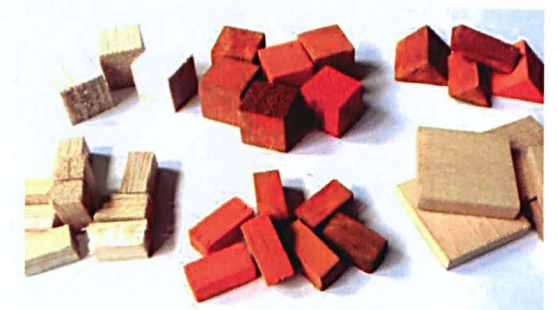


Economic



Skills (Colourful chips)

Basics (White chips)



Wood

Brick

Concrete

Raw materials

Fig. 8.24 Impressions of available resources represented by different material

Settlers with sufficient elements can start building their basic dwelling in their assigned plot; otherwise they can barter with other settlers at the market. Finally, if participants still do not have enough resources to start building, they can wait to acquire more units, raw materials and skills by rolling the 1st dice. For example, in the case of Traditional Vernacular board, the basic dwelling is a Troje. To build a basic Troje see fig. 8.25

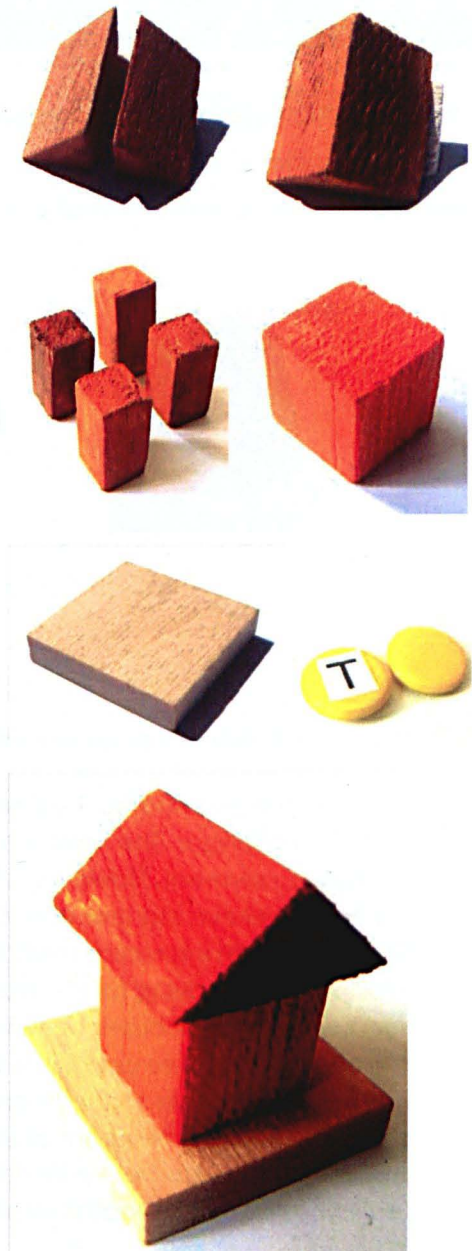
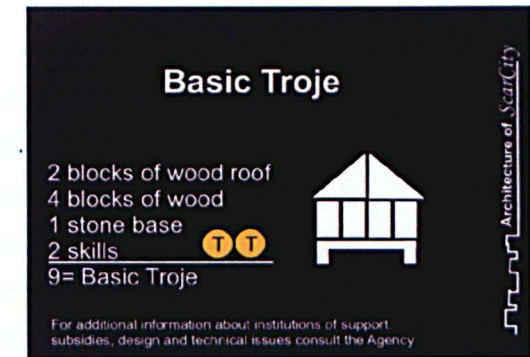
4. – Rolling the **Chance**. Settlers have to start rolling the 1st die

In order to obtain as many skills, units or raw materials as possible, the settlers have to start rolling the 1st die for around 2-4 complete rounds according to circumstances. The different faces of the die include: **Take one raw material, Take one skill, Take two units or Lose one unit** (figs. 8.26). The metaphor to live processes suggests getting resources such as skills, raw materials or economic resources in chance basis of the everyday life. For some of the settles inhabiting informal communities' chance is the only choice.



Fig. 8.26 Different faces of the die

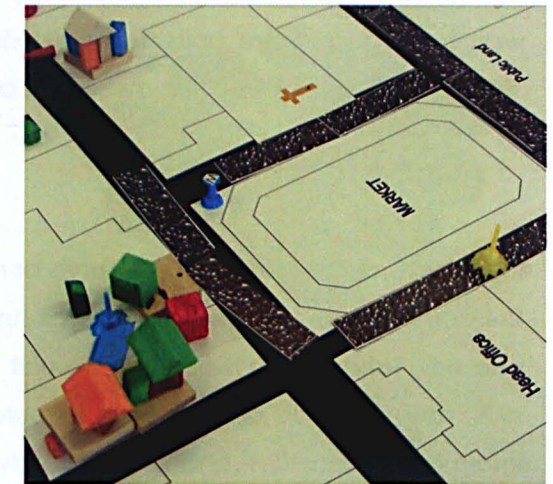
Every round has an equivalent time scale. In the case of the Traditional Vernacular (TV) board, 1 round it can be compared to a 6 month period in real life. In the other two cases, Informal Modernism (IM) and Semi Informal Modernism (SIM) boards, 1 round can be compared to 3-4 months. It is assumed that between 6-12 months of Pre-Agency stage are needed before the formal establishment of the Agency. This means that in TV 1-2 rounds and in IM and SIM 3-4 rounds are necessary before this can happen. In this time, (in real life) the Agent will be doing previous research and survey analyses recognising the main issues of scarcity, defining priorities, negotiating different grants from institutions, identifying collaborators and discussing the issues and strategies within the community.



Figs. 8.25 Elements to develop a basic Troje

Additional faces of the die

The die also includes 2 additional faces. One face is **Contingency**, in this case the participant has to take a contingency card and do what it says. Most of the contingency cards were also inspired by good and bad unpredictable events suggested by real settlers, statistics, observation, reviewers and participants. For example the statistics shown high risk of earthquakes area, by research the flooding areas were identified, a participant pointed out possible pandemics, others suggested children's illness or food infection. Also positive events were added such as: take two additional skills for extra hours in the workshop, take two economic units in energy saving, etc., just to mention some examples. The other additional face is **Community contribution**: each settler deposits one element of their resources at the head office. The community contributions can be compared officially to a 'communal saving account', which in the future will be invested in community events (annual town's celebration, marriage of community's members), facilities (main plaza, school) or support such as communal transport. This specific feature highlights that within these communities, especially in the Traditional Vernacular case of San Antonio even under limited conditions, there is a very strong sense of community cohesion. In many ways this characteristic is the key for their permanence under difficult conditions (figs. 8.28).



Figs. 8.29 Layout board showing different areas such as: Head Office, Market and Public Land.

Fig. 8.28 Additional two faces of the dice

Story part 3. Additional faces of the dice: The lack of support cards

Even so, Dorotea and her husband are happily occupying their basic housing today; they had to bypass a set of difficult challenges. The most remarkable episode according to them was at the time of the deposit and first mortgage payment. However although the rate of repayment is low if one compares it to the bank rate, contingent circumstances can complicated this duty. One day after her work, Dorotea felt unwell. The lack of National Health insurance available when she began to work at the primary school made her to have double thinking about paying for a private health service. The main problem was that she did not let her boss know about her pregnancy because she was afraid she would not be offered the job. Dorotea's job was hectic, which could affect her vulnerable condition. One night she was in danger of losing her baby. Fortunately, Miguel the taxi driver was able to take her to the nearest clinic without any charge. Also, her medical bill was paid by Teofilo, his single brother who is an immigrant at USA. At that time the US dollar was strong enough to pay a Mexican pesos bill. His simple claim was to be the Godfather at the time that the boy would be born. At this time it can be said that Teofilo has been his Godfather since that day.

Analysing Interesting moments-lessons of the Pre-Agency stage

As it was already mentioned, the intended objective of this stage was further developing understanding of the conditions of scarcity by involving different participants in the game. In other words to observe if the game communicates to participants a clearer sense of the complex condition of life, the realities, and difficulties of living under limited resources in Mexico and identify what additional factors were recognized by participants involved. This is now the first opportunity to reflect and analyse if evidence of Pre-Agency stage reflects some of this issues.

After participants became comfortable and engage with the game (approximately after 10 minutes in average) the first lessons started to emerge (fig. 8.30). Different situations challenged participants to begin negotiation, discussion, arguments, and propose some solutions. At the same time participants began to reveal part of their real personalities in taking some of the characters too seriously. They were able to start using in their small informal housing production key elements and basic design tactics of the non-prescribed design process introduced in different catalogues. In other words participants begin to understand citizen's tactics of the everyday practice.¹³ Some of these Issues of scarcity in practice were: self-construction, use of local natural resources available, use of local techniques and skills, low energy consumption, flexible design which allow flexible financial, to mention several. However the most interesting moments emerged when participants unleash/un-lock a set of new possibilities such as different service exchange, suggestions of another kind of self-construction techniques, alternative prototype production, different use of materials and functions, etc., just to mention some examples. Some of these new tactics were never explored or catalogued before. Participants demonstrated not only have begun to understand the *Issues of Scarcity* discussed to develop their proposals, but also they began taking them on board with improvements and modifications. In words of one of the participants "learning by making is easier than 5 lectures about the same issue". This situation is might be possible due to the fact that this reality is approached from a foreign or contrasting view point which is not distracted by local concerns.¹⁴ As a result participants can innovate using their actual knowledge added with fresh acquired creating a new hybrid.¹⁵ A brief sample of relevant moments will be presented in the following lines.

Adopting settlers

One of the most interesting moments regarding the experience of participants adopting the role of settler in these communities was when the participant number 28, Victoria, (a participants from a British middle class background), was shocked to play the role of her selected card. The particular settler was Dorotea-Doroty the cleaner. In her own words she argued that "how can it be possible that I need to be a cleaner". The solution was to give her a chance to choose another card. Sadly the new card did not satisfy her full expectations either. In this case the new



Fig. 8.30 Participant showing confidence after understanding the basic lessons of the Game.

¹³ Certeau, M. D. (1974). *The Practice of Everyday Life*. Berkeley, University of California Press.

¹⁴ Ramirez-Ugarte, A. (2008). *Reflexion. Opportunistic Urbanism*. D. R.-. Lovering. Melbourne, RMIT University Press.

¹⁵ Parrack Livingstone Linda , P. L. E. a. C. G. R. (2002). "Promoting creativity through the logic of contradiction." *Journal of Organizational Behaviour*(23): 321-326.

card was Maruca the secretary and this was the new role that she finally played successfully. This episode showed evidence of questioning the adoption of one of the most stigmatised employments in Britain. In other words her game personality questioned her stereotype mental constructions and challenging her to play a new role. Through this exercise she was able to recognise the importance of this role within the society.

Negotiation

Participants were also able to demonstrate their skills for negotiation of different materials at the local market. A broad range of trade was carried out, but also some disagreements took place when some settlers were trying to take advantage of their peers by asking too much for his scarce resources. The key lesson of this episode highlighted that even if a settler does not have cash available, they were able to trade by swapping or service exchange. This is a well known vernacular traditional of many citizens within informal communities. For example, a participant traded hours of his valuable technical skills for a needed raw material. Others preferred to swap their basic resources for economic units. At the end participants understood how even without financial support from the banks, settlers of informal communities are able to develop strong communities (fig 8.31).

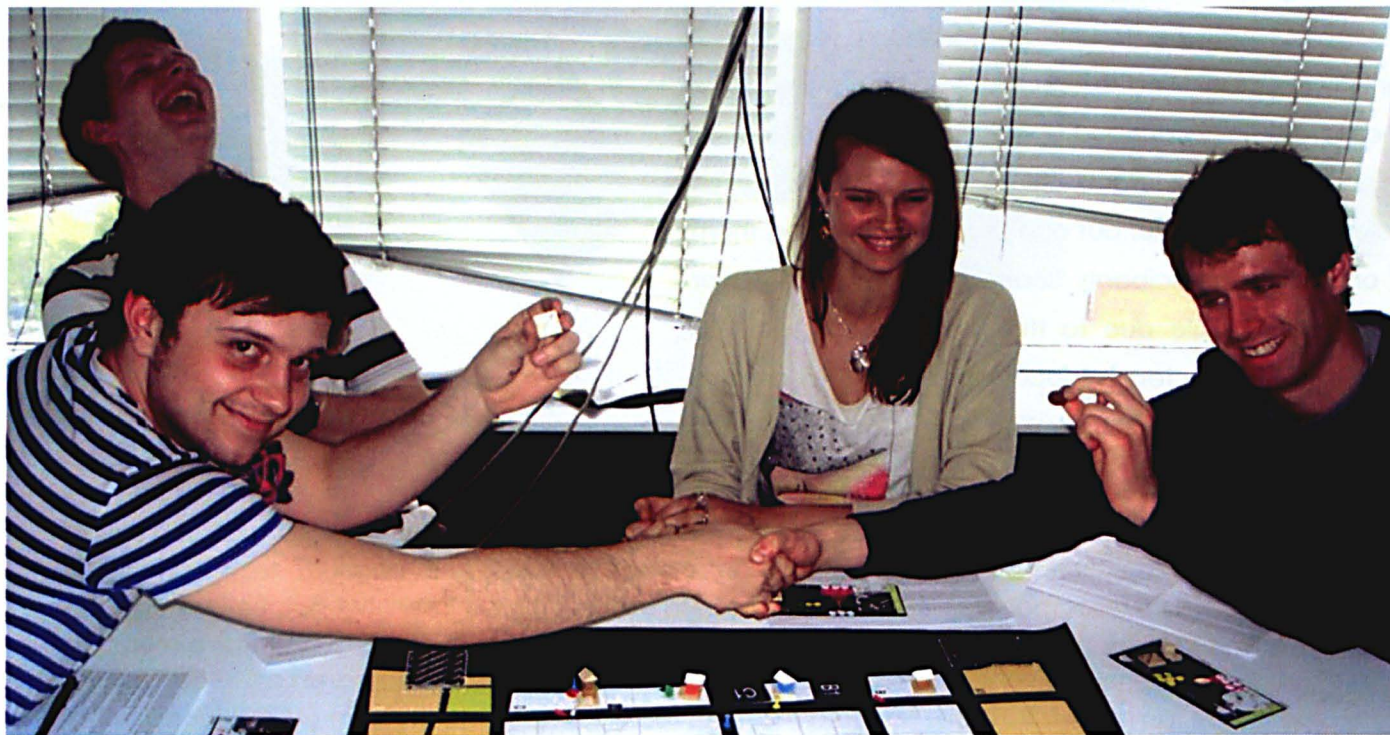


Fig. 8.31 Participants showing negotiation skills

Showing real personalities

Many of the participants were able to show their own personalities through different settler's character. For example one participant - a guy who is a 'passionate capitalist' in his own words- was reluctant to support the community contribution. Also he was fascinated with his accumulation of wealth (fig. 8.32). Fortunately later he was



Fig. 8.32 Participant showing his enthusiasm after important accumulation of wealth

able to see the benefits of community contribution when resources are pooled together. Another interesting episode showed the great business skills of another participant. Immediately after receiving his plot, he was dividing it in two sections. He immediately planned a basic housing plot for himself and a second for letting purposes and through this was able to generate some extra income (fig.8.32).

Alternative prototypes production and different use of materials and functions

It is important to highlight that even so the basic elements of housing prototypes and their possible interpretation through the game were explained, quickly new prototypes emerged. Some of the participants developed a second floor, used a new combination of material available or used the prototype in different way. In this way the game elements were flexible to accept new possibilities and were open to modification.

Understanding the dynamics of informal processes after rolling the 1st die

After rolling the 1st die additional resources were gained and lost by participants. For those gaining resources, they were able to begin a basic dwelling construction guided by a very basic vernacular tactics. For those mainly losing and having additional contingencies, their scenarios were difficult, and as a consequence their dwellings were poorly developed. The lack of support made their efforts useless, meaning development took place mainly by **chance**. At this stage participants mainly noticed the demonstration of the non- prescribed process of informal construction and also had the opportunity to suggest additional design tactics.

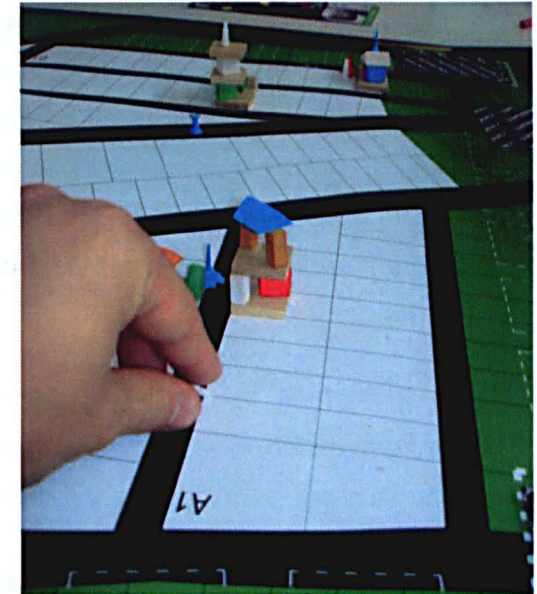
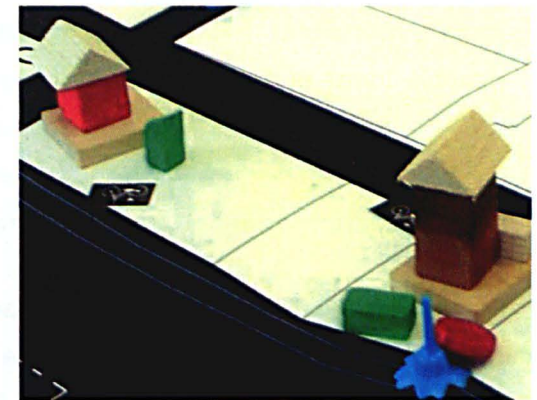


Fig. 8.33 Above: Participant giving individuality to his basic dwelling using his starting small amount of resources

c) Post-Agency Stage

One of the main concerns in alternative architectural practice -even for those architects recognising the richness of this field - is the lack of tools to understand the complexity of informal processes including the appropriate implements to listen citizens' remarks. In this sense the outcome lessons resulting from the Research by Design methods explored in Chapter 6 and collated in the Agent Tool-kit V2010, were created to assist the Agent with these issues. It is speculated that supported by these tools the Agent will be able to guide participants thought the test to understand actual conditions and suggest an alternative path. In specific, it is necessary to test if some of these tools are useful to stimulate participants to think critically and actively about actual circumstances of built environment and encourage them to create their own proposals that exploit and take advantage of all limited resources available. It is important to make participants aware of their needs beyond just designing and building. In real context it is important to identify possible forms of collaboration/cooperation in order to stimulate processes that will enable settlers to improve their lives. To achieve this objective participants have to consider individual and communal tactics. The key is to unlock the right balance of each one according to particular characteristics of each community. Some examples are introduced by the different 'catalogues' and the individual or communal design chest cards.

From a wider perspective the test experience aims to un-lock collective consciousness about people's capacity to generate, claim, change, participate and transform the built environment eliciting specific local possibilities. In 'sustainable' era the key message is to inform participants that in addition to the Western challenges of the sustainable agenda (such as global warming, energy supply, more efficient materials, etc.) ScarCity has other priority issues such as fulfilling basic needs, inequality, population growth, education, health, the impact of globalisation, cultural clashes, etc. still waiting to be addressed. Paraphrasing one more time Peter Marcuse "Sustainability is not enough".¹⁶ Additional critics of sustainability in the global south argue that within informal context an alternative path is necessary.¹⁷ According to Emiliano Gandolfi, an Italian architectural critic, an alternative practice has to aim to define "a different society that will be more equal and more permeable to different influences and cultures". In his own words within this context,

"There is an urgent necessity for redefinition of architect's role, along with the formulation of instruments capable of comprehending the surrounding context, of acting on the complexities of the urban situation and of imagining an alternative"¹⁸.

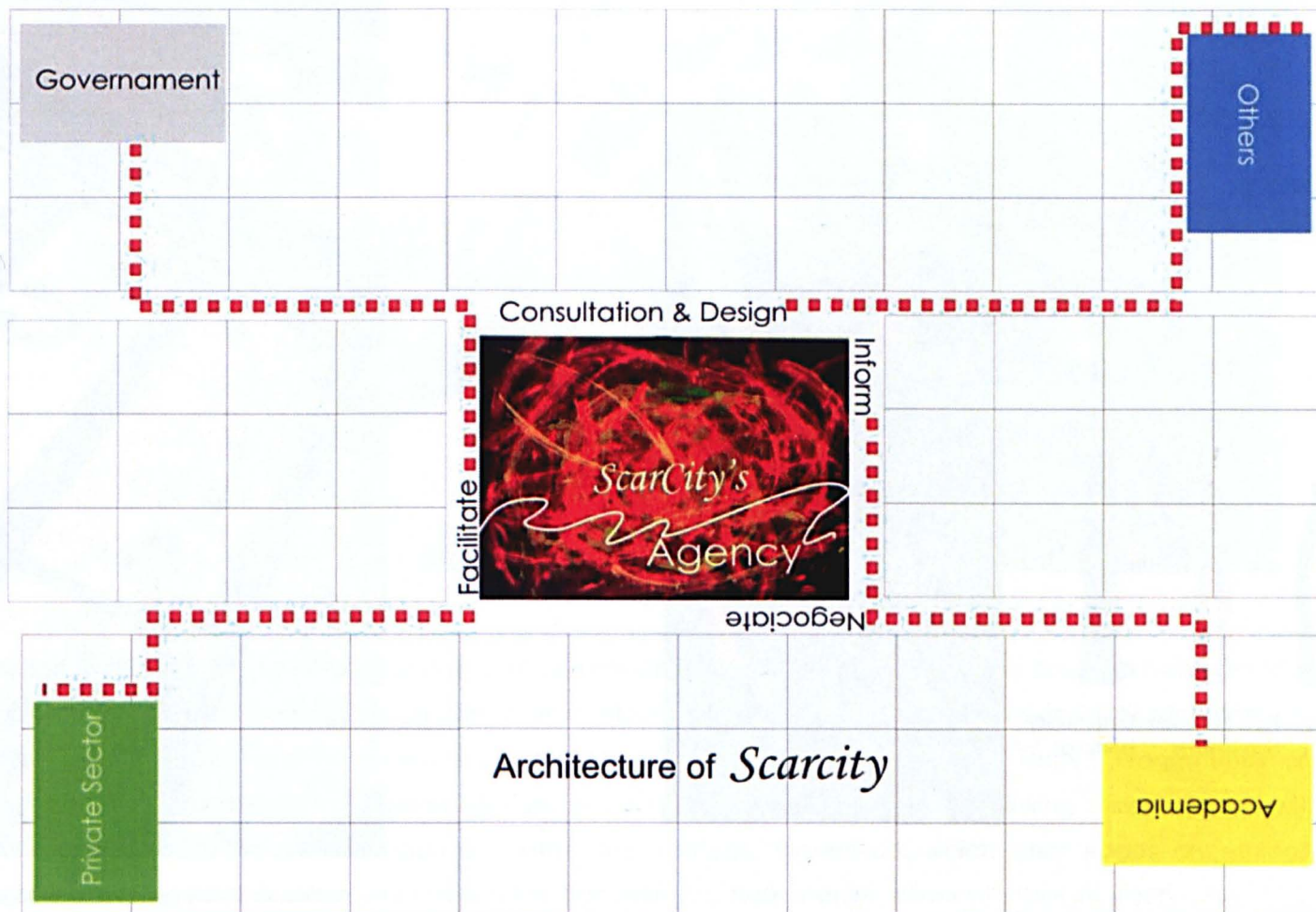
The **Post-Agency Stage** intended objective was to test the validity of founded lessons and designed tools which have the aim to support the new architect's role within ScarCity. Between 35-40 minutes were required to cover these issues. It was metaphorically suggested that after rigorous investigation done by the Research Institute of Architecture of

¹⁶ Marcuse, P. (1998). Sustainability is not enough. Environment and Urbanization, Division of Urban Planning, School of Architecture and Planning, Avery Hall, Columbia University.

¹⁷ Shah, K. (4-6 July 2000). Global Urban 21 Conference. Berlin

¹⁸ Gandolfi, E. (2009). "Spaces of Freedom." Architectural Design.

Scarcity Studies (RIASS) through Research by Design methodology, the agency was ready to be stabilised and the appointed Agent was prepared to start his adventure. In this case it was suggested that in addition to design, the new tasks of the agent were to inform, facilitate, negotiate and consult. According to Michale de Certeau architects need to develop a new attitude in order to support every day citizen's practice.¹⁹ In other words the Agent has to be a good leader. In this test simulation, to support different participants' goals the agency has to be linked to a wider web beyond the community which includes actors and institutions ranging from the government, academia, private sector and others. The catalogue of institutions of support selected after research developed in chapter 6 is a key tool to simulate this task. It is assumed that through network with these organisations the Agent can have additional knowledge and economic resources to support different projects. This structure was previously explored through a RIASS model exercise also in Chapter 6 (fig. 8.35). The model figured out the possible impact of a RIASS and its agencies within the contrasting developments of the studied city. The conceptual model can be seen in the following fig. 8.34. For more detailed critical framework and specific analyses see stage D: Appraisal in Chapter 6. The next step is to explain the additional elements-tools involved in the Post Agency stage of the game and to introduce the following set of instructions given to participants.



RIASS Modelling Exercise

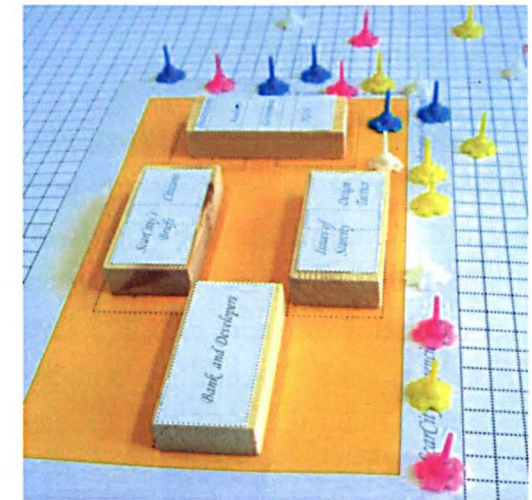


Fig. 8.35 RIASS modelling exercise. In the front homogeneous wealthy housing development contrasting to informal ones in the background left. Conceptually the RIASS and its agencies seats in the middle (yellow zone)

¹⁹ Certeau, M. D. (1974). *The Practice of Everyday Life*. Berkeley, University of California Press.

Additional elements of the game

The Agent Toolkit V2010

Different data-lessons were identified and some tools were designed as a result of the *Research by Design* methods: *Identifying the Issues of scarcity beyond its forms*. The most relevant findings were collated in the Agent Tool-Kit V2010. Consequently, the Agent will receive the outcome tool-kit in order to support his Architecture of Scarcity practice. It includes small representation of such lessons, design tactics programmes to support alternative architectural practice, institutions, etc. Some examples of these tools include *The Catalogue of Issues of Scarcity and Design Tactics*, *the Catalogue of Institutions of Support*, *Diagram of Action Development Tray*, *Individual Family Design Chest Cards*, *Community Support Chest Cards*, *Contingency Cards* and *the Tool Box of locally available resources* (fig 8.36). In live projects, versions of the toolkit can be annually upgraded by RIASS according to the particular circumstances of studied communities. The conceptual visual of Agency tools is presented in following figures 8.36. Detailed development of every single tool is explained in previous Chapter 6.



Figs. 8.36 Toolkit V2010



Figs. 8.36 Toolkit V2010

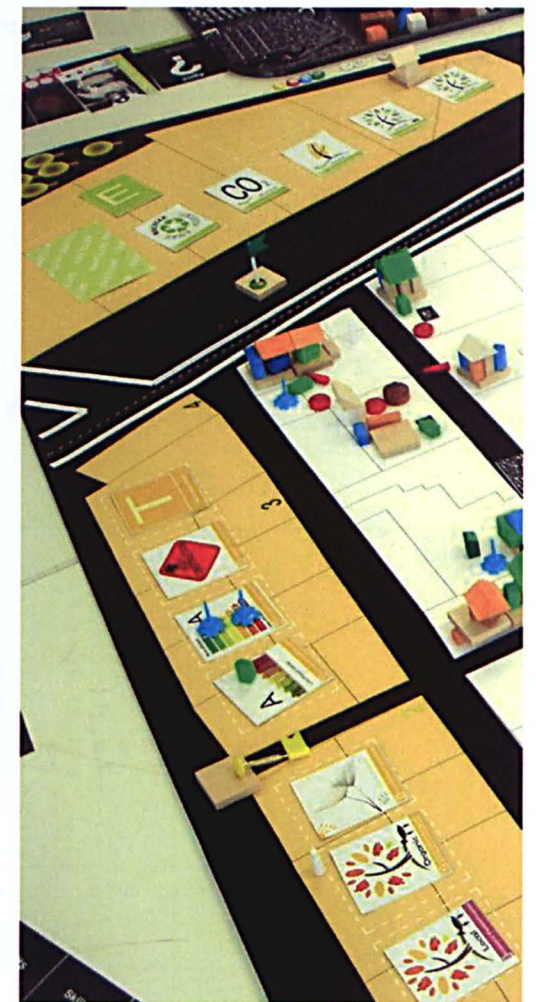


Fig. 8.37Above: Some Design Tactics Programmes already displayed on the Board.

Fig. 8.38 Bottom left: Impressions of cards of the Catalogue of Issues of Scarcity

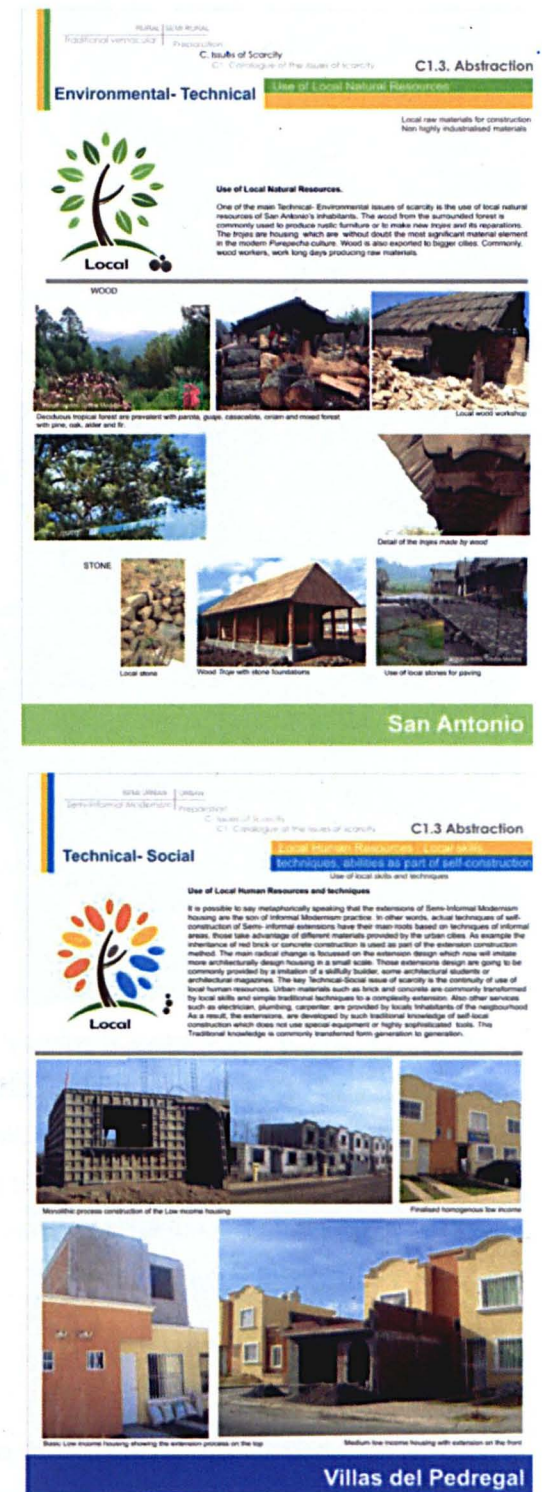
The Catalogue of Issues of Scarcity and Design Tactics Programmes

After research by design methods analyses (stage C, Chapter 6), the main founded data -Issues of Scarcity- of the non-prescribed design process of three different case studies were classified and collated in *the Catalogue of Issues of Scarcity* (see full catalogue in appendix 1). In other words identified citizen's tactics of the informal everyday practice were catalogued in four main labels: technical, environmental, social and economic. Others *Issues of Scarcity* that are overlapped were classified as socio-economic, technical-environmental, etc. This classification allowed the agent to effectively identify relevant local issues in the field and link them directly to Design Tactics programmes and corresponding Institutions of Support (fig 8.38).



The **Design Tactics** are the small representation of potential programmes of support. In this case the main identified *Issues of Scarcity* of research stage C-Chapter 6 were later interpreted/translated as a Design Tactics to inform the Architecture of Scarcity design process and enhance local conditions. The Design Tactics Programmes are supported by different Institutions following Michael de Certau argument which suggest linking citizen's tactics with structures of power.²⁰ These are introduced within the Strategic Framework which encourages an ethically sustainable development of different communities according to their specific circumstances of each case study. Following Paul Durbin suggestion of understanding of sustainability as an ethical-democratic framework rather than

²⁰ Ibid.



Figs. 8.38 Catalogue of issues of Scarcity; Examples of Issues of Scarcity Cards

a set of recipe rules that everybody should rigidly follow²¹. The **Design Tactics** Programmes are also classified by the four main labels: technical, environmental, social and economic issues. Some examples of these are showed below (figs. 8.39 & 8.40). (See full catalogue in appendix 2).

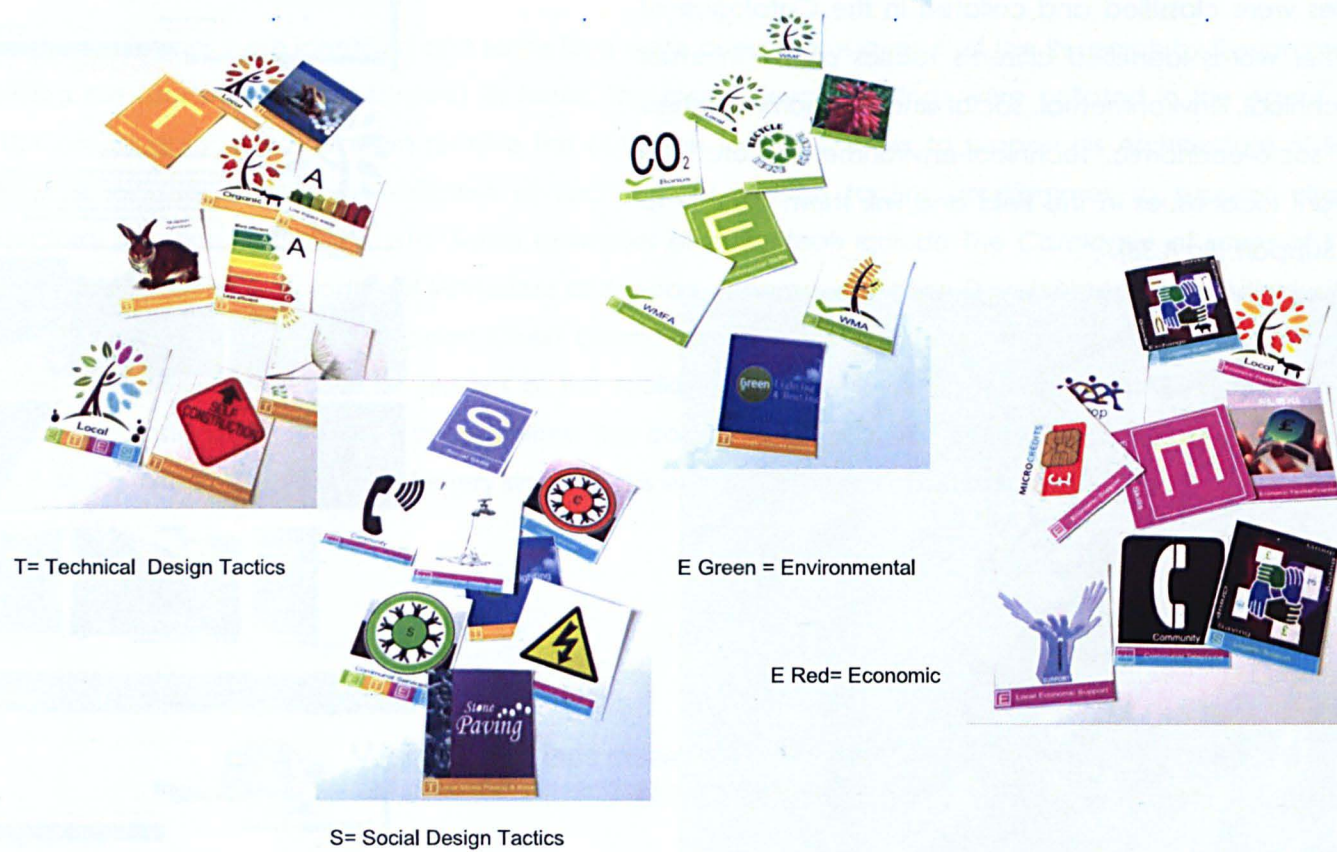


Fig. 8.40 Impressions of the Catalogue Design Tactics

It is expected that after test experience different agents will identify more *Issues of Scarcity* or develop additional design tactics in other case studies; if they can assimilate the suggested methodology then they will be able to enrich both 'catalogues'. In this sense the catalogues should be able to evolve according to the different circumstances of different communities. At the same time, after a proficient use of this methodology it is hoped that it can be assimilated, enhanced and modified. As a result every agent can give individuality, critically inform and add useful information for interventions. In other words the methodology is only the first step to unleash further means for future intervention.

Catalogue of Institutions of Support

This includes examples of institutions of support founded by survey analyses developed in stage D of Chapter 6. These include governmental, academic, and private institutions already supporting projects dealing with similar issues. In other words Antony Giddens argues for Institutions playing an 'enabling' role for its citizens. This means that a combination of bottom up civil action supported by top-down policies, consultancy, funding, etc., is



Fig. 8.41 Impressions of the Catalogue of Institutions of Support

²¹ Durbin, P. T. (1997). "Can There Be a Best Ethic of Sustainability." *Phil & Tech* 2(2): 49-58.

required to face unfair social conditions of contemporary urban centres.²² Each potential institution is represented by a card which indicates if the support only applies to certain case studies e.g. Traditional Vernacular or for all of them. Such support mainly includes economic or human resources to help develop the projects. Some institutions only support environmental programmes whilst others have interest in two or more fields (fig 8.41). See the full catalogue in appendix 3.

Diagram of Action Development Tray

The **Action Development Tray** consists of miniature logo representation of the different parties involved in the Architecture of ScarCity process. These include the Agent-coordinator, different institutions, representatives of the community concerned and members of the RIASS. They are displayed on a small tray to illustrate different diagrams of possible intervention. According to Gisela Medina to explore different organisation for action and observing the broad network of participants is key practice before any intervention takes place.²³ At the same time the diagram has to be flexible enough to accept institutions joining during the intervention process (fig.8.42).

Tool Box of resources available

As a result of the theoretical critical framework developed in part 1-2 and Research by Design methods applied in part 3, the basic elements of informal design process were indentified.²⁴ This includes small representations of the local resources available (economic units, basic units, skills and raw materials) which are used to create the small housing models and its community development. The tool box also includes the two dies which can lead to losing or gaining different resources and support. In other words an element of Chance-unpredictability is included as part of the design process. In addition it includes smaller physical representation of individual family support devices; composting toilets, biodegradable painting, well managed wood and brick, concrete slabs, biomass



boiler, organic food and farming, etc. As well the box includes the small representations of community support amenities: potable water supply, units of electricity supply, lighting, local stone paving, breaches, etc. Finally it includes the small representation of the Agent itinerant office. In other words different strategic elements to offer some opportunities are included to support an alternative design process (figs.8.43 & 8.44)

²² Giddens, A. (1998). *The Third Way: The Renewal of Social Democracy*. Cambridge, Cambridge University Press.

²³ Medina, G. (2006). Interview to Gisela Medina: A coordinator of San Antonio's Project, Mich, Mex. . A. Becerra. Morelia.

²⁴ Preez, D. (1984). "Basic socio-economic elements of development theory for traditional societies." *Development Southern Africa* 1(1): 36-55.



Fig. 8.42 Impressions of Institutions Tray



Fig. 8.43 Impressions of the Tool Box and part of the interior pieces development in the background



Fig. 8.44 Impressions of the interior pieces of the Tool Box representing locally available resources

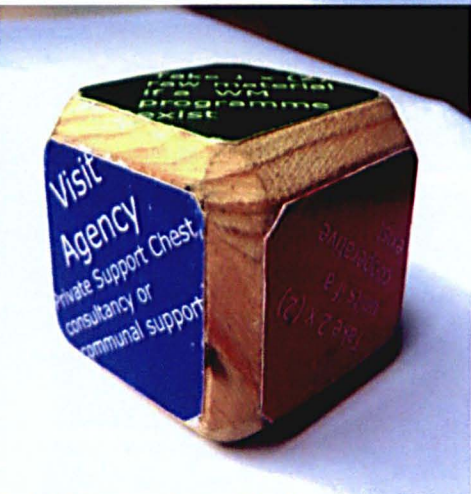


Fig. 8.45 The new faces of the die

Following set of Instructions:

5. – Rolling the **Chance + Strategy**. Settlers have to start rolling the 2nd die

One of the most important elements of the tool-kit is the 2nd die which represent chance + strategy + opportunity. It is expected that the Agency will promote a change in actual conditions introducing a 2nd die. Specifically, the new die set up by the agency aims to change the actual dynamics of the game in which settlers are mainly driven by **Chance**. The new ingredient is the introduction of a **Strategic Framework** which introduces different programmes inspired by local conditions; these are supported by different institutions. The final aim is to encourage the consolidation of a sustainable community according to specific circumstances of the concerned case study. It is speculated that by exploration, participants can visualise new possibilities and develop potential contributions. The objective is to test if the Agency supported by researched lessons and tools makes a difference to organisation, to promote the power of collective endeavour, to support about access to other types of skills & resources and economies of scale. In other words this part of the test has to challenge the participants to question if there is added value visiting the Agency. How could be the built environment different with the Agency's intervention? What could be the Agency's main contribution? How could the Agency accelerate a successful process? If some of these questions arise and participants start figuring out some possible answers, the first move of the practical use of designed tools is exposed. However it will be after analysing final participants' production and discussion results that some conclusion can be drawn.

The new faces of the die

The new Agency's die will lead participants to take advantage of a set of different programmes and strategies such as:

- **Face 1 Take one raw material.** The face that in the earlier die indicates the collection of raw materials such as wood, in the new die encourages participants to establish a well manage forestry programme. After this action, settlers will be able to increase production or enjoy more benefits such as CO2 credit bonus.



Fig. 8.46 Impressions of Individual Family Support cards



Fig. 8.47 Impressions of Community Support cards

- **Face 2 Take one skill.** The face that in the previous die indicates the collection of one skill, in the new die encourages establishing workshop programmes to develop local skills further. After this action, settlers will be able to take double skills or enjoy the benefits that such workshops subsidise.
- **Face 3 Take one unit** The face that in the previous die indicates the collection of one unit, in the new die encourages establishing cooperative programmes to multiply economic resources. After this action, settlers will be able to take double units and enjoy more benefits such as low interest credits from Local Bank of Support.
- **Face 4 Individual family supports.** The face that in previous die indicates lose one unit, in the new dice has individual family support. In this sense different families can now visit the Agency and it can provide useful information, consultancy or even negotiation on their behalf to different situations (fig. 8.46).
- **Face 5 Community contributions.** The main difference in this face is that from now on there are programmes available that duplicate the amount of units accumulated by the settlers. The economic resources come from different grants available that at the moment are unknown for them or are difficult to get there due to bureaucratic demands. In addition, a set of community design support-cards is available to organise community priorities. For example if after the survey of the studied community and further discussion with the community council, the primary school is one of the main needs; the Agent will negotiate its support (fig. 8.47).
- Finally **Face 6 Contingency.** It has no significant change to the previous one in the sense that contingencies may have happened and cannot be stopped. The only difference now is that there are some programmes ready to confront such contingencies, for example, the natural disasters contingency fund that supports communities after earthquake destruction, flooding, volcano eruptions, or other major events.

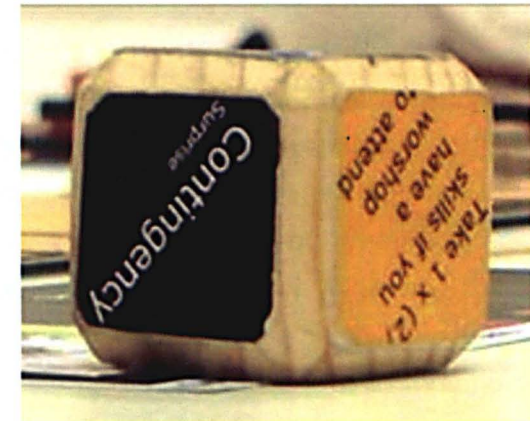


Fig. 8.48. Contingency face

6. –The Agent visits the community after every round

In addition to the support aforementioned, after every round the Agent will have to display all his proficiency to keep filling the gaps according to the specific circumstances of every community. Every round a new additional programme from the Catalogue of Scarcity Design Tactics can be introduced. A speculated time scale is that every round refers to a period of quarterly time-scale. The aim in real life is to introduce between 3-5 programmes per year (3-5 rounds time in the game) progressively to allow settlers assimilation. In the first visits of the Agent in this game, he/she should identify the participant who can be 'Head Officer' of the community. A 'virtual' meeting within all the members of the community has to be organised to appoint his position. In real life the Agent should identify the actual Head Officer or his/her equivalent. If this person does not exist already, a meeting within all the members of the community has to be organised to appoint one. The key for the successful introduction of the Agency is to have local support and communication with a local leader. The Head Officer can make the situation easier for the Agent who has to introduce the programmes with more potential. According to each circumstance, previous research and knowledge produced by RIASS (Research Institute of Architecture of Scarcity Studies), should lead the Agent to decide which programme has the greatest potential (fig. 8.49). Nevertheless in additions to this support the Agent's experience is the key to suggest an adequate programme proposal.



Figs. 8.49 Agent's visit assisting one additional programme

7. – Evaluation: Qualiuns Score scale

The participant with the most points during the game is the settler who at the end has amassed the greatest number of QualiUns (Quality of Life Units). This unit is a conceptual value inspired by the New Mexican Index of Quality of Life already under development²⁵. In this game the gaining of QualiUns depends on the combination of individual and communal improvement and contributions. However the participants with fewer points are not really 'losers' due to in many ways they will also enjoy individual and communal improvements. The main aim of the score scale unit introduction is to keep participants incentivised, and enable them notice improvements to their community. The introduced score scale is an alternative to a western proto-capitalist scale list based on goods and commodities, where every single citizen has to tick every single box in order to scale society's ladder.²⁶ To this end, it is important to make the participants aware of the power of communities' social cohesion. Consequently, the QualiUns scale has to consider physical improvements, but also involves other issues related to the dynamics of the whole community such as: socio-economic development, environmental conservation, cultural values preservation and government effectiveness.²⁷ This scale is not static; it is evolving through every day values, priorities and capacities of the studied community. This means that according to different communities the scale can vary. In a similar study in Santiago de Chile, Fadda, Jiron and Allen argue that due to the complexity of all factors involved in communities under the condition of scarcity it is difficult "to apprehend, define and measure" all the elements that define quality of life. They also suggest a Quality of Life (QoL) concept that does not only limits to "private life level", but suggest including tangible and intangible elements such as socio-economic perceptions, government expectations and more holistic levels of satisfaction.²⁸ In Paula Jiron own words "this way of defining QoL is relevant when evaluating and intervention which attempts to provide and integral response to poverty".²⁹

Minimum or maximum playing time of Post Agency Stage

All the test activities of the Post Agency Stage of the Architecture of Scarcity Game were planned to be carried out over the minimum time of 35-40 minutes; however some participants kept playing an average of 30 additional minutes. The next step is to analyse participant's productions and arguments to observe the practical use of suggested lessons and tools. A full set of contrasting moments were exposed by the participants releasing different lessons and tactics to tackle issues of the game in diverse manners.

²⁵ INCAVI (2008). Índice de Calidad de Vida en Mexico. Monterrey.

²⁶

²⁷ INCAVI (2008). Índice de Calidad de Vida en Mexico. Monterrey.

²⁸ Fadda, G., P. Jiron, et al. (2000). Views From the Urban Fringe: habitat, Quality of Life and Gender in Santiago, Chile. *Compac Cities: Sustainable Urban Forms for Developing Countries*. M. Jenks and R. Burges. London, Spon Press: 82-162.

²⁹ Jiron, P. (2009). The Evolution of informal Settlements in Chile: improving Housing Conditions in Chile. *Rethinking the Informal City: critical Perspectives from Latin America*. P. K. a. L. K. A. F. Hernandez. New York- Oxford, Berghahn Books: 70-90.

Analysing contrasting moments-lessons of the Post-Agency Stage

The Post Agency Stage developed even more interesting and at the same time stressed moments. Sometimes bipolar ones such as settlers' **partnership** or settlers' **conflicts** appeared. At this stage participants were really engage after 30-35 minutes developing their personal strategies to tackle given scenarios. In addition introduction of the Agency and by implication supplementary lessons, tools, and different programmes such as subsidies, consultancy, information, etc. raised expectations. This is now time to reflect and analyse if this stage development shows evidence of the validity of suggested lessons. This means to evaluate how useful the tools and catalogues were to promote further development of design tactics.



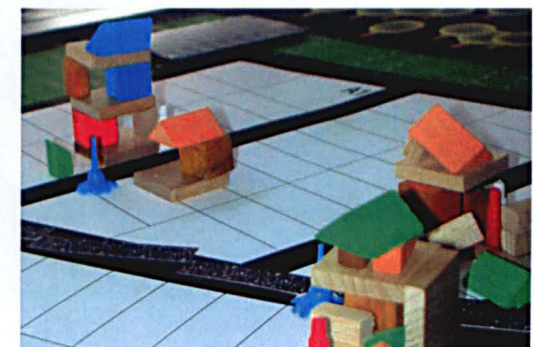
At this stage supported by new lessons, and upgraded confidence, participants began to get engage with introduced design tactics, but also suggesting their own personal interpretation. In other words participants begin to understand the value of linking citizen tactics to institutions of support or structures of power. In this sense the introduced programmes of the Strategic Framework began to unlock participant's own creativity to face their specific challenges. Some examples are:

- Peer housing partnership development. Two participants decided to pool resourced together to built and share a first house rather than develop each one their own.
- Housing & facilities sharing. Participants decided to share some facilities with their neighbour.
- Art of conjugation: improvising, flexibility of uses and economic schemes, alternative modalities
- Stronger negotiation & discussion. New interactions, relationship, alternative social dynamics
- Developing arguments due to taking the settlers' character too seriously
- The settlers were able to appropriate the public spaces of their community. Use of the streets as extension of the housing. Some abandoned and unexpected spaces became sites for light.

Fig. 8.50 Above left: Participants agreeing partnership to develop one share housing first. They pooled together both of their resources due to the limitations to build each one their own. Later they were able to developed the second one.

Fig. 8.51 Above right: Participants having conflicts due to resources distribution disagreement.

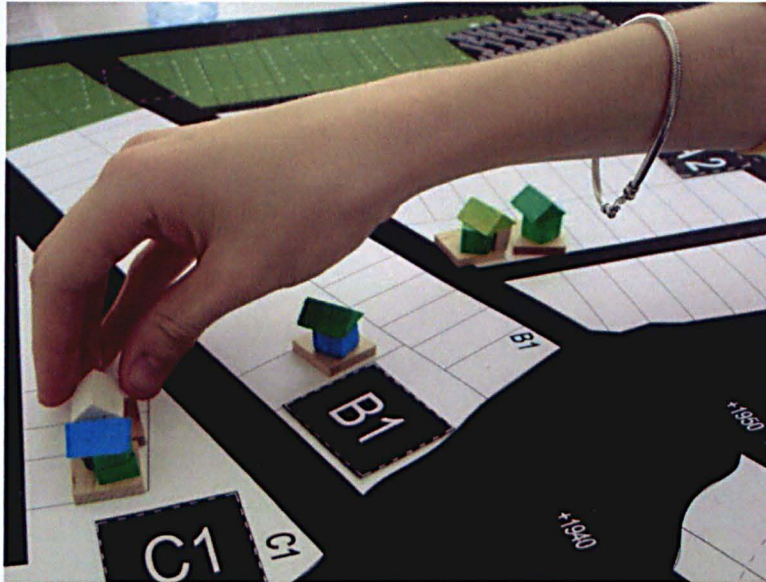
Fig. 8.52: Bottom right: Later more complex participants' productions emerge.



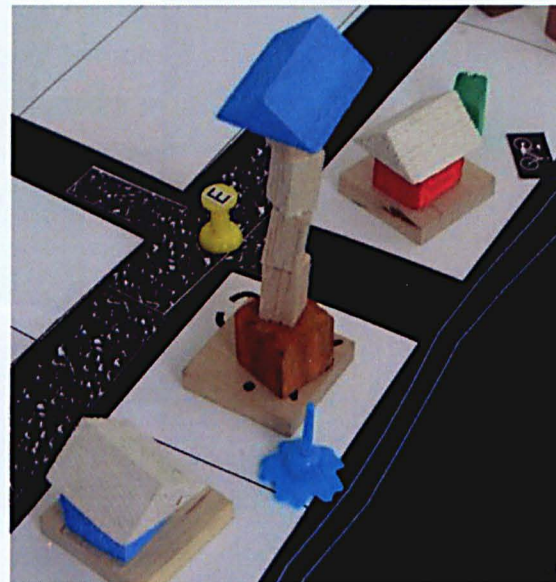
- Gradual evolution changing over time.
- Mix of the legal and illegal tactics
- Support of local enterprise and home self-building

Participants understood an open ended and flexible design process
 Use of locally available techniques, skills and materials mixed with more contemporary ones.
 More examples can be seen in the following visuals

Examples of additional lessons developed by participants in the Post Agency stage (figs. 8.53)



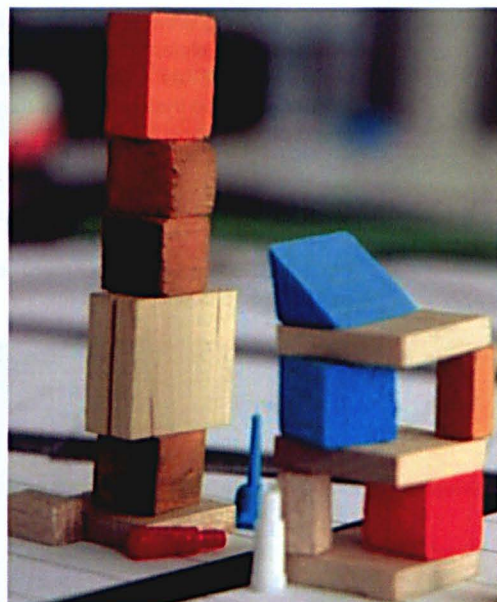
Awareness of Community participation & Contribution



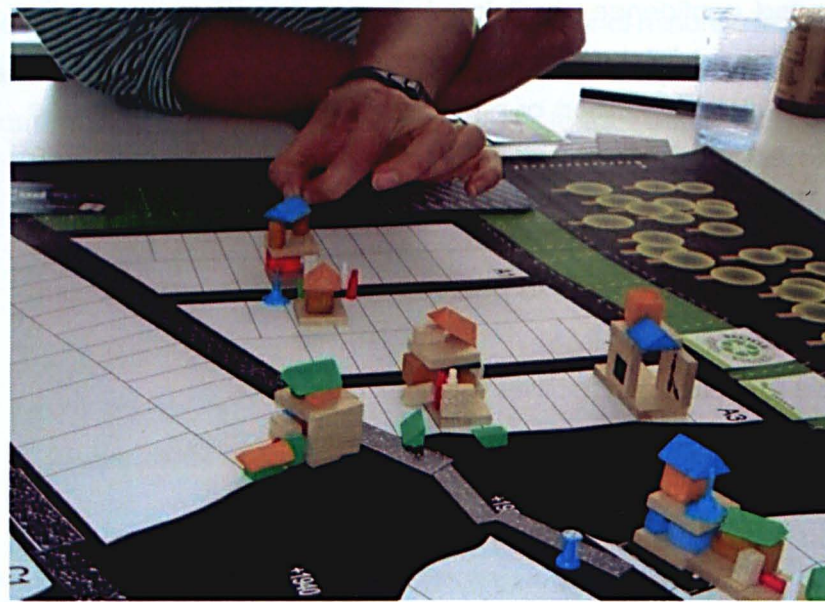
Breaking Borderlines



Developing Arguments through Design

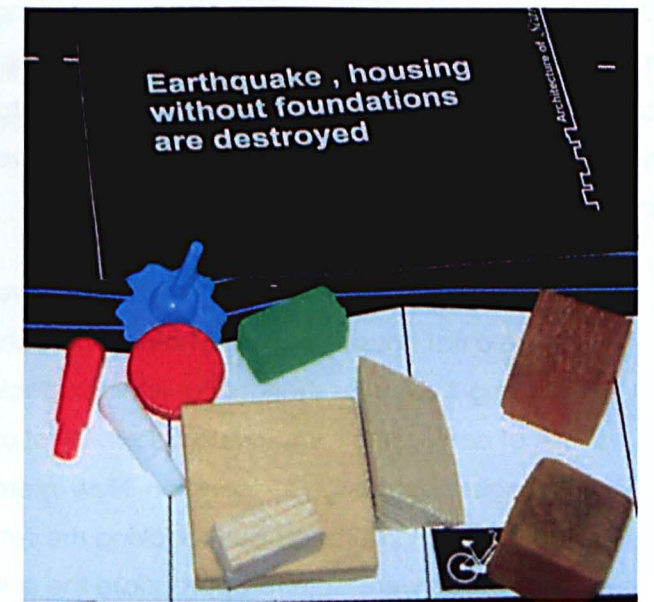


Expressing Diversity & Individuality using the



same limited materials provided

Expressing Threaten



Awareness of Real Contingencies

Deeper reflexions and suggestion were reached later due to participant's unpredictable and plural character. Participants raised additional issues never explored before. For instance two relevant lessons are: strong sense of community and leadership or also difficult community disagreements. These two specific lessons highlight the possibility to generate though the game issues that can be compared to real live positive or negative moments. In that sense the game tool also demonstrated to be useful bringing 'simulated' contingent-unpredictable issues to the discussion table which commonly prescriptive design process tried to erase in order to have a fully controlled situation. However to acknowledge and discuss these contrasting situations allows to think and identify additional factors of the design process in order to promote positive inputs from participants or on the other hand to have strategies ready to deal with negative situations. In other words it is necessary to recognise the involvement of socio-economic, political, etc. forces in the design process and consider possible impact that they can have. Considering these additional factors can allow designers to take advantage of them or at least be ready to contingent situations rather than only neglect or ignore them. In other words the game tool could be useful to bring discussion to the table of the impossibility of a fully controlled design process or the impracticality to apply traditional architectural values within the ScarCity.

Sense of Community and Leadership

A very **proactive** participant interested in social enterprise introduced his own agenda; he bought a plot for the whole community benefit in order to grow organic food. As a result the other settlers appointed him the Head Officer of the community. This act un-locked issues never explored before or in other sessions such as claims for local organic food programme support. This was also the first time that a Head Officer was introduced to this game. In general he made the process easier for the Agent as he was always supporting him. This experience reminded to the author of a recommendation from Gisela Medina, a real life 'Agent' in the vernacular town of San Antonio, where she has coordinated a successful community engagement. According to Medina the Head Officer is always the key person for every simple intervention³⁰. The Head Officer can always make the things 50% easier or 50% more difficult. This action pointed out one of the most important lessons in the game: the significance of leadership to coordinate an intervention in the actual dynamics. In other words leadership is one of the most relevant aspects of the re-organization and re-birth of this context. In this condition it means that in addition to conventional skills, the revised role of an architect challenges him/her to assume leadership responsibilities. This means an ability of the Agent to coordinate and share responsibilities with local leaders is essential. According to M. Chemers "a process in which one person can enlist the aid and support of others in the accomplishment of a common task"³¹ or according to Alan Keith "leadership is ultimately about creating a way for people to contribute to making something extraordinary happen"³².

Community disagreements

³⁰ Medina, G. (2006). Interview to Gisela Medina: A coordinator of San Antonio's Project, Mich, Mex. . A. Becerra. Morelia.

³¹ Chemers, M. (2002). Cognitive, social, and transformational leadership: Efficacy and Effectiveness. . Multiple Intelligences and Leadership. S. E. M. R. E. Riggio, F. J. Pirozzolo

³² Kouzes, J., and Posner, B (2007). The Leadership Challenge, CA: Jossey Bass.



Figs. 8.54. Participants' unpredictability: The juice over the Game.

In the subsequent session the opposite character appeared, namely the **sceptical** settler who is not supportive with this kind of political practices. However she was indirectly affected by the other settlers' example. Their actions influenced her to keep going and also gave her support.

The most exciting moment happened at the session which had both of the previous personalities together, the proactive and the sceptical. This situation generated one of the biggest community conflicts due to a disagreement between their different priorities, values and capacities like those really happening in mass urbanised cities in Mexico. The sceptical player decided to not collaborate with the community's fund. Instead she decided to invest most of her resources in her own housing. However, the proactive player organised a discussion within the community arguing that this kind of attitude is the most dangerous and unsustainable for the community's future development. He pointed out that at the end it is unfair that although she is not contributing to the community's fund, she would take advantage of some of the achieved benefits.

Additional lessons examples

In order to have further understanding of additional lessons, the following section of visuals is going to show more detailed examples and comparative analyses of the participant's speculative Architecture of Scarcity production resulting from the three different case studies. These are:

- Diverse prototypes production expressing individuality through the different interpretation of the same concept and diverse use of the same available resources. (See visuals case study 1-figs. 8.55-8.56)
- Further understanding of the Design tactic programmes organised in four main labels thought The Strategic Framework in action. As a result participants appreciated a suggestion of sustainability as an ethical framework. (See visuals case study 2-figs. 8.57-8.60)
- Understanding the value of community cohesion and contribution towards the implementation and negotiations of social, economic, technical and environmental programmes and subsidies. (See visuals case study 2-figs. 8.61-8.62)
- Comparatives of participant's production with live environments. (See visuals case study 3-figs. 8.63-8.64)
- Observing the evidence of every day evolution of the non-prescribed informal design process. (See visuals case study 3-figs. 8.65-8.67)



Case study 1:
The Traditional Vernacular
(figs. 8.55- 8.56)



Participants

- S1. Settler 1
- S2. Settler 2
- S3. Settler 3
- S4. Settler 4
- S5. Settler 5
- S6. Settler 6
- S7. Settler (The Agent)
- S8. Settler 8



Strategic framework & Supportive tools of design

(Intangible design structure)

- 1. Plot location card
- 2. Area of virtual Strategic Framework Area for programmes in action
- 3. Individual Family Support Chest
- 4. Technical programmes in action
- 5. Additional Settlers' cards
- 6. Cards of Individual Family Support
- 7. Locally available resources
- 8. Different skills & basic resources chips
- 9. Environmental programmes in action
- 10. Green flag indicating proficient use and understanding of environmental issues.
- 11. Forest
- 12. Well managed wood as raw material
- 13. Catalogue of Scarcity Design Tactics
- 14. Cards of Community Support
- 15. Dice
- 16. Community Support Chest
- 17. Socio-Economic programmes in action
- 18. Cards of Contingencies

Architecture of Scarcity

Production (tangible production)

- P1. Dwelling of settler 1
- P2. Private plots area
- P3. Community support fund
- P4. Head office area
- P5. Dwellings of settler's 3,4 and 6
- P6. Dwelling of settler 2
- P7. Dwellings of settler 5 and 7
- P8. Public land
- P9. Agency area
- P10. Clinic and secondary school
- P11. Primary school
- P12. Plaza and Market
- P13. Church
- P14. Street with local stone paving

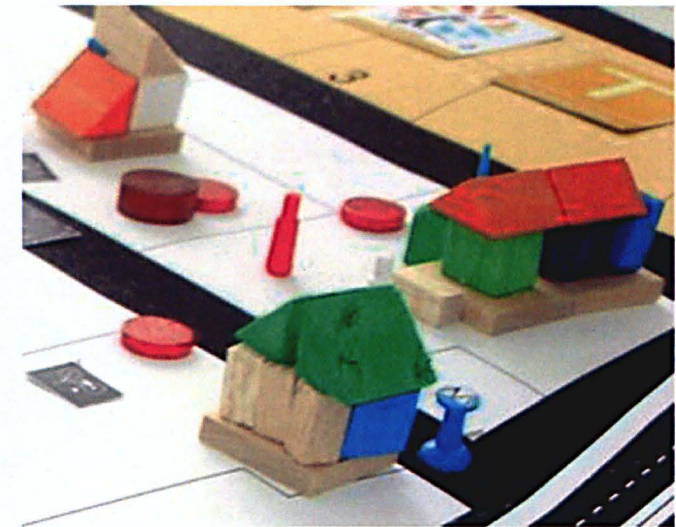
Examples of participants' diverse interpretation of the same concept (figs. 8.57)



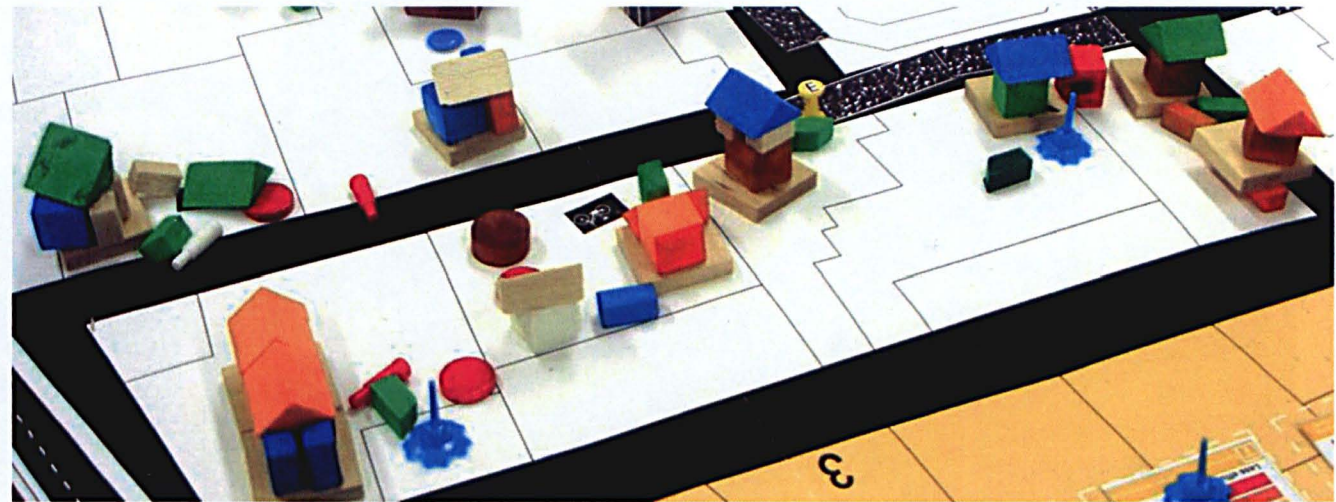
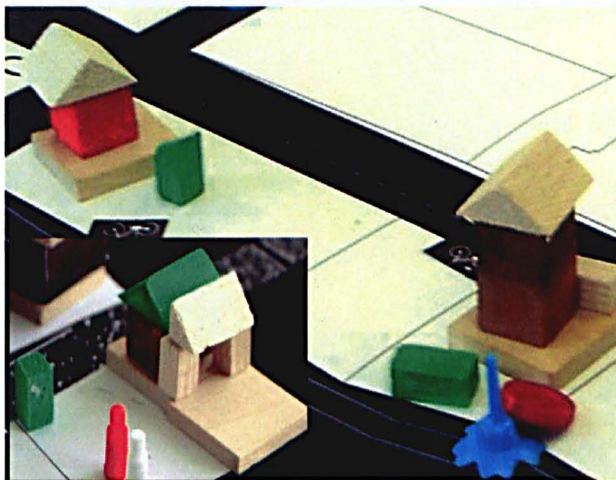
Original Troje from the community of San Antonio



First Troje interpretation in the Game



Alternative participants' interpretation of the Troje



As it can be observed in the outcome production; the session un-locked a rich set of individual interpretations of the same concept taking advantage of the limited resources available

Case study 2
The informal Modernism (fig. 8.58)





Participants

- S1. Settler 1
- S2. Settler 2
- S3. Settler 3
- S4. Settler 4
- S5. Settler 5
- S6. Settler 6
- S7. Agent's card
- S8. Settler 8



Strategic framework & Supportive tools of design

(Intangible design structure)

- 1. Plot location card
- 2. Area of virtual Strategic Framework
Area for programmes in action
- 3. Individual Family Support Chest
- 4. Environmental programmes in action
- 5. Additional Settlers' cards
- 6. Cards of Communal Support
- 7. Locally available resources
- 8. Different skills & basic resources chips
- 9. Technical programmes in action
- 10. Yellow flag indicating proficient use
and understanding of technical issues.

- 11. Forest
- 12. Well managed wood as raw material
- 13. Catalogue of Scarcity Design Tactics
- 14. Individual Family Support Chest
- 15. Small version of Catalogue of Scarcity
Design Tactics
- 16. Itinerant office of the architect
- 17. Socio-Economic programmes in
action
- 18. Cards of Contingencies
- 19. Cards of Individual family support
- 20. Dice
- 21. Canyon

Architecture of Scarcity

Production (tangible production)

- P1- P9 Settlers' dwellings
- P10. Agency
- P11. Public Plaza and market
- P12. Public land and public facilities
- P13. Head office
- P14. Public facilities
- P15. Canyon breach

n The Strategic Framework in action

At the end participants were aware of the functions of the Strategic Framework to organise and enhance local principles. Every single Design Tactic exemplifies the diversity of necessary elements in a concerned community. By playing, the participants were aware that according to a set of characteristics of the specific place, those issues could be different. Each element has a direct correspondence to its specific context (Space) and time. Also each element was open to modification and grows organically according to the participants' personal interpretation.

Different Design Tactics Programmes arrived at different times according to local needs and a variety of opportunities provided by Institutional support. As a result participants appreciated sustainability as an ethical framework. In the words of Paul Durbin "In principle, there may be a general framework for ethical sustainability, but in practice there are only local democratic attempts to bring about some approximation of it" (fig 8.59).



Fig. 8.59 The strategic Framework shows different programmes in action organised in four main labels: Environmental, Technical, Social and Economic issues. The above photograph shows Environmental on the top, Technological on the right and socio-economic on the bottom

Example of some communal programmes



FLAGS

1. Green flag: indicates proficient use and understanding of environmental issues.
I.e. indicates if the Well managed forest programme is running
2. Yellow flag: indicates proficient use and understanding of technical issues.
I.e. indicates if established workshops are running
3. Yellow flag: indicates proficient use and understanding of economic issues.
I.e. indicates if established cooperatives are running
4. Blue flag: indicates proficient use and understanding of social issues.
I.e. indicates if established school or clinic are running

Additional stuff

5. Blue pins: indicate unit of potable water supply
6. Yellow pins: indicate unit of electricity supply
7. Green street lighting
8. White pieces: indicate biomass boiler or wood stoves
9. Green boxes: indicate composting toilet
10. Black long pieces: indicate local's stone paving street
11. Bicycles



Fig. 8.61 Above example of representation of communal programmes

Fig. 8.62. Bottom left : In the foreground examples of different communal facilities such as: the agency, primary school, secondary school, clinic, workshop, cooperative, street paving, potable water and electricity. In the background the socio-economic programmes that supported such facilities. The flags show that some workshops and cooperatives are already running.

Case study 3

Semi – Informal Modernism (fig 8.63)



Additional lessons and reflexions of the test

Making comparisons of participant's production with live environments

Participants from different backgrounds begin identifying similar issues of scarcity in their small housing production compared to their own developing countries environments such as Syria, Iran or Nigeria. A participant from Syria argued that in his country traditional vernacular families used to share the same plot of land growing organically in a **horizontal** way. However, now within Informal Modernism practice such tactic is still a common feature. The main change is that as a result to more limited amount of land in suburban areas now families grow organically in a **vertical** way. This means that housing that in rural areas use to have only one storey, in suburban areas housing goes for two, three or four stories to accommodate growing needs due to more limited space. Doing a comparative analysis between sections A and B-Case study 3 of resulting participant's production and real live photos of the low income housing case study of *Las Higueras* street in Morelia, Mexico, it can be also observed a vast amount of similarities (figs.8.64.) In similar study made by Teddy Cruz in the city of Tijuana, he also acknowledges the value of an opened and flexible design process.³³

At the same time participants from developed countries expressed equal awareness of similar situations in certain areas of capital cities such as London or Berlin. For example a participant from England who lived in East London and has a Sri Lankan background, and another from Germany who lived near marginal Turkish suburbs of Berlin, both said that settlers of these communities also adopt informal tactics as a solution. Even so, such 'informality' in developed countries is not as physically evident as it is in developing countries because social exclusion and economical marginalization is more *Visibly Camouflaged*.³⁴ Similar argument has been developed by the Pop Artist Dudley Edwards in 1960s who was inspired by front doors in Bradford painted by immigrant families in different lively colours³⁵. In this 'informal' way they were expressing their individuality (figs 8.54). The main difference to this example is that in the global south they can go beyond only painting front doors.

In this sense the game tool simulates different patterns of housing evolution limited by the condition of scarcity. This feature allowed participants not only to have understanding of the complex conditions but also to further engagement with founded lessons developing their own proposals.

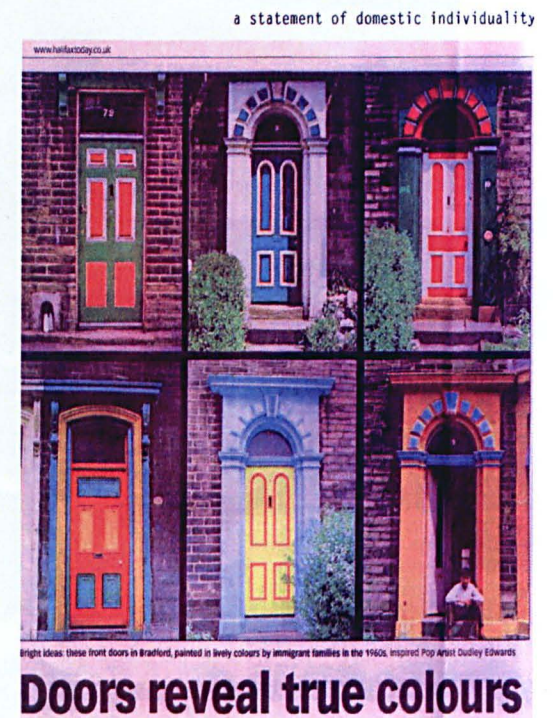


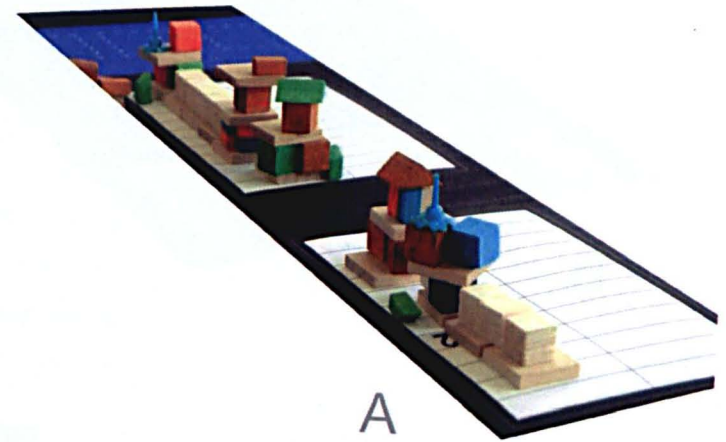
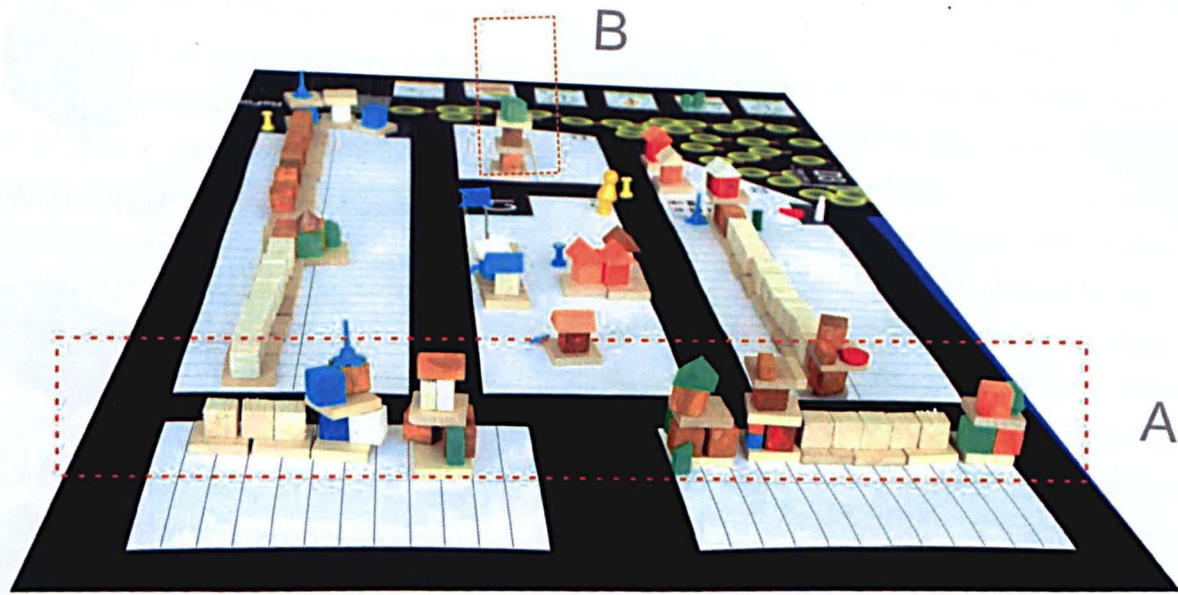
Fig. 8.64 Pop Artist Dudley Edwards photographs in Bradford

³³ Cruz, T. (2004-2005). Border Postcards: Cronicles from the Edge. James Stirling Memorial Lectures on the City. Canadian Centre for Architecture, Montreal and London School of Economics.

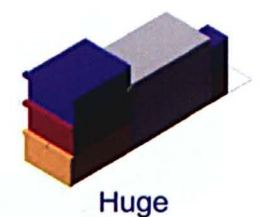
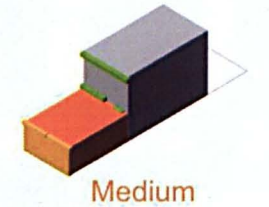
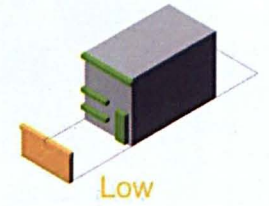
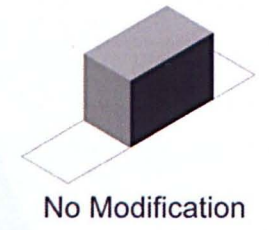
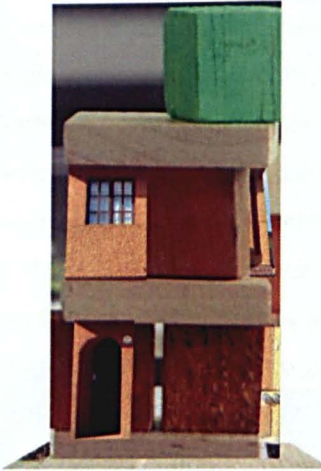
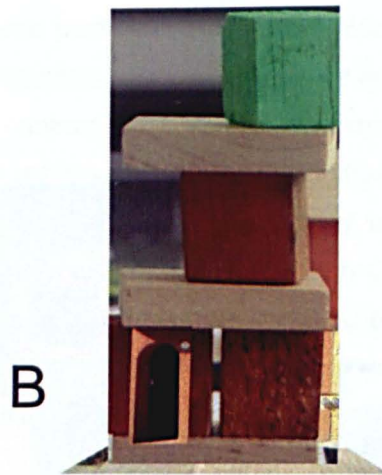
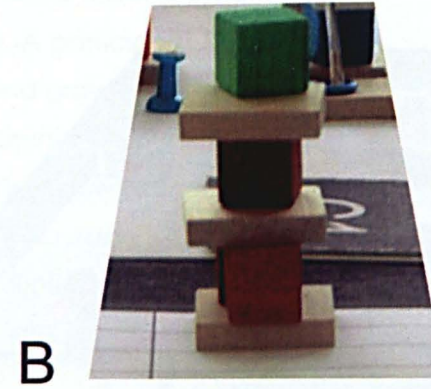
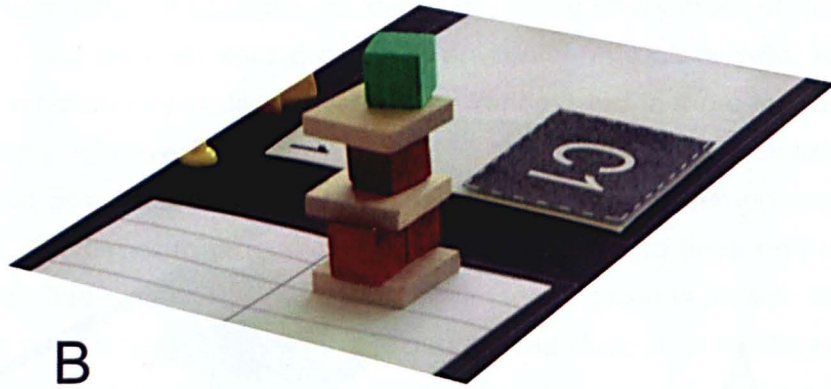
³⁴ The term *Visibly Camouflaged* is used to refer the existence of marginalised areas of the population in developed countries which are not as physically evident as in the global south. The massive phenomenon of marginalised and undervalued areas shows that even in megacities of the developed World there is major renaissance of marginal areas, rather than dying out- albeit under completely different circumstances to the global south context. The latest most evident examples are the immigrant's suburbs of Paris. Additional examples in other European capital cities are: Turkish suburbs of Berlin, African districts of Madrid and Bangladesh *ghettos* of East London just to mention a few of them.

³⁵ Edwards, D. (2004). A statement of domestic individuality. Halifaxtoday.co.uk.

Comparative of participants' production of case study 3 and real life pictures A (figs. 8.65)



Comparative of participants' production of case study 3 and real life pictures B (figs. 8.65)



Design Tactics

The evidence of the everyday evolution

An additional interesting lesson of game tool simulating different patterns of housing evolution is the possibility to record the evidence of process development. In previous analysis developed in stage C-Chapter 6 it was firstly necessary to deconstruct the informal design process of certain case studies and later present a series of frozen sections to explain its dynamic. However the dynamic nature of the game allowed recording the process evolution through both, photographs every 5 minutes and video filming. After editing such information, it was useful as evidence of every day evolution which can be compared metaphorically to time span periods of life developments. This means that participants were able to observe pictures of the design process from the beginning to the end in order to have a wider perspective of how informal communities evolve over time like a live organism. (figs. 8.65-8.66). For example in the Traditional Vernacular example 1 round can be compared to 3-4 months development. Consequently the resulting production of 4-5 rounds can be approximately referred to 1 year development. Similar comparatives were elaborated with the other two case studies. The only difference was that 1 round in Informal and Semi-Informal cases represented 6 months due to faster dynamics of the mass urban areas of developing countries cities in Mexico. The equivalent time span between the game simulation and the live developments was informed by analysis of time average development of the studied case studies.

In different words, this means that discussion of the dynamics of informal process taking place on the table about priorities, capacities, suggested Design Tactics programmes, time periods of execution, identified Institutions of support, etc. allowed participants to speculate about the possibilities of a revised role within the ScarCity context in this case represented by the Agency. In addition both, frozen sections of deconstructed live case studies, generated in Stage C-Chapter 6, and the evidence of every day evolution, simulated by the game, demonstrated to be a complementary set of tools to transfer knowledge about the complex dynamics of informal and semi- Informal design processes. As a result this allowed participants to understand informality as a process. Participants recognised the informality from a wider perspective beyond its forms.³⁶ Different social, economic, environmental, technical and political factors were discussed. Some of the participants' also highlighted that these lessons could be useful tool to plan and develop strategies for future live projects interventions. In one of the participant's words "It conveys how more buildings develop slowly over time, well and also it showed the necessary societal change".

³⁶ For wider understanding of Informality beyond its form see Hernandez, F., P. Kellett, et al., Eds. (2009). *Rethinking the Informal City: Critical Perspectives from Latin America*. Oxford And New York, Berghahn Books.

The evidence of every day evolution (figs 8.66)



The evidence of every day evolution in the three different case studies (figs 8.67)



Traditional Vernacular (4 rounds = 1 year time aprox). These series of photographs represent the production through 2 years time of development



Informal Modernism (6 rounds = 1 year time aprox). These series of photographs represent the production through 2 years time of development.



Semi-Informal Modernism (6 rounds = 1 year time aprox). These series of photographs represent the production through 2 years time of development.



d) The Questionnaire & final Discussion

The closing stage included Questionnaire answers and final Discussion (fig. 8.68). Between 10-15 minutes were required to cover these issues. The questions of the questionnaire were designed to evaluate how the students grappled with the issues embedded within a non-prescribed design process of informal developments. In other words the questionnaire is an additional external tool to evaluate the impact of the session on the participants' thinking and whether there was any change in the fundamental awareness/acceptance of the ideas discussed in the session. In Particular, it aims to establish whether participants were able to further understanding the characteristics of the non-prescribed process of informal developments in Mexico and how they used practically the introduced tools in order to 'play' a revised architect's role for intervention.

After evaluation of the answers to 46 questionnaires, some brief results are presented in parallel¹ (fig. 8.69 and fig. 8.70). The questions generated a limited number of variables². The questionnaire was organised by 10 first questions with multiple choice where only one answer was correct; so only two variables were possible (correct or incorrect). For instance, from the question number 1 to 9 (Q1-Q9) most of the participants answered correctly all the questions with few exceptions. The most surprising happened with the Q10 which says:

What is considered the meaning of sustainability in this game?

- A) It is an Ethical Framework which is flexible enough to recognise local conditions but robust enough to guide participants to achieve a sustainable path.
- B) It is a new path of progress that allows satisfying the necessities and aspirations of the present without jeopardising the capacity of future generations to satisfy its own.
- C) It is an Agency that sells solar panels.

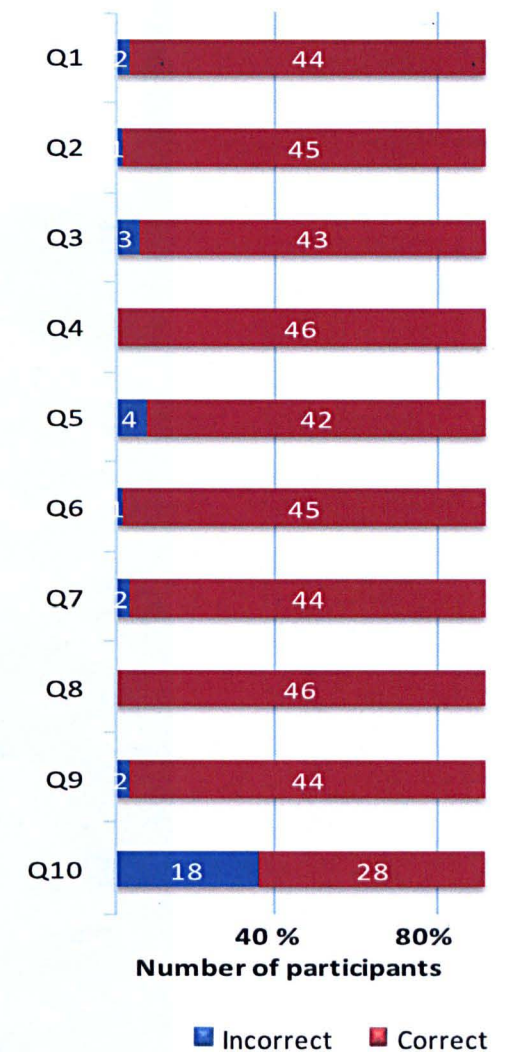
As can be seen in the final results of Q10, 39% equals 18 participants of a total of 46 participants still consider B as the right answer and 61% equals 28 participants of a total of 46, adopted A as the accurate answer (fig. 8.71). This pattern expressed interesting signal. At this stage it is probably causing discomfort in participants' memory construction leading to the first step of criticism against established definitions and considering the possibilities for a new interpretation.³ (See Appendix 7 for full questionnaire's sample which includes all the questions and the second part of the questionnaire analysis).

¹ For more about evaluation methods see Greene, J. (2006). Learning to use statistical tests in psychology Open University Press.

² For more about questionnaire design see Bradburn, S. S. a. N. M. (1983). Asking Questions : A practical guide to questionnaire design. London, Jossey-Bass Publishers.

³ Parrack Livingstone Linda , P. L. E. a. C. G. R. (2002). "Promoting creativity through the logic of contradiction." Journal of Organizational Behaviour(23): 321-326.

Evaluation of the questionnaire



Figs. 8.68 and 8.69: Evaluation of the questionnaire results from Q1 to Q10

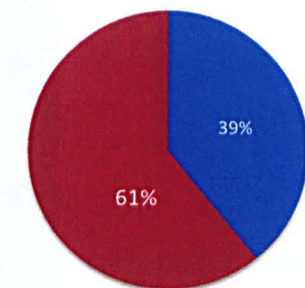


Fig. 8.70 General comparative of the Q10



The Questionnaire
(fig. 8.71)

Final lessons discussion and reflection of the game test experience.

All the test activities of the Architecture of Scarcity Game such as: a) Introduction, b) Pre-Agency stage, c) Post-Agency stage and d) Questionnaire and final discussion were planned to be carried out over the minimum time of 75-90 minutes; however some participants kept playing an average of 30-45 additional minutes. This means that the average length of the sessions was 120 min (2 hours). The minimum playing time was 70 minutes and the record longest session was 2 hours and 45 minutes. During this experience different lessons were pointed out. The final discussion and feedback of participants mainly highlighted wider/general lessons. For instance some participants mentioned awareness of the issues discussed such as:

- The values of citizen's tactics of the everyday practice as a source to inform an alternative design process
- Recognising contingency as part of the design process,
- Understanding the issues of scarcity beyond forms and as a process
- The outcome of the various session of three different case studies un-locked a rich set of individual interpretations of the same concept
- The practical use and flexibility of the design tactics programmes in the three different scenarios
- Practical understanding of the Architecture of Scarcity approach and possibilities of a revised role of the architect within the ScarCity context.

Reflecting about some of these comments that occurred during the dynamics of the test but also referring back to previously mentioned intended objectives in Chapter 7. The test was firstly designed to create author's strategies for intervention. Secondly to encourage participants' further developing understanding of the complex factors involved in the informal design process of communities in Mexico. Thirdly it was a media to test the validity of founded lessons and designed tools which have the aim to support the new architect's role within ScarCity. In other words the test intended objectives were to test a combination of the scenario1 –a tool for a thinker/coordinator to develop ideas and strategies for intervention and scenarios 2a-2b -a tool for knowledge transfer by simulation the key elements of the informal process and use of founded lesson to inform the design process.

It can be possible to argue, **beginning with scenarios 2a-and 2b**, that resulting production and final discussion of the participants not only expressed a clear understanding of the intended objectives but also demonstrated a high level of personal interpretation, suggestions and application of the raised concepts. According to the final results the test facilitated the development of participants' awareness of the importance of non-prescribed processes at informal developments and issues of scarcity as a design tactic for a high level of creative solutions which break with traditional stereotypes. By implication participants challenged by the condition of scarcity had to think beyond the traditional values of architecture.⁴⁰ In other words the test created situations where students were able

⁴⁰ About traditional values of the architect see Habraken, N. J., Ed. (2005). *Palladio's Children Essays on Everyday Environment and the Architect*. New York, Taylor and Francis.

to interrogate conventional values and come up with creative ways of addressing the new challenges that they faced. It is possible to say, in Piaget terms, that some participants were challenged to an 'Extended Equilibration Stage' in order to come up with new creative solutions.⁴¹

Gaining a better understanding beyond informal forms of how things work helped derive solutions to what an architect as an Agent might do within informal developments. Alejandro Ramirez-Ugarte argues that rather than neglect and observe the informality with prejudice, in this case the Mexican example, a learning opportunity also for students of western countries exists. This is due to the fact that this reality is approached from a foreign or contrasting view point, "one that is not distracted by quotidian and local concerns. Matters that are of social relevance and worthy attention may be discerned".⁴² In other words there are valuable lessons to be learned, specifically in the test experience participants recognised the value of alternative design processes in architecture and its infrastructure produced bottom up processes within a context of limited economical resources, social struggles, real time solutions and chaotic organisation. Even if the context is different such lessons learnt from this test could lead to valid number of alternative design tactics such as: different local philosophies for adapting the local environment; technical options limited by traditionally available materials and non-highly-industrialised techniques; local skills and customary design process with complete involvement of each household in the housing process; open processes which follow a series of interventions according to different contingencies; communal service exchanges and group money schemes to mention just some examples. Founded lessons and designed tools allowed participants to engage and understand this reality more critically. In short, it is possible to say that majority of participants not only have heard and perhaps understood the ideas discussed, but also they have taken them on board, processed them and engaged with them critically. Hopefully in near future also inspire them to develop their own approaches not only for the communities concerned, but also for their future challenges in the western world.

The main lesson learnt as the Agent-coordinator of the test experience

Following with scenario 1, the main reflection from the author's point of view as an Agent-coordinator of the test after a set of sessions is that it cannot be possible to prescribe all the 'rules' for the game (simulated or real); rather as a possible Agent it is more important to be ready to understand the richness and unpredictability of participants' behaviour interacting and challenged by the conditions of each case study. In this sense, the agent can enlist the aid and support of his network in the accomplishment of a common aim according to the specific circumstances of each case. This means that the suggested Strategic Framework to support the community development has to be flexible enough to accept different situations, but robust enough to act as guide through basic sustainable principles. To achieve this task the proficiency of the Agent and all the knowledge support of the RIASS in helping this process is essential. The Agent's additional skill is to develop the ability of assuming leadership in environmental,

⁴¹ Piaget, J. (1999). "An Exposition of Constructivism: Why Some Like it Radical."

⁴² Ramirez-Ugarte, A. (2008). Reflexion. Opportunistic Urbanism. D. R.-. Lovering. Melbourne, RMIT University Press. Pg. 8

social, political, and economic arenas where key decisions about the built environment are being made.⁴³ The *Architecture of Scarcity Game* cannot provide a proven formula for success, but offers an exploration of theory of design-by-research of these issues that may be useful for training future Agents for real life projects.

In order to have further understanding of this reflection, it was highlighted that some examples of the participant's production when revised, show evidence of physical production that looks similar to reality. This metaphor can be a useful to link this simulation to the real context. However, it is more important understand the dynamic process of the participants to achieve such production. Consequently, after assimilation of the informal process happening, it can be considered useful for participants because the good or bad things that happened in a game can facilitate learning about how the community can work. The game especially helps them to speculate for example about: a informal community facing rapid change and limited to scarce resources, simulate social behaviour, observe the value of community contribution, play with intervention, modifications, adaptations, search non linear processes, explain it in different ways, clarify options, and develop realistic aspirations. In other words, it shows the participants how it is a useful framework for design, a media that encourages participants to think constructively, explore alternatives and build consensus.

The key principal of the game remains the fact that is dynamic, changeable and unpredictable due to participants' involvement. As a result the game not only can have an application for understanding the dynamics of informal processes and testing practical use of founded lesson. In addition to students and academics, hopefully it could engage very different professional groups in dialogues including communities, councillors, planners, architects, mayors, developers, policy makers and more citizens involved in the built environment in near future (Scenario 3). In fact some participants and critics practicing in this field suggested using this tool as a **community engagement and participatory design tool**. They argued that in this way even more complex issues of governance, power, democracy and self-determinacy could emerge and be explored.

In conclusion this test demonstrated respect to the variance of participants' individual interpretation of informality, provided a structure for better understanding of the issues of scarcity discussed and encourages personal expression with the support of founded lessons and designed tools. The test activity not only simulated different patterns of non-prescribed design process in informal and semi-informal communities in Mexico, but also was a media to unlock other contingent factors involved in the design process such as different participants' patterns of social-economic thinking. At the same time bring together to the table discussion required intuitive, strategic and logical thinking of different participants to face coming challenges involved in the informality agenda. The author observation over all the test session of participants engage in this activity suggest that if individuals begin to understand informality beyond its forms, they consequently will appreciate the valuable lessons of the non-prescribed design process and feel confident to use them. Additional researchers suggest "*Rethinking the Informal*

⁴³ See Till, J. (2009). *Architecture Depends* Cambridge, MIT Press.

City" in order to understand the complexity of sustained and 'transculturation' processes involve in informal developments.⁴⁴

The outcome of this study and the final result seen in not mainly the 'virtual' Architecture of ScarCity production using the game in conjunction with all its elements and tools, but the result of a greater confidence by participants to challenge conventional architect values and inspire them to develop new ones for a revised architect's role intervention. In other words the test, in simulated manner, pointed out the validity of a non-fully prescribed design process which accepts the use of citizen's tactics and acknowledges additional contingent forces in design process as a fertile ground for creativity. As a coordinator of the test it was observed that confidence is critical in leveraging such participants' creativity. The best reward as a coordinator of this session is expressed in the following reflections of one of the participants; *"it is just a game but a meaningful game!"*

In order to have further understanding of the live projects applicability of Architecture of Scarcity approach, the following section is going to present two different ends of the previously discussed story. Following to the story boxes the complementary part of the Provisional Outline Plan for Architecture of Scarcity Design and Practice is presented as a method to guide possible future interventions. Finally the overall conclusions are presented in the following Conclusions Chapter 9

⁴⁴ Hernandez, F., P. Kellett, et al., Eds. (2009). *Rethinking the Informal City: Critical Perspectives from Latin America*. Oxford And New York, Berghahn Books.

Story part 4. Ten Years Later: two possible story's ends

Scenario A: Driving by Chance

After ten years Dorotea and Miguel had achieved some of their goals. However, there are additional issues now being raised. In the case of Dorotea and her husband, they managed to complete some basic finishes such as decoration and painting to their housing; also they added another bedroom. Now with a second daughter, they are considering making some additional amendments. In relation to the promised local primary school, unfortunately the government terminally suspended its construction. The new local government argued that there was a 'lack' of budget but settlers of the community suggests it is simply due to 'lack' of interest. As a result Dorotea is taking her son and her daughter to the school where she works every day. After school her children commonly play at the improvised 'green' area in front of their house. Now a creative playground has been developed by the community. Fortunately a neighbour who is working in tyre repairing workshop managed to recycle some of them in a very creative way.

Regarding Miguel, he was able to complete a second bedroom for his two sons. Now only the toilet needs work to be in service. He is supporting his plumber friend in order to learn how to deal with his own toilet. He still drives his own taxi, but unfortunately, after ten years in similar posture and little advice on his seating position added to low exercise and high fat diet, he is suffering some health complications. He is thinking of starting jogging at the local 'green' area. Nevertheless this place is not motivational enough to have at least a walk. Furthermore one of his sons is already in a secondary school which means more requirements. He normally spends 1 hour and 15 minutes every day in transport journeys to reach the school. Finally his old taxi after 10 years of service calls for retirement. At the moment this looks impossible due the spending of all his savings in his back treatment and additional son's expenses. A credit option for a new car looks difficult due the impossibility of make the deposit.

As it can be observed future plans for both families does not look too promising.

Scenario B: Driving by Chance + Strategy + Opportunity

After ten years time Dorotea and Miguel have achieved most of if not more than their goals. One day listening to the radio as usual at work, Dorotea head of a community application call. In this case it was a call from the Research Institute of Architecture of Scarcity Studies. They were looking for an organised community on which to apply their research. The RIASS offered to establish an Agency which can help to support the local community's sustainable development. The main requirement was to have formally and legally a civil society and ask for an agent's visit to fill a form which will explain the aims, weaknesses and strengths of the community. Even when Dorotea did not understand what 'sustentabilidad' means, she got the main concept behind the idea. Her main motivation was hearing of the possibility of a local school which can save a lot of time and resources in transit of more than 2000 families of the 3 different section of Villas de Pedregal. Actually if parents are fortunate, they only have to travel 1.5 km to the nearest community, otherwise they need to go further away. Also the possibility exists of creating new local jobs and adult evening classes. Dorotea saw this chance as good opportunity for their children and also a motivation to find a closer job. If she can find a job in a suggested local school, she also can have additional time for her own little business or teaching cooking/baking classes. She is a very good pudding maker, at the moment only produces a few on weekends to get extra income.

Dorotea took fast action to organise a community committee and submitted an application on their behalf. Even when Doroteas' husband was reluctant due to cultural traditions, he finally gave her all his support. Fortunately Doroteas' application was successful. The RIASS took action after two months and in additional 9 months of research, discussion, and negotiation, a local agency was established. During these processes different institutions such as the local University, City Council, Social and Environmental Secretaries became involved. The first target was to organise efforts for a new primary school. After difficult battles with the local government the school budget was finally assigned. Along with this some funds for evening workshops and local business incubator were also approved. 20 % of the economic



Fig. 8.72. Above; Rutilia on the left Settlers of the low-income housing of Villa Magna.

Fig. 8.73. Bottom: Lupita



contribution were supplied through the Community Contribution Fund. Due the lack of cash some of these contributions were given in 'hours' of work by members of the community. Dorotea was the first one to give some extra hours of her time as a secretary, a secret skill that she practiced only one year before getting married. In the case of Miguel, he was supporting the committee with the delivery of official documents to different institutions. Also his social and broad networking skills which he had developed as a result o his experience as a taxi driver added additional sponsors and supporters.

After one year of hard work the community supported by the Agency achieved the local school and business incubator centre. In the first year of operation Dorotea managed to allocate her children successfully. Even when she thought to work for the local school she finally received an offer from the local City Council to be the official head officer for 3 years of the community of Villas del Pedregal. In addition to discovering her new passion, Doroteas' job allows teaching baking evening classes and she also has some extra income from the local handmade sweet shop supported by the cooperative programme. The same programme funded by the Local Bank Support played a key role upgrading Miguel's taxi business. He also applied to the CO2 emissions reduction programme to receive an extra subsidy. In this way he managed to swap his taxi for a LP gas Van Taxi service. As part of his new approach he also delivers school breakfasts every day from a local Deli and organise some day trips on weekends.

After completion of the school a local clinic was added in the same area on public land. It already has a family doctor, a dietician and two nurses. In the day time they are mainly organising children's diets (breakfast and lunch) at the school, exercise routines and additional health issues. In the evenings the clinic's members deal with similar issues with the parents.

The Agency left Villas del Pedregal after successful competition of additional individual family programmes such as the application of solar water heating system developed in partnership of the University of UMich and a local factory. Another program was the compulsory recycling and energy saving bulbs scheme supported by National Commission of Electricity.

The local committee managed to continue the community's sustainable approach. The new community's goal now is to have a local secondary school. Another interesting project is to establish a local plastic processor factory. The community already manages to recycle 90% of all local waste. Students from the Technology Institute suggested processing all the paper, cardboard and plastic. Although this project needs a considerable amount of investment, the community is already studying different options.

The Agent is still visiting the community at least once a month for a consultancy, to manage different workshops and gather invitations. However the new task is now to assist to Rutilia, a representative of the neighbour community of Villa Magna, and Lupita her daughter. After successful completion of different projects within the City such as Villas del Pedregal, the City Council is continuously funding the Architecture of Scarcity Programme through the Secretary of Social Development and the Commission for Sustainable Cities Development.

Provisional Plan of Work of Architecture of Scarcity

The participants' output from the simulation tests was crucial informing the following Plan of Work of Architecture of Scarcity. Hopefully this could be useful as theoretical basis for future live interventions that should be considered as a guide rather than a series of prescriptive rules that should be strictly followed. It is important to consider this plan as 'Provisional' due to live projects will inform it further in the future. (Pre-Agency Stage + Post Agency Stage).

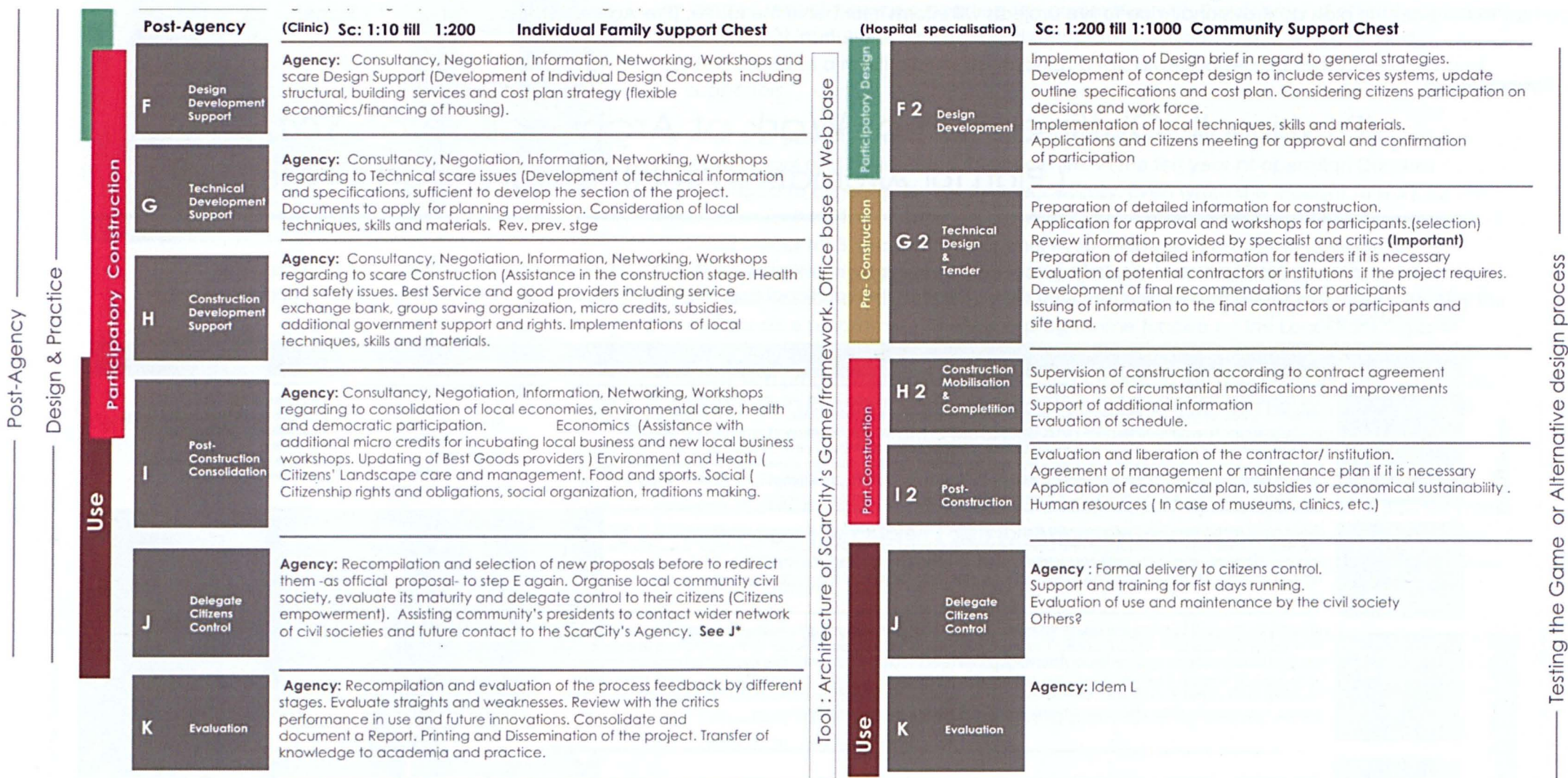
Pre-Agency Stage

(Provisional) Outline Plan of Work of Architecture of *Scarcity* (Plan for Alternative Architectural Design & Practice)

The Outline plan of Architecture of *Scarcity* proposes the process of managing, designing and construction development of projects under circumstances of scarcity. As a result under such circumstances the traditional approach result useless calling for an Alternative Architectural Design & Practice Process.

Work Stages -	PreAgency	Description	Examples of(visuals)	Part of Game or toolkit designed
Pre-Agency Research Design by Research Participatory Design	Diagnosis Lessons & Preparation Networking	A Documentation Mapping Conceptual Drawings The purpose of this stage is to map and document the main issues associated with local conditions. There are different 'levels' of documentation, in this stage it is very important to make visible and communicate issues that traditional practice commonly does not take into account, such as: inequality, consumption, polarisation, irregularity, informality, etc. The traditional practice of architects is to impose new projects 'putting in'. The revised version is to 'draw out' the local conditions first and to understand the different dynamics involved from a bigger picture. In short, the rise of the importance of the main issues requires documentation to be more integrated and consistent - and thus the involvement of everyone and more holistic forces is greater.	(Tool A) Intro case studies Abstraction of case studies layouts Polarisation Time scale? Additional Mapping	Data base card Abstraction of layout for the board Abstraction of settlers (recover my stories) Add little story of the settler to now more about him/her
		B Summary Analytical Drawings A summary or recap in this case means a short overview. The main purpose of such a simplification is to highlight the major points from the Mapping and Documentation carried out during stage A. The target is to help the reader get the gist of the main issues involved in a short period of time. In this case it is important to recap the nodes of tension and identify the levels of inequality or levels of marginalisation of the studied community.	Tool QualiUn System Mspectrum Architects Role	Contingency cards?
		C Issues of Scarcity In stage C, Issues of Scarcity, the question: 'What are the local conditions and features that make the development of ScarCity possible without an architect's intervention?' will be addressed. The aim of this exercise is to explain through visual means, why such issues are productive in each context and what are the main conditions that allow its success. The target is to help the reader get the gist of how citizens under the condition of scarcity have been breaking boundaries through informal developments, and not playing by the rules of the traditional architectural practice, in order to afford their basic housing and consolidate their communities.	Level of intervention Tool Conceptual D Analytical D Exploratory Abstraction D Design Tactics Catalogue of IS	Depends of the context. Catalogue of Issues of Scarcity programmes for application and (little logo cards)
		D Appraisal Design of Strategic Framework Networking Chasing Institutions & formalizing its participation The Appraisal (decision analysis/decision project) is an alternative-making process comparing options to produce a new objective. It suggest a model to simulate how the actual dynamics can be manipulated, evaluating the new role of architect participation and additional support from different institutions. It attempts to create a political strategic framework that gives solid foundations to an enhanced design process in a condition of scarcity (limited resources). The appraisal aims to manipulate the actual dynamics driven by 'chance' in informal developments to achieve a more balanced condition driven by 'strategy'. Two? variables/scenarios: What would happens with out intervention What would happens with Architecture of Scarcity intervention Community Rep	Tool Cards - Dbase Strategic Framework Design drawings... Main sides according to specific conditions.. Little cards playing Tools to evaluate scenario 1 scenario 2	Adding virtual framework to the main layouts based on 4 main topics Exploratory drawings of little cards before playing Institutions of support cards Little institutions logos Keeping stronger contact with government and additional institutions Promotion and looking for economic resources.
		E Design Brief & Conformation of Scarcity's Agency Defining initial Priorities . The design brief stage is the dynamic process assessment of possible interventions, developed through workshops by all the parties involved. It has the aim of defining the main vision of a specific intervention, outlining the aims, objectives and milestones of the Strategic framework (economic, technical, environmental and political). It is important to have representatives' attendance from each and every sector involved (community, RIASS, institutions, etc.) This is a critical forum that will discuss constraints and potential of the area. An articulated design brief is a critical part of this design process. It aims to help to develop trust and understanding between the representatives of the community involved, and representatives of RIASS and participant Institutions. It also serves as an essential point of reference for all involucrate parties. Above all, the design brief ensures that knowledge about design issues is considered and questioned by the Agent, before its Agency is established and starts work. Sign of collaboration contracts if it is required. Final Database of participants.Organising agenda, meeting times, Agency opening days and services provided. Agency ready.	Brief Individual Family Desig support chest Community Design support ch Methods of application Organigram tray & task Contracts Agenda & Times	Individual Family Support cards Community Support cards Institutions of Support Catalogue Organigram try design for intervention

Post-Agency Stage



Note: From F-J stages, these can be overlapped. This means that different stages can begin again X number of times. This process allows the design by little chunks accepting the limitations and circumstantial changes of scarce situation. In other words this process accepts an open end allowing everyday contingent modifications. Also in certain circumstances can be possible to jump from one stage to the other missing one in the middle.

J* In this stage of citizens empowerment, additional proposal can be possible according to the specific characteristics of each community. Those could lead to a different economic, social or environmental future interventions. As example those can be: communal transport, car club, travel agency club, free local transport, community food buying and delivery, consolidation of home clusters of offices, security, local water supply control and recycling, local energy production and supply, communal internet access, free connexions within the community, local network by internet or radio frequency, environmental campaigns, only cycling inside, local landscape management, recycling collection, management and transformation, Job centre, group saving and investment opportunities, political community participation, governmental links, communal celebrations, additional amenities , spot club, school enhancement, local clinic, workshops, etc. Key word Autonomous Community.

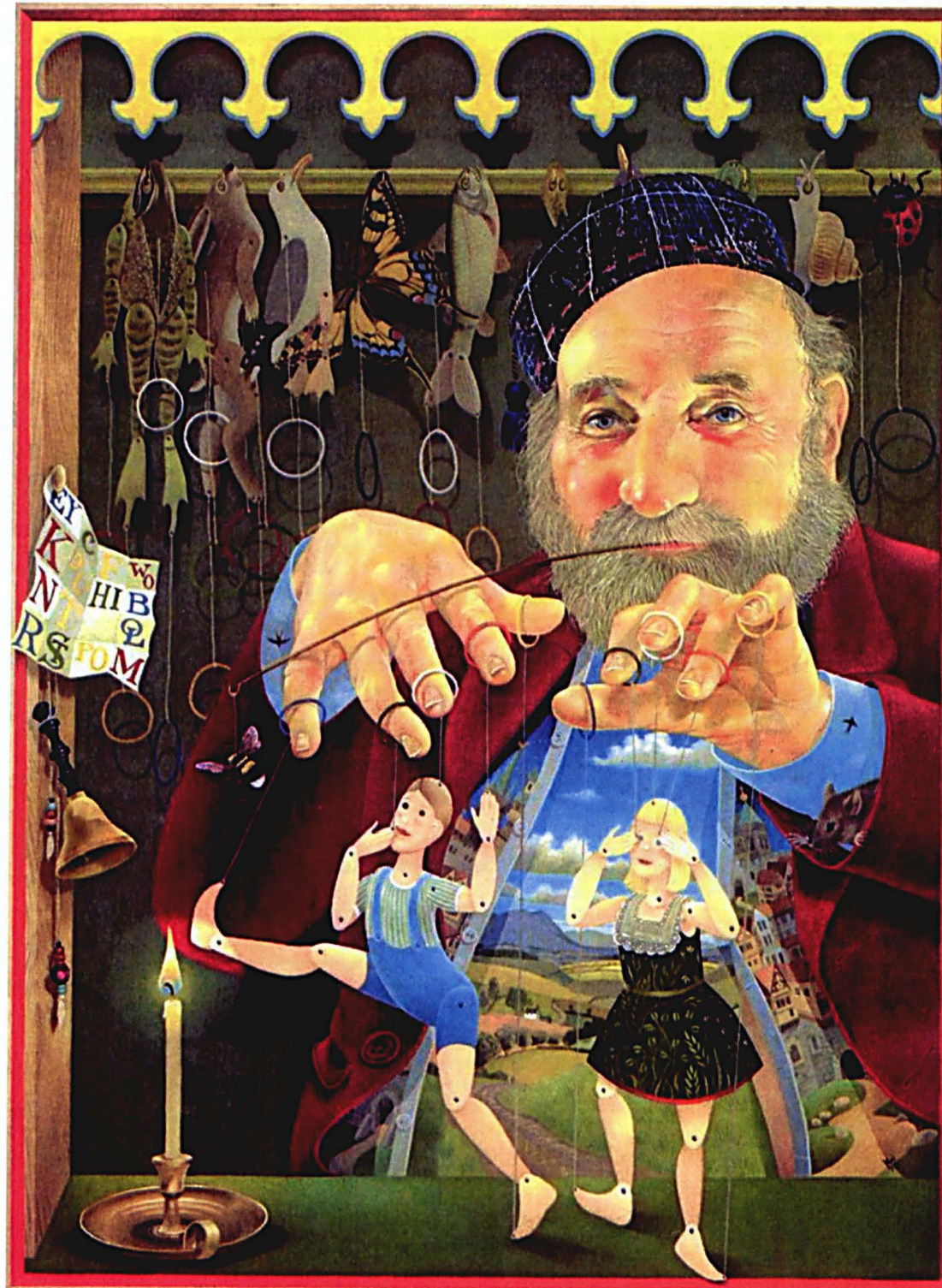

Architecture of Scarcity

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Chapter 9: Conclusion

Architecture of ScarCity:
A non-prescribed design process approach



"The stupidity of perfection"

Silva Herzog

Architecture of ScarCity, revaluating the non-prescribed design process approach

Recapitulating findings

The part 1 of the thesis: Architectural Globalphilia and the City of Paradoxes Model

The importance of this study was to begin the debate on the future of sustainable Mexican architecture promoting a critical understanding and realistic scheme for adopting a new path. In other words the broad research question was what is an appropriate design approach for future Mexican architecture at the beginning of the XXI century?

In this sense, this thesis began by discussing the actual tension generated by the adoption of the foreign concepts such as sustainability, as the actual main novelty, in the field of Architecture in Mexico due to the *Globalphilic* phenomenon. In other words it was founded a tendency to 'love' and uncritically adopt foreign tendencies mainly coming from the western world. However the most interesting finding is that The *Globalphilic* phenomenon is not a new phenomenon it has driven both architectural production and urban planning since Mexico's independence over last two centuries. In other words it can be the result of a postcolonial phenomenon. At the same time it was explained the reasons behind the limits of adopting sustainability without any critical questions; especially within the context of contrasting and dichotomous conditions like Mexico. It was argued that sustainability is another western discourse that does not correspond fully to the realities of life in Mexico. The resources, values, capacities and priorities of the majority of Mexico's population as part of the Global South countries are very different from those of the developed Global North, and yet many of the concepts of architecture and sustainability have been uncritically taken from one context to another. The result is that issues of sustainability in the architecture of countries such as Mexico remain under-theorised.

Previous postcolonial analysis such as Hommi Bhabhas explanation of the 'pedagogical' and the 'performative' or directly in the field of built environment Rahul Mehrotra's concepts of 'static' and 'kinetic' city had discussed such issues highlighting the ambivalence nature of every nations project and showing the struggles of projects that attempt to impose total order and control.¹ In Mexico, Jesus Silva Herzog entitles this situation as *The Stupidity of Perfection* highlighting the impossibility to achieve whole perfection through a prescriptive process.² Following with this discourse the term used to amalgamate a critical framework of analysis of Mexican cities conditions or other cities with similar characteristics was *the City of Paradoxes*. It is integrated by two bipolar areas, *AbundantCity* and *ScarCity*. The former refers to the space strongly influenced by the westernised approach based on prescribed design process and commodisation of natural, human and economic resources. As a result in this approach, architects take for granted to have total control of the design process and have abundant management of resources for the creation of 'perfect' space. The second term refers to the space developed under conditions of scarcity, due to different limitations, the design processes is challenge to be developed by

¹ Bhabha, H. (1990). *Narrating the Nation*. London, Routledge, Bhabha, H. (1994). *The Location of Culture*. London, Routledge. Also see Mehrotra, R., S. Dwivedi, et al. (1995). *Bombay: The cities within*. Bombay, India Book House.

² Silva-Herzog, M. J. (2006). *La idiotez de lo perfecto miradas a la política Mexico City*, FCE.

non-prescriptive design process which uses citizens' tactics as the main tools. Also the process of scarcity has to acknowledge additional contingent forces that influence the built environment. The objective of this model of analysis was to make clear the ambivalent capacities and priorities causing a tension within Mexico towards a more sustainable cities future. At the same time the analysis of both pointed out the contrasting amount of recourses needed to fuel each approach.

The outcome of The *City of Paradoxes* model of analysis (part 1) pointed out that actual western concept of sustainability is still revolving within a complex paradox. To explain this statement further, it has been noted after a detailed analysis of the conditions of Mexico and also supported by different modernity and sustainability critique, that the main limits to the application of this concept in non-west countries like Mexico is related to a different understanding of time. A 'cyclical' model perception of time still remains in majority of Mexico's population which is different to 'modern' model understanding found in western culture which AbundanCity attempts to imitate. It was exposed that the western model mainly focused on a 'prescribed' process, which considers every day as a new opportunity to improve previous actions, so creating the chance to achieve a form of 'perfection'³ on the search for an ideal society.⁴ The 'modern' perception is expressed through a different ethos regarding nature and resource use, and by implication a dissimilar system to accumulate wealth. The key issue for the successful development of such a model is the need for absolute control over natural resources. By implication built environment developed under this model requires a prescriptive design process which uses excessive amount of resources for construction and consumption. Consequently, it was identified that such an approach is causal of actual environmental degradation⁵. It has been argued by different critics that the main concern of the western approach is its 'utilitarian' consideration of the environment which is still present in the principles of the western model of sustainability⁶. In terms of Timothy Luke under these conditions "environmental degradation perversely acquires its own degradation"⁷. The main conclusion until this stage of the thesis suggested that as well as Octavio Paz pointed out in 1970s that "Modernity is an exclusively western approach that has no equivalent in other civilizations"⁸, sustainability in contemporary times, is an exclusive western concept that only can be uncritically adopted in Mexico by the life styles of the wealthiest communities (AbundanCity), not with those who live under the condition of scarcity (ScarCity).

As a result, these findings and conclusions of part 1 (Chapters 1,2,3) leaved more questions than answers. Such questions were: What then really means to be an architect in the Mexican context? What is an appropriate design approach for future Mexican architecture according to its specific circumstances? Can one formulate a new approach to future Mexican architecture based on a model that is the antithesis of the western approach? If so, rather than considering Architecture from an idea of 'perfection' and *Abundance*, is it perhaps time to start thinking in accept 'imperfection' due to the conditions of *Scarcity*? This means can one formulate an approach based on the idea of *Scarcity*?

³ Roland Schaer, G. C., Lyman Tower Sargent, Ed. (2001). *Utopia: The search for the ideal society in the western world*, Oxford University Press.

⁴ Paz, O. (1974). *The Children of Mire: Modern Poetry from Romanticism to the Avant-Garde* Cambridge:Harvard University Press.

⁵ Schawarz, U. (2004). "Que es hoy "modemo"? La arquitectura de una sociedad radicalmente modernizada." *Anales del Instituto de Investigaciones Esteticas*, otono XXVI, Num 085: 75-83.

⁶ See Luke, T. W. (2006). "The system of sustainable degradation." *Capitalism Nature Socialism* 17(1): 99-112.

⁷ Ibid. pg 100

⁸ Paz, O. (1974). *The Children of Mire: Modern Poetry from Romanticism to the Avant-Garde* Cambridge:Harvard University Press.

In looking for answers to such questions, in part 2 (Chapter 4-5) the response was to observe to Mexico's local conditions recognising the value of a non-prescribed 'cyclical' model created under the *Conditions of Scarcity* in the Traditional Vernacular, Informal and Semi-informal practices of Mexico's settlements. Supported by the vernacular and the neo-vernacular schools of thought, it was identified that such an approach in the three corresponding variants accepts the challenge of managing a limited amount of locally available resources. The common feature-issue is the challenge of not having control over all the elements of the entire design process. As a result it is indeterminate: taking advantage of citizens' tactics for developing their own environment and playing with a full set of contingent forces to deal with the everyday struggles. In other words, the ScarCity's approach is open to change over time and can be upgraded through an improvised process of organisation. Commonly, this approach, which is a result of these specific characteristic, can be classified as 'imperfect' if an understanding of a non-prescribed process is still embedded within normative notions of architecture. Nevertheless, in this case this approach provided the basis to address some key questions. Bhabha's theory was a starting point to revalorise such 'spaces of mixing' or 'space of hybridity'. He argues that such spaces offer the most profound contemporary challenge for developing countries.⁹ Felipe Hernandez explains this phenomenon in Latin America in terms of bidirectional transcultural system that should be revalued.¹⁰ A wide range of critics and professionals practicing on global south countries such as Rahul Mehrotra, Teddy Cruz, Nelson Brisac, Alfredo Brillembourg and Diego Lovering to mention several, suggest putting attention on its involuntary sustainable lessons. To revalorise such spaces in the Mexican context and to put attention in the involuntary sustainable issues from the architectural perspective was precisely the main answer of this thesis. This means to use the condition of scarcity as a theoretical model to inform an alternative architectural approach for the Mexican context.

The part 2 of the thesis: lessons of ScarCity-issues of Scarcity as design tactics

At this stage of the thesis the answer to the first set of questions suggested that the focus should be upon opportunities to enhance the field of architecture by exploring its place in the often undervalued context of society, in this case, the *ScarCity and its lessons*. It is suggested that if its main *Issues* are explored through understanding the features of the non-prescribed design process, new insights into the application of an alternative model may be found. In other words according to Felipe Hernandez and Peter Kellet it is necessary to rethink the understanding of informal processes beyond chaotic forms.¹¹

As an alternative design process for future sustainable Mexican architecture answer, this thesis suggested the *Architecture of Scarcity* approach. It is a potential methodological proposal that attempts to address the issues of economic, social technical and environmental sustainability in the context of Mexico based on the idea of scarcity. *Architecture of Scarcity* is defined as architecture created by the idea of not having sufficient resources to fulfil unlimited **relative** needs. **Firstly**, *Architecture of Scarcity* has to understand the key local principles of the design and construction processes associated with systems of informality. In other words it identifies citizen's design tactics of architectural production in a condition of limited resources and open to 'imperfection' rather than considering architecture from the perspective of commodity and

⁹ Bhabha, H. (1994). *The Location of Culture*. London, Routledge. Pg. 113

¹⁰ Hernandez, F., Mark Millington and Lain Borden, Ed. (2005). *Transculturation*. Amsterdam, Rodopi.

¹¹ Hernandez, F., P. Kellett, et al., Eds. (2009). *Rethinking the Informal City: Critical Perspectives from Latin America*. Oxford And New York, Berghahn Books.

abundant control of resources to produce a 'perfect' product. **Secondly**, it evaluates such features - *Issues of Scarcity* as a potential design tactics to inform the design process linking them later to structures of power. The *Issues of scarcity* are the suggested architect's tools to support an alternative practice. **Thirdly**, Architecture of Scarcity also acknowledges additional contingent forces as part of the design process. It is hoped that such an approach could be a source of inspiration for students, professionals or researches in this field in order to further develop their own approaches on this basis.

Leading experts in theory, education and practice within the field of architecture from diverse schools of thought were the main support of the Architecture of Scarcity theoretical framework. From different perspectives theorists have increased their interest in the lessons of empirical knowledge of non-prescribed design processes such as the vernacular and neo-vernacular practices¹². They argue that there are many lessons already emerging in the global south that can often provide an alternative approach for architects, engineers and builders who have been trained under the normative values of the prescribed process of western architecture and who in the past have only developed their arguments from this perspective¹³. In other words, it is necessary to revalue the lessons of the non-prescribed process that might be useful in solving some challenges facing contemporary architecture in Mexico. The key for reconsidering such lesson is to avoid understanding of them as a historic, nostalgic or aesthetic set of features that can inform a 'stylistic' approach. This means that rather to understand informality through final objects, their main *Issues of the process* should be understood. Later identified issues can be mapped and translated as a solution. Critics such as Paul Oliver go even further, arguing that even in developed countries such lessons might be useful to solve some of the actual challenges related to environmental degradation and climate change.¹⁴ In short, the key point of the theoretical part of this thesis suggested that an approach which does not look to the 'perfection' of the formal objects or to prescribed design processes of informality may be a fruitful ground for the discussion of a sustainable architecture appropriate to the specific context of Mexico.¹⁵

In this sense, until the end of the theoretical part of the thesis the **first main contribution** was to build up the *Architecture of Scarcity* theory. It is supported by a combination of hypothesis of different schools of thought such as post-colonialism, post-structuralism, modernity-sustainability critique, vernacular and neo-vernacular to mention several which allowed further understanding of the alternative logic produced under the conditions of scarcity. Such issues informed The Architecture of Scarcity methodological approach. Consequently, the theory that has been built was the basis for a critical framework of a practical analysis of selected case studies in Mexico presented in the second part of the thesis.

¹² Oliver, P. (2003). *Dwellings: The Vernacular House World Wide*. London, Phaidon, Alsayyad (2006). *Vernacular Architecture at the 21st Century*. London, Taylor and Francis, Asquith, L. and M. Vellinga (2006). *Vernacular architecture in the Twenty-First Century*. London, Taylor and Francis.

¹³ Mitchel, A. B. a. M. (1992). *Culture, Cash And Housing: Community and Tradition in Low-income Building*, VSO. Pg. 11-12

¹⁴ Oliver, P. (1999). *The vernacular architecture in the 21st century Hepworth lecture*, London: Prince of Wales Institute.

¹⁵ Silva-Herzog, M. J. (2006). *La idiotez de lo perfecto miradas a la política Mexico City*, FCE.

The part 3 of the thesis: Practical understanding of the Issues of Scarcity beyond its forms

Having understood the logic of informality processes the part 3 (Chapter 6) of the thesis aim was to analyse the *Issues of Scarcity* from a practical perspective. In other words the questions to address were: What can be learnt from an understanding of existing features –*Issues of Scarcity*– of three typical cases of architectural production under the condition of scarcity? Why even under the condition of scarcity there is a huge amount of architectural production. How then the condition of scarcity can inform the Architecture of Scarcity approach? This means how some of the involuntary sustainable *Issues of Scarcity* of non-prescribed design process can be identified to inform an alternative practice program in Mexico. To address such questions developed theory was the basis for critical framework of a practical analysis. Supported by such theory a *Research by Design* methodology was suggested to explore the main *Issues* beyond its forms in the three selected case studies. This method allowed achieving two aims.

First, from a wider perspective to identify practically, how such different societies, AbundanCity and ScarCity, contained inside Morelia, Mexico, the selected city of paradoxes, provide evidence of a very different ethos when approaching the built environment. By implication the opposite processes of design and contrasting amount of resources needed to fuel each approach were identified. In other words, the Stage A and B of the *Research by Design* methodology allowed to identify contrasting models of using and consuming resources and as a result different understanding of the meaning of sustainability.

Secondly, the Stage C of the *Research by Design* methods allowed identifying the features of the design process of the development of ScarCity as set of lessons to inform the *Architecture of Scarcity* approach. This means recognizing and cataloguing main *Issues* in three case studies that allow citizens to obtain a shelter thought 'informality'. At the same time identifying such issues allowed to speculate later in Stage D about a model to use them as set of renewed design tactics within a *Strategic Framework* to impact future architectural practice in Mexico. The outcome lessons were collected in the *Catalogue of the Issues of Scarcity and Design Tactics Programmes*. In addition, Stage D of the *Research by Design* methods carried out an analysis of different institutions to support aforementioned initiatives; in order to address the question where the money is coming from? The outcome data base integrates the *Catalogue of Institutions of Support*. Stage E analysed additional design priorities, these were classified in the *Individual Family and Community Design Chests*. Finally the most common unpredictable situations to make sense of additional complex factors involved in the condition of scarcity were also identified and classified in the *Contingency Cards*. All the lessons were translated as the main architect's tools. All of them were amalgamated in the Agent Tool-Kit V2010. This was the first step to start speculating about a revised role of the architect within the ScarCity context. It was suggested that supported by the 'virtual' Research Institute of Architecture of Scarcity Studies (RIASS) and developed tools, the architect-agent can play a key role in alternative architectural practice.

At the end of the part 3 of the thesis, the **second main contribution** was to develop the Research by Design methods of analysis to understand the main issues of scarcity beyond its forms. This methodology allows identifying important data to speculate later its practical use as part of a Strategic Framework solution.

The part 4 of the thesis: Architecture of Scarcity Game

Having identified a set of key lessons and developed a various tool's of support, the questions to address were: how such lessons can be interpreted by an architect as a new set of design tactics to offer an alternative? And what can be the revised role of the architect?

In this sense part 4 (Chapters 7-8) developed a Research methodology for further developing understanding of the informal process and testing the validity of the founded lesson collated in the in the Agent Tool Kit V2010. The answer was to create a board game to simulate the development of informal architecture and speculate about possible intervention. This test involved different participants to make sense of the Architecture of Scarcity approach. Involving participants in a simulated practice allowed testing lessons more objectively. The *Architecture of Scarcity Game* demonstrated to be a useful tool to understand the actual dynamics of informal processes and at the same time speculate about possible interventions of the Architecture of Scarcity approach. In addition the game gave the possibility to incorporate the different circumstances of the conditions of scarcity, including intangible forces such as unpredictability and chance. It also gave the opportunity to explore and simulate the possibilities of architectural contributions based on opportunity, creativity, strategy and playfulness. In short, the game incorporated other factors that are part of the world of design but which conventional design methodology had generally tended to erase.¹⁶

By exploring the main issues first in simulated manner in the selected case studies can be determined later if the strategies could be replicated in practical live projects in Mexican cities or other cities with similar characteristics in Latin America and even to be applicable in unvalued areas of population in developed countries. At the end of the part 4 of the thesis, the **third main contribution** was to develop a research methodology and different tools to hypothetically speculate about possibilities to manipulate struggles faced by mass urbanised cities through guiding them on an alternative path before problems get magnified and more difficult to solve. Hopefully the Architecture of Scarcity approach and its tools can inspire others to develop their own approaches.

Further research

At the end of this experience, new questions start to emerge such as: if the results of the game testing can inform a live project, what are the different possibilities or stages of intervention in 'real-life'/actual projects? Also, what could the new architect's role be in live projects? In this sense "The Provisional Outline Plan of Work of Architecture of Scarcity" is the first attempt to translate this theory into a strategy for professional practice. It is important to remember that at this stage the proposal was tested as a speculative approach to un-lock design tactics which are complex to test in reality without preliminary knowledge and are characterised by contingent forces beyond control. As a result the next step for further

¹⁶ Till, J. (2009). *Architecture Depends* Cambridge, MIT Press.

research has to be to test such tactics in a real context. They might be useful as a foundation or starting point for the author's future practice as well as those others interested, in both academia and professional practice.

In academia, the Architecture of Scarcity Game could be employed as a didactical tool to demonstrate non-western process to students in Mexico and it could be observed whether or not the game has similar impact on them as it did for the students at the University of Sheffield in UK on whom the game was successfully tested. Also it would be useful to train prospective agents who would like to be involved with informal development interventions.

In professional practice, the game would allow us to test how constructive the suggested methodology (Provisional Outline Plan of Work of Architecture of Scarcity) is and how useful all the lessons and design tools (The Agents Tool-kit V2010) are for community engagement and participation. Perhaps these tools can also be useful in other contexts. For example similar context in Latin America or even in marginalised areas of developed countries. Only further tests and explorations in live projects might give answers to these questions. The suggested methodological approach and tools of support are not intended to provide a proven formula for success in a positivist manner but they offer an exploration of the theory of Design by Research that may be useful in the studied contexts or other similar ones.

Further wider findings-lesson

At this stage it can be said that during the part 4 of the thesis, specifically for the period of the research game testing methodology were brought the most fruitful lessons/conclusions. However these lessons also are the result of previous parts of the thesis. From a wider perspective during the speculative tests key findings goes beyond the mechanics of proposed artefacts to a deeper reflection on traditional architectural values. Despite its speculative nature, the lesson learned might be usefully applied in future live projects. The most important can be entitled: accepting the lack of total control, recognising the limits of looking for 'perfection', distinguishing the obsession with perfection, identifying the myth of perfection as a memory construction and finally the stupidity of perfection: reevaluating the non-prescribing design process. In order to have further understanding of wider lessons a brief explanation is going to be presented.

Accepting the lack of total control

Although in a simulated manner, the key skill needed for a successful intervention in this exercise was based on a new architect-agent aptitude. It was the understanding and accepting the lack of total control over all the elements of the design process that conventional practice takes for granted. During the game test it was not possible to prescribe all the actions and rules of the participants due to a condition of scarcity. Rather in anticipation of as a possible new architect's role, it was more important to be ready to appreciate the richness of a participant's unpredictability and to be proficient at seen the opportunities in local conditions. This means that the suggested Strategic Framework to support informal communities' development has to be flexible enough to accept different inputs, but robust enough in knowledge and judgement to guide participants through basic sustainable principles.

For example in one session, one of the participants volunteered as a community leader. This was the first time a 'Head Officer' had been appointed during a game test. He also took some of the agent's responsibilities; in this case his role challenges the traditional value of the architect's total control within this intervention. In addition, due to player's proficiency in social enterprise, he was able to make a significant contribution. Also his suggestion un-locked additional issues previously unexplored, such as setting up a food and farming consultancy. At the same time the leader made the agent's task easier. At this point the agent began to play a more relevant role; his new responsibility challenged him to focus upon bigger picture, contributing his knowledge of consultancy, support, information, criticism and design. For instance, local *Issues of Scarcity* which are highly sustainable for this specific context influenced a number of new design tactics such as:

- Recognising a different ethos of integration within the environment through local research
- Promotion of technical options limited by traditionally available materials and non highly industrialised techniques through different workshops
- Enhancing local skills and customary design processes with complete involvement of each household in the housing process through individual family support
- Understanding an open process which follows a series of interventions according to different user contingencies through the itinerant office
- Finding enough economic and technical resources between different institutions to support the suggested programmes through community support chest, just to mention some of them.

Also this position challenged the Agent to do further research in order to find more answers to the Head Officer questions and community's demands. Those lessons were later used to generate new knowledge in coming sessions. In this sense the architect became more like a moderator discovering new lessons rather than someone who has all the answers. This meant that in the end he was taking a lead but from behind-the-scene.

Metaphorically it can be argue that like orchestra conductor, the revised architect's role within ScarCity had to be capable of locating the local instruments, sounds and letters, in other words to negotiate between different citizens' wishes, priorities and needs in order to finally design and play a harmonious piece with a full set of hybrid elements.

As a result of this experience, it can be also argued that in order to be able to recognise the main lessons beyond the lack of total control of the non-prescribed process speculated in the *Architecture of ScarCity Game* and its approach developed on this basis, it was intrinsically necessary to learn additional skills not commonly found in the traditional architectural values.¹⁷ These include design supported by rigorous research, multidisciplinary awareness, open ended design, leadership, itinerant ability, political awareness, negotiation skills, etc. In other words, some of the traditional values of the prescriptive design processes were at times in opposition to solutions for some of the identified challenges, causing confusion, lower impact and even in some cases irrelevant results. Specifically it might be argued that the main

¹⁷ Habraken, N. J., Ed. (2005). *Palladio's Children Essays on Everyday Environment and the Architect*. New York, Taylor and Francis.

conflict was caused by the pursuit of a traditionally pre-conceived 'perfection'. As a consequence a sustainable approach developed on this basis could be condemned to ambivalence and conflicts. The key issue to the conventional way of perceiving the built environment is that it needs a "structure of control" through a prescribed process of design to secure 'perfection'. In the words of Habraken, "control defines the central operational relationship between humans and all matter that is the stuff of the built environment"¹⁸.

Recognising the limits of looking for 'perfection'

It was founded that one of the most problematic conventional values of architecture is the belief that architects can create 'perfection' through a prescribed process of design and construction. For example architects in the western world have embarked on the search for an ideal society¹⁹. The long tradition of thought and the arts envisaging "the perfect place" are extended from classical ambiguity to the present²⁰. Similarly, globalphilic architects inside *AbundaCity in Mexico (i.e. the new Tres Marias and Bosques de Altozano in Morelia already presented)* understood practice as a tool to achieve "the perfect environmentally friendly place" in contemporary life which should be developed under strict architect's control. By this perspective the design process is controlled by 'experts'. However the main concern is that this approach evolves more and more in its own self referential world, losing connection with the eventual users²¹.

It also was founded that within *AbundanCity* the individual citizen, who finances the design, has very little to say in the prescribed process involving their own housing²². Users are not commonly involved in the design and building of their own accommodation. As a result, the architect is often focussed upon materialising isolated 'iconic' buildings inspired by his/her individual wishes rather than as a result of a process of social interaction. However evidence of the selected informal and semi-informal case studies and also the game test simulation has taught us the complex factors involved in the built environment. In the words of Jeremy Till,

*"Architecture at every stage of its existence -from design though construction to occupation- is buffered by external forces ...These forces are, to a greater or lesser extent, beyond the direct control of the architect. Architecture is thus shaped more by external conditions than by the internal processes of the architect. Architecture is defined by its very contingency, by its very uncertainly in the face of these outside forces"*²³.

The main concern is that in a prescribed process of design and construction, important additional lessons can be missed or neglected. Sometimes some of these can be highly relevant. For example, actual low consumption of energy and water by an individual stakeholder, personal skills that can give special taste and individuality, multiple uses of present space, a strong sense of community, traditional natural ventilation and daylight, walking and cycling habits, etc. Consequently, within prescriptive conditions architects can be consulting with an isolated series of specialists that only

¹⁸ Habraken, N. J. (1998). *The structure of the ordinary : form and control in the built environment*. Cambridge, Mass.; London : , MIT Press, . Pg 8

¹⁹ Roland Schaer, G. C., Lyman Tower Sargent, Ed. (2001). *Utopia: The search for the ideal society in the western world*, Oxford University Press.

²⁰ Ibid.

²¹ Habraken, N. J. (1998). *The structure of the ordinary : form and control in the built environment*. Cambridge, Mass.; London : , MIT Press, .

²² Mitchel, A. B. a. M. (1992). *Culture, Cash And Housing: Community and Tradition in Low-income Building*, VSO.

²³ Till, J. (2009). *Architecture Depends* Cambridge ,, MIT Press. Pg.1

discuss and talk within their own 'world', losing sight of the challenges of the everyday life and the forces that affect architecture from a wider perspective. For example higher use of the car in new suburban developments, use of air new range of air conditioning systems, use of industrialised processes and materials, etc. In the words of John Habraken,

*"In short, there is a disconnect between the way we, as architects, perceive and explain ourselves and what we actually do. As a result, neither our working methods, nor our teachings, nor our values permit the profession to be effective. The resulting conflict confuses everyone: practitioners and clients, teachers and students alike."*²⁴

As a result it can be argued that architects within *AbundanCity* might be losing links with a wider web of citizens, who will ultimately become the users of the city, and by implication, redefine it according only to their own needs²⁵. Evidence has shown that the 'perfection' of master planning developments normally suffers modifications as part of the natural cycle of citizens' occupation and use of the space buildings. According to Habraken "the built environment, in all of its complexity, is created by people. Yet it is simply far too complex, too large and too self-evident to be perceived as a simple entity"²⁶.

Even without the intervention of architects in presented studies showed evidence of how citizens are able to take the initiative and develop their own communities as has been the case in a vast amount of informal communities in the majority of developing countries and also in the suburbs of a number of cities in developed countries. For those who cannot afford a mortgage, they may well end up taking advantage of the vernacular tradition of self-building. It is now our opportunity for recognising the limits of 'perfection' and revalue the lessons of non-prescribed design process approach.

Distinguishing the obsession with perfection

It is also argued that the set of normative values were essential in the model of Beaux Arts western architectural education which later was the model exported to all the associated colonies. Thus this set of 'values' were transferred to the Mexican context through the creation of one of the most important postcolonial arts schools in Latin America. *La Academia de San Carlos* created in Mexico City in 1793 based its programme on the *Ecole des Beaux Arts* school of Paris²⁷. Later *La Academia de San Carlos* became the School of Architecture of the National University. Consequently, other New Mexican schools of architecture within the country were inspired and supported by the National University. As a result some of the normative values are still reflected today in the contemporary Mexican schools, despite changes in of architecture after the revolution of 1910-1920. However, in practice normative values of 'perfection' are expressed in a new mutated version, with a hybrid of normative principles promoted in theory but in practice actually mixed with local traditions. The Mexican writer Ruben Gallo traces the ways in which Mexican painters, sculptors, writers, film makers and architects armed themselves with intellectual "artefacts" to break conventional models of production that had

²⁴ Habraken, N. J., Ed. (2005). *Palladio's Children Essays on Everyday Environment and the Architect*. New York, Taylor and Francis. Pg. X

²⁵ Gonzalez, d. L., Teodoro (2008). *Medalla de Oro a Gonzalez de Leon, F. Leal*. Mexico City, El Universal.

²⁶ Habraken, N. J. (1998). *The structure of the ordinary : form and control in the built environment*. Cambridge, Mass.; London : , MIT Press, .pg.6

²⁷ Arias (2002). *Una nueva escuela mexicana*. San Luis Potosi, Mexico, Universidad Autonoma de San Luis Potosi.

dominated Mexican cultural practices through incorporating traditions of Mexican civilization²⁸. Gallo argues that only through artistic practice have artists been able to relate their job to the social and cultural history of Mexico²⁹. Gallo entitles this new stage as the "Second Mexican Revolution", a battle for cultural representation³⁰. It is also time for architects to take part in this cultural battle, already there are various architects beginning to take part, unfortunately they still are very few compared to the amount of coming challenges.

The Architecture of Scarcity Game is an 'artefact' that encouraged participants to explore and exploit the possibilities of breaking the actual boundaries. The final result is a tool to stop controlling the entire design process. It confronts the rules that professionals in this field take for granted. The game simulates a 'fake' reality by exploring in different ways with surveyed information. As a result participants do not have anything 'real' to lose. Instead they have all the freedom to innovate.

Participants invited to use the game demonstrating development of new innovative design which acknowledges the values of citizen's 'tactics'³¹ and 'contingency'³² of a non-prescribed design process. In this sense, it may be argued that the normative set of values of architectural practice based on 'perfection' were acceptable in a time and context in which architecture was considered a discipline with the aim of creating a 'perfect place', but are no longer useful to address challenges facing mass urban cities in contemporary life, especially in the global south countries. Habraken argues that, the *Palladian model*, as he define architect's using traditional values, historically developed to create unique and limited acts of monumentality, cannot guide us in engaging the common place. The interpretation of Habraken's argument in this thesis might encourage professionals to get involved with informal developments which, looking at the lessons of *ScarCity*, could be regarded as an opportunity to recognise the creativity and effectiveness of a non-prescribed process of design. In the words of John Habraken,

"In studying the structure of the ordinary as we entitled the study of a common place, it is not only necessary to discover, much less to invent, but to recognize"³³.

Identifying the myth of Perfection: Perfection as a memory construction

In the field of architecture the idea of 'perfection' might only be developed through a mental construction of 'perfect' moments Impressed into memory than later are transferred trough prescriptive design to reality. The Mexican architecture critic Johanna Lozaya argues that within architecture, what exists is the appearance of all the multiple phenomena and events that happen to determine our own present. It could have fragments that allude to a reality that is more a product of a series of questions than a reconstruction; it is not an objective reality, but a cultural product³⁴. In this sense, it may be

²⁸ Gallo, R. (2005). *Mexican Modernity, The Avant-Garde and the Technological Revolution*, The MIT Press. Also see

²⁹ Gallo, R. (2004). *New Tendencies in Mexican Art: The 1990s (New Directions in Latino American Culture)*, Palgrave Macmillan.

³⁰ Gallo, R. (2005). *Mexican Modernity, The Avant-Garde and the Technological Revolution*, The MIT Press.

³¹ Certeau, M. D. (1974). *The Practice of Everyday Life*. Berkeley, University of California Press.

³² Till, J. (2009). *Architecture Depends* Cambridge, MIT Press.

³³ Habraken, N. J. (1998). *The structure of the ordinary : form and control in the built environment*. Cambridge, Mass.; London : , MIT Press, . Pg. 3

³⁴ Lozaya, J. (2002). 'Contruccion De Imaginarios Colectivos O Historiografia Moderna De La Arquitectura.' VI Seminario nacional de Teoria de la Arquitectura. Local y lo Global. escuelas regionales de Mexico. mesa: La historia y La critica., Centro De Investigacione Y Estudios De Posgrado Facultad De Arquitectura UNAM.

argued that the conception of 'perfection' as an object cannot really exist; instead it can only be a mental construct that is forced into being by a controlled process. This means a question of constructions that can contain different vistas of the desired future and images of hope³⁵. In other words introducing an idea of 'perfection' is not and a quantitative element that can be measured objectively, it is something subjective that people can construct according to their own experience and wishes of life. For example real activities of citizens can be ordered and so the 'chaotic' side of their existence can be denied. Also the production of rubbish or disorganised spaces can never be exposed within the frozen visuals of 'perfect' architecture. Under the conditions of perfection, architecture can be reduced to a 'perfect' moment of time that is not a representation of the full richness of reality but a 'perfect' memory construction. In other words 'perfection' is only a myth.

According to the Colombian literature Nobel laureate Gabriel Garcia Marquez, "The human heart minimises the bad memories and maximises the good moments, and by doing this, humans have learnt to manage the past"³⁶. Ruben Gallo argues in his book "The Mexico City Reader" that someone, for example exploring this city, has to change this romantic perception. Gallo suggests that there is a lot to learn about how this city works as one of the Latin Americas' cultural capitals and one of the most vibrant urban spaces in the world. In contemporary life Mexico City is not noted for being the perfect "City of Palaces of yesteryear, but the vibrant, chaotic, anarchic urban space..., the city of garbage, necrophiliac artists and kitschy millionaires"³⁷.

"The stupidity of perfection"³⁸

From a wider perspective an increasing number of critics from different fields support the argument that normative values of 'perfection' could be acting today as an obstacle to exploring diverse principles that could give some alternative answers to current and future challenges. The Mexican journalist and writer Silva-Herzog Marquez in his book *La idiotez de lo perfecto* (The Stupidity of Perfection), argues that in contemporary life the first to believe that the state is an instrument for achieving perfection, utopia and happiness are politicians³⁹. History has taught that these aims can be thwarted. Silva Herzog suggests that the first step in the social agenda is to assume and accept that imperfection is necessary as part of everyday human evolution⁴⁰.

In the field of architecture, it may be argued that in terms of *Palladio's model*, contemporary architects still believe that architecture can be again developed through prescribed process. In other words contemporary architecture is dominated by technical-rational regulation that demands preserved answers. In terms of sustainability, it is now suggested to produce a 'new' environmentally friendly approach through this normative process. The key issue is that under these conditions sustainable architecture still maintains the idea of being a path to achieve perfection and

³⁵ Bloch, E. (1989). *Somthing missing: A discussion between Ernst Bloch and Theodor W. Adorno on the contradictions of utopian longing. The utopian function of art and literature: selected essays*

J. Z. a. F. M. (translators). Cambridge, MIT Press: 1-17.

³⁶ Marquez, G. G. (1987). *Amor en tiempos de colera*, Sudamericana.

³⁷ Gallo, R. (2004). *The Mexico City Reader*, University of Wisconsin Press.

³⁸ Author's translation from the Spanish "La Idiotez de lo perfecto" taken from the book of the same name. Silva-Herzog, M. J. (2006). *La idiotez de lo perfecto miradas a la politica Mexico City*, FCE.

³⁹ *Ibid.*, pg. 11

⁴⁰ *Ibid.*

produce a utopia. The main concern of an approach developed on this basis is that it is founded upon a high consumption model of architectural production. Evidence reviewed in this thesis has shown that this perspective is condemned because of the difficulty of finding stable perfection especially within unequal societies such as are observed in the ScarCity and AbundanCity areas of the Mexican Cities of Paradoxes model.

Additional writers from different fields such as Hommi Bhabha, Octavio Paz, and Michael Oakeshott to mention few examples have analysed the nature of this fascination for perfection in relation to values, rules, prejudices, freedom, etc. From different professional backgrounds, and diverse methodological ideologies Bhabha, Paz and Oakeshott agree that a more critical approach to questions is necessary, and it is essential to start recognising chaotic 'spaces of mixing' or 'space of hybridity'.⁴¹ They had argued that such spaces offer the most profound contemporary challenge for developing countries.⁴² In other words critics concur with the inability to find permanent perfect processes of control and order forever, because these will always be competing versions as to what constitutes 'perfection'.

Revaluating a non-prescribed design process approach

To return, to the starting broad question of this thesis: what does it really mean to be an architect in the Mexican context at the beginning of the 21st Century? Or what might an appropriate design approach for future Mexican architecture according to its specific circumstances be? What an architect revised role be? The final reflection, after concluding this thesis, might be to suggest that the first step towards a revised architect's role and an alternative approach when returning to practice in Mexico is to promote the revaluing of a non-prescribed design process approach. Following this thesis analysis, it can be argue that by developing further understanding of the complex condition of life, the realities and difficulties of living under the conditions of scarcity confidence to generate alternative solutions can be found. These need to acknowledge breaking down some of the normative 'values' of present day architectural praxis through an exploration of the chaotic context of *ScarCity*. This action can act as a catalyst to challenge prescribed knowledge. In this sense, it may be argued that *ScarCity*'s model is not really 'imperfect'; it is simply unknown and follows a different logic compared to the western approach. This perspective demands further exploration in order to discover its lessons and then organise them as new knowledge.

Future implications and strategies facing the informal settlements in Mexico suggest that the success of an architect working within this context not only depends on his or her ability and imagination designing new projects on blank canvases, but also ScarCity requires a capacity to render a different reality. In other words it demands creativity and imagination in developing projects even without the total control of all the elements of the design process. Sometimes this take place in situations where there are insufficient resources to produce enough to fulfil basic needs. The architect in this context must develop tactics for making buildings that withstand the vagaries of climate, economy, limited resources, struggles, real time solutions and chaotic organization. It seems a difficult task but there are already millions of settlers

⁴¹Bhabha, H. (1994). *The Location of Culture*. London, Routledge. Pg. 113

⁴² Paz, O. (1986). *Tiempo Nublado*. Barcelona Espana, Paz, O. (1999). *El laberinto de la soledad ; Postdata ; Vuelta a El laberinto de la soledad*. México, Fondo de Cultura Economica. And Oakeshott, M. (1991). *Rationalism in politics and other essays*, Liberty Press.

around the world, mostly in the global south dealing with these issues. However they can be highly benefited by a revised version of architect support and architect's strategic thinking intervention.

The new task for architects exploring ScarCity is does not confuse the typical surface of additional factors of the design process for something deeper. It is very important to understand the logic beyond imperfect forms. In her book *The God of Small Things*, the writer Arundhati Roy describes these kinds of forces such as globalization, alienation, geopolitics, etc. as something far away from their common understanding⁴³. Roy's stories describe real people dealing with too many struggles at the same time as unseen forces which cannot be hated or even imagined⁴⁴. Citizens transcend this 'chaotic' complexity because they are continuously adapting. They are not frozen over time; rather they are in permanent transformation following the fluxes of every day change. Globalisation is overwhelming them like new virus that cannot be stopped. Nevertheless it is possible to be prepared to absorb this new condition critically.

In short, gaining a better understanding of how things work from inside could drive to develop more critical solutions of what an architect might do within informal developments. Consequently, architects should be prepared for projects without clear conclusions and non static use. In addition to the architect's capacity for working long hours, this context demands mobile creativity in negotiation with such different forces. Habraken argues that one of the main weaknesses with respect to present day designers and planners consists of the typical "immobilized" understanding of "use". It commonly leads to an "optimised" problem solving by a controlled system. The main concern is that "use" is neither static nor passive⁴⁵. Thus within informal environment architects not only are compromised with physical forms or infrastructure but also all the people acting on this process. In this condition architecture cannot be an isolated discipline. In fact it is one of the most interactive disciplines and as a result of that the strongest social interactions and interdisciplinary solutions are necessary. This means narrow links between different disciplines: economic, environmental and social⁴⁶.

In further research and practice, it will be more important to consider the *Architecture of Scarcity* approach not by what forms it can produce, but by the social formations or processes that it can engender. What kind of new socio-economic dynamics and relationships could emerge? In other words, instead of final objects, it is necessary to search for new processes that can promote critical collaboration across financial, governmental, education and community agencies, crossing the boundaries of traditional architectural "values". Perhaps it is possible that as a result of different processes, different notions of housing, schools, hospitals, etc, could emerge that accommodate 'imperfection'.

⁴³ Roy, A. (1997). *The God of Small Things*, Flamingo.

⁴⁴ Ibid.

⁴⁵ Habraken, N. J. (1998). *The structure of the ordinary : form and control in the built environment*. Cambridge, Mass.; London : , MIT Press. .

⁴⁶ Basic concepts on Environment and sustainable development in Chile. <http://www.conama.cl/portal/1255/channel.htm> access July 2005.

"Sustainability" according to ECODES⁴⁶ in Costa Rica is a "Dynamic process in which the control of the natural sources, the human potential, the citizen participation, the scientific and technologic development, the new laws, the administration and orientation of the economy and the ethic principles of the environment responsibility, satisfy the actual basic requirements. All these aspects avoiding the ecologic destruction from which the socio-economic development and the future quality of life depends."

Looking at this context with different eyes, architects in this field might understand the immense potential of this process of construction which goes beyond a controlled aesthetic technique to an understanding of more complex forces of the process that ultimately shape the informal environment. Once found this, to redefine an approach on this basis may be the closest attempt to a democratic sustainable approach. However, it is important to see such lessons objectively to avoid romantic interpretation of them. Sadly many of these processes are still related to poverty and very little has been done to make sense of non-prescriptive processes inside the mainstream operations of design and construction⁴⁷. Unfortunately those architects already dealing with these issues are still very few and have limited impact.

In conclusion, the outcome of this study can be classified as an Architecture of Scarcity Theory, the Research by Design methods to explore, analyse and identify *Issues of Scarcity* and a Research game method testing the validity of founded lessons which have been built through the iterative research process. These elements provide a structure for better understanding of the issues of scarcity discussed and encourage interested people to get involved. Hopefully, theory, methods of analysis and designed artefacts to test lessons not only explain and simulated different patterns of non-prescribed design process in informal and semi-informal communities in Mexico, but also could be a media to bring together to the table discussion required critical, strategic and logical thinking of different professional to face coming challenges involved in the informality agenda. If this opportunity exists, the first step will be to highlight that an approach that does not look to the perfection of the informal objects or to prescribe processes of design may be a fruitful ground for the discussion of a sustainable architecture appropriate to the specific context of Mexico.

⁴⁷ Oliver, P. (2003). *Dwellings: The Vernacular House World Wide*. London, Phaidon.

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Appendix 1-2



CATALOGUE OF THE ISSUES OF SCARCITY
Abstraction of the issues of scarcity and Design Tactics

 Architecture of *ScarCity*

 Architecture of *ScarCity*



CATALOGUE OF THE ISSUES OF SCARCITY
Abstraction of the issues of scarcity and Design Tactics



Case Study 1 - a1

San Antonio

Environmental- Technical

Use of Local Natural Resources



Local raw materials for construction

Use of Local Natural Resources.

One of the main Technical- Environmental issues of scarcity is the use of local natural resources of San Antonio's inhabitants. The wood from the surrounded forest is commonly used to produce rustic furniture or to make new *trojes* and its reparations. The *trojes* are housing which are without doubt the most significant material

WOOD



Image credits: Gisela Medina
Deciduous tropical forest are prevalent with *parota*, *guaje*, *casacalote*, *ciriam* and mixed forest with pine, oak, alder and fir.



Local wood workshop



Detail of the *trojes* made by wood

STONE



Local stone



Wood Troje with stone foundations



Image credits: Gisela Medina
Use of local stones for paving

San Antonio

Technical- Social

Local Human Resources : Local skills, techniques, abilities as part of self-construction

Use of local skills and simple traditional techniques
Local people's traditional knowledge of construction



Use of Local Human Resources.

As a result of the organic sensibility of the vernacular evolution of San Antonio, other key Technical-Social issue of scarcity is the use of local human resources of San Antonio's inhabitants. The wood from the surrounded forest is commonly transformed by local skills and simple traditional techniques. The inhabitants of San Antonio were limited and challenged to use and transform local natural resources. As a result,



Surrounded forest of San Antonio



Troje, this picture shows how every single element from columns to roof has developed by local people, traditional techniques and skills.



Construction of troje's roof



Local furniture



Detail of the *trojes* and improvised bench

San Antonio

C1.4. Design Tactics

Environmental- Technical

Maximizing use of local natural resources



The main design tactic consist in **maximizing the use of local natural resources -ie wood and stone-**. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

Financial support/subsidies to encourage applications of well managed forest programme.
Community Management of natural resources. It means local resources planning, monitoring, implementation and evaluation.
Integrating of indigenous knowledge system into natural

Technical- Social

Maximising use of Local Natural & Human Resources Local skills, abilities and personnel



The main design tactic consist in **maximizing the use of local human resources -ie local skills and techniques-**. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

Use of local skills and simple traditional techniques
Local people's traditional knowledge of construction
Use of local raw materials for construction
No highly industrialised techniques



Wood workers, work long days producing raw materials. It could be better if instead to sell huge proportion of the wood as a raw material, they add some value producing different approaches.

San Antonio

C1.3. Abstraction

Economical -Technical

Indeterminacy of £ Force to have Flexible Financial of housing = Flexible Space, space mutation and indeterminate space

Open to Modifications
Innovative
Not fixed to spatial labels
Space diversity
Star of the same, but evolves to give



Flexible Finantial.

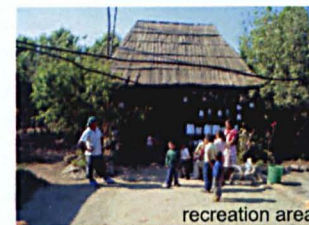
The settles of San Antonio have been limited by economic resources under this circumstances they have learnt to use develop trojes in different stages. In other words due the necessity of flexible financial a flexible space is the answer. As a result the same space accepts different uses, is open to modifications over time and can be upgraded according to every day life. Such proposal accepts an

Evolution of settlement

1st. stage:	1 troje= Bedroom	1996
	1 troje =Kitchen	
2nd. stage:	1 troje =new kitchen	2000
	1 conversion of previous kitchen to bedroom	
3rd. stage:	1 troje= multiple uses	2004
	1 collocation of patzari stove in the kitchen	2005
4rd. stage	1 composting toilet	2007



Patzari stove and table



recreation area



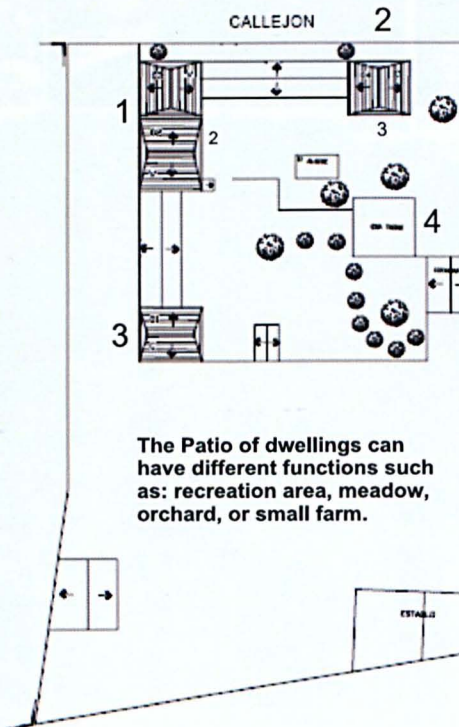
meadow



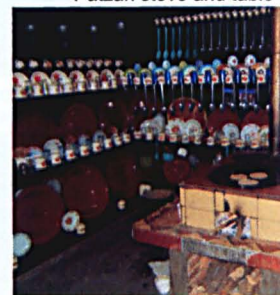
orchard



farm



The Patio of dwellings can have different functions such as: recreation area, meadow, orchard, or small farm.



Patzari stove and kitchen



San Antonio

C1.3. Abstraction

Technical-Economical

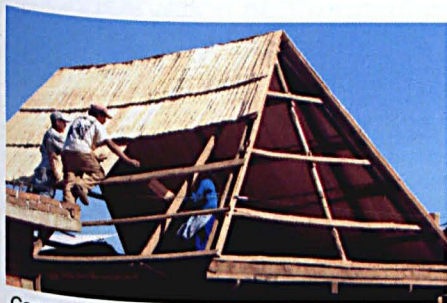
Traditional Self-Construction

Traditional knowledge of construction
Saving economical resources
Avoiding bureaucratic processes and its

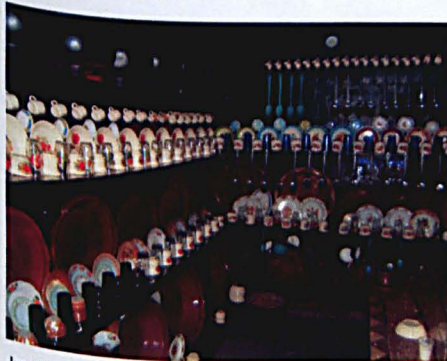


Traditional Self-Construction

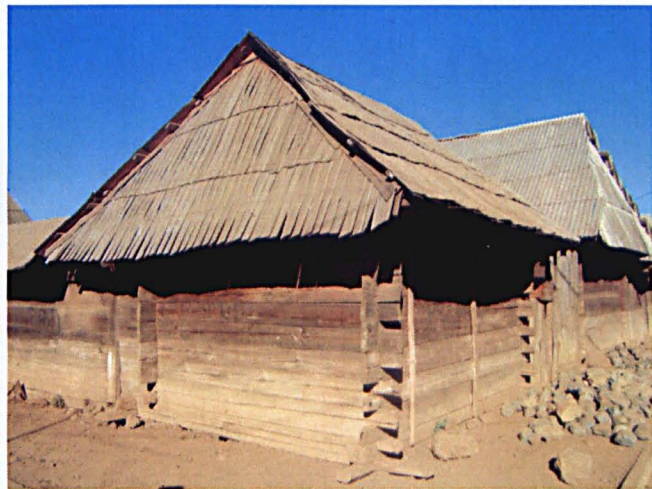
The settles of San Antonio have developed their towns around 4 centuries back. In those days the huge movement of economic resources, land speculation or position to pay someone else to built your house (as it happens in contemporary life) was not an issue. Under this circumstances the most common tactic was to develop a traditional self-building tactic. This activity is already well stabilised



Construction of troje's roof



Inside the kitchen



Troje developed in full by traditional self-construction technique

San Antonio

C1.4. Design Tactics

Technical

Flexible Tactics Workshop



As part of the design tactic consist in maximising **the use of local traditional self construction techniques and understand its rich backgroud.** Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

- Flexible finatial
- Maximizing traditional self-construction
- Additional tools
- Flexible space
- Space mutations, materials mutation
- Open to Modifications
- Innovative
- Not fixed to spatial labels



Flexible Financial



Mutation
Hybridism

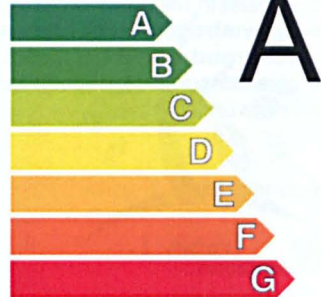
San Antonio

Environmental- Technical

Low Energy Consumption: Natural light, natural ventilation and low impact waste

Local raw materials as alternative energy

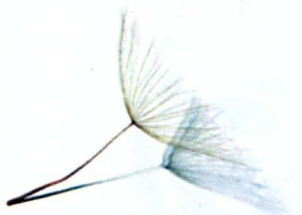
More efficient



Less efficient

Low energy consumption

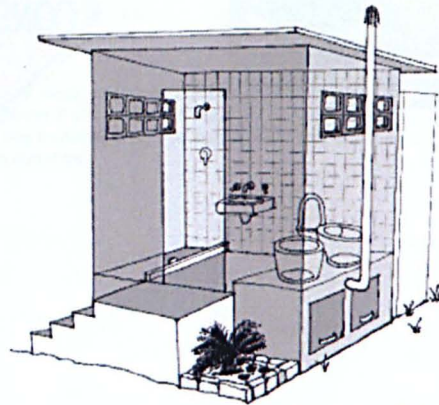
Due the settles of San Antonio have been limited by the use of local natural materials such as wood; they have learnt to use them for multiple applications including energy source. At San Antonio the use of wood stoves called Patzary designed by GIRA (an environmental research group) are considered more appropriate than western gas stoves due to the abundance of trees and vegetation in the region. Omar Masera chief of GIRA argues that this stove is a locally adapted fuel-efficient design that boasts up to 60% reduction in fuel wood use and 70% reduction in indoor air pollution and the final CO2 emissions do



Natural ventilation and illumination



Use of firewood instead electricity or gas for aliments cooking of Patzari stove



Composting toilet

San Antonio

Environmental

Cyclical life principal
Materials for long term life, multiple uses and recycling

Cyclical life principal

Due the settles of San Antonio have been limited by the use of local natural materials such as wood and stone; they have learnt to use them rationally, for multiple applications, extend its life use and recycle them. The main issue is that they clearly understand the



Local stone applied as a paving



Local wood has a high level of multiple uses and long term life with adequate maintenance



Local stone has a very long term use and multiple use applications

San Antonio

C1.3. Abstraction

Environmental

Vernacular Landscape



Use of local plants
Local Techniques!

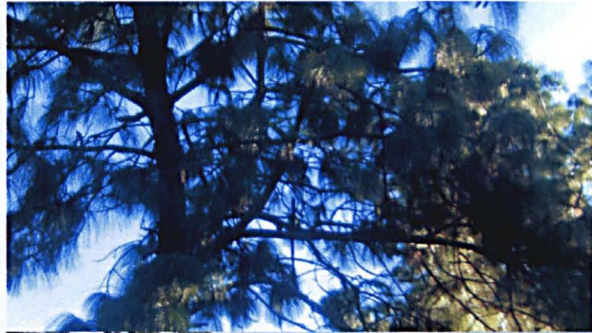
Vernacular Landscape

The settles of San Antonio have their main raw material and sources from the forest. As a result the respect and care tradition is part of the traditional believes of the culture.

Conservation of Vernacular Landscape design



Local native plants



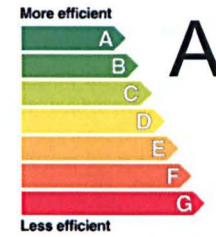
In addition, to take the animals to eat grasses, the Landscape is used as a recreation area as well. Picnic days are common in this area.

San Antonio

C1.4. Design Tactics

Environmental

Maximising the use of materials for long term life, multiple uses, low impact and recycling



Low energy consumption and low impact

The main design tactic consist in **maximizing the use of low energy consumption techniques**-. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

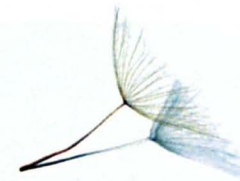


Low impact waste

Natural ventilation and Illumination
maximising use of local raw materials for long term life



Long term life cycle



Natural ventilation and Illumination



Vernacular landscape

San Antonio

Socio-Economical

Flexible and non for profit financial
Group Savings & Service Exchange



Flexible Financial

Traditional Self-Construction

The settles of San Antonio have developed their towns around 4 centuries back. In those days the huge movement of economic resources, land speculation or banks for credit was not an issue. Under this circumstances tactics such as group saving and service or good exchange were



Socio-Economical

Cooperatives



Cooperatives.

ICOMOS Michoacan implemented some workshops where the community can use the woolen sheep for production of thread later used in different approaches. Economic sources such as woolen sheep can be a good approaches for the community if it is combined with embroidered workshops. At the moment the community is conforming different cooperatives to keep forward additional



Local wood workshop



Additional women workshop

C1.4. Design Tactics

Socio-Economical

Local Support Bank



- Group Saving Bank (Tanda) 0% interest
- Service Exchange Bank
- Cooperatives incubator
- Microcredits - Subsidies - Donors
- Group Buying
- Community goods and services swap
- Immigrants revenue investment



Coop

The main design tactic consist in establish a local economic support to **maximise informal local economies and informal economic tactics**. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

- Flexible financials
- Cooperatives support
- Microcredits
- Formalising group saving and service and goods exchange
- Immigrants revenue transfer and advice
- Financial support/subsidies to encourage applications of well managed forest programme or other products (wool)
- Community Management of natural resources. It means local resources planning, monitoring, implementation and evaluation.
- Integrating of indigenous knowledge system into natural resources management.



Flexible financial



C1.3. Abstraction

Socio-Economical

Local Consumption, Low consumption

xxx



Local and low consumption.

One of the main Socio- Economical issues of scarcity is the use of local and low consumption of San Antonio's inhabitants. Also the use a set of traditional agricultural and farming techniques winch are



Agriculture is produced by traditional techniques which uses many rudimentary tools and ox or tractor. It is highly organic, but some facilities are necessary in order to improve it.



View of corn field and Tapan Hill in the background



Local gold and lamb



Woman wearing traditional locally produce dressing

Socio-Economical

Communal services

Communal transport
Communal water collection and supply



Communal services

The settles of San Antonio have been limited by economic resources under this circumstances they have learnt to share basic services rather than individual. In this sense they have develop a



San Antonio town has a communal transport for the agriculture workers.



Communal workshop room



Water wells are actually used by diary water consumption 63 water wells are actually there which 60 are located inside of the 21 blocks and the others 3 are more public



Additional services such as: water collection, potable water taps and telephone also work in communal basis



Women waiting to star the wood process workshop

San Antonio

Socio-Economical

Communal Celebrations



Communal services

The settles of San Antonio have been limited by economic resources under this circumstances they have learnt to share also celebration expenses. In this sense they have develop a



Women preparing meals for local festival



Image credits: Gisela Medina

Local band celebrating festivity

San Antonio

Socio-Economical

Organic Grow



Note:

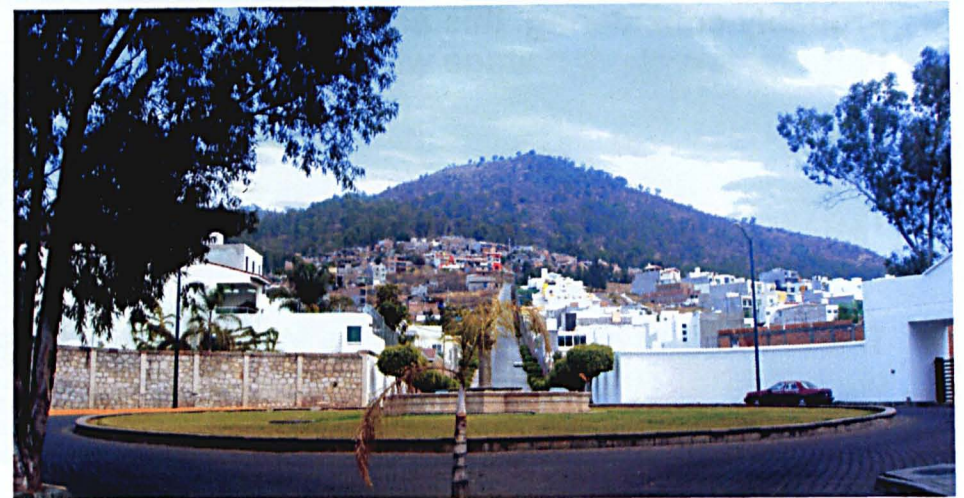
It is necessary to do this exercise with more people and identify additional issues of scarcity

Probably considering this activity as part of the Participatory design stage will be necessary

Workshop: Issues of scarcity abstraction

Those cards can act as a support to detonate further cards development.

The final set of cards can act as a tool for Participatory design in the Architecture of Scarcity's Game



Case Study 2- b1

El Punhuato

Environmental- Technical

Use of Local Natural Resources



Use of Local Natural Resources-Raw materials.

The "Boxes housing" are the most significant material element in the modern marginalised areas of mass urban cities in Mexico. One of the main Technical- Environmental issues of scarcity is the use of local raw materials. Traditional earth brick of the rural areas has been substituted by red or concrete brick in urban areas as main material. Also Mexico's industrialisation had made concrete and steel more accessible in urban cities. As a result, reinforced concrete is part of the main structure. Commonly, it is within this settlements called *Colonias Populares* where



WOOD

The deciduous forest of the surrounded rural towns provides pine wood which is transformed by local workshops. This is

Steel plus cement are basic ingredients for a reinforced concrete roof.

Brick plus cement are the basic ingredients for a wall

Use of local stones for foundations

Technical- Social

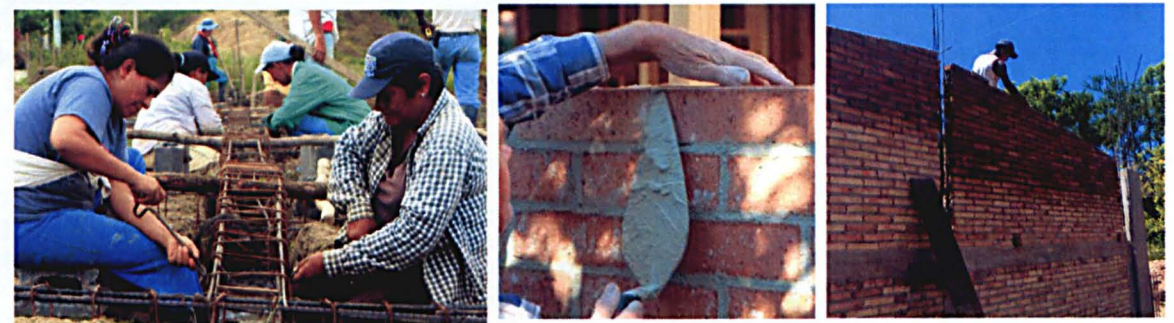
Local Human Resources : Local skills, techniques, abilities as part of self-construction

Use of local skills and simple traditional techniques
Local people's traditional knowledge of construction



Use of Local Human Resources.

Metaphorically speaking, It is possible to say that Informal Modernism is the son of Traditional Vernacular. In other words, actual techniques of self-construction of Informal Modernism practice have their roots based in traditional techniques of rural areas, however those now take advantage of different materials provided by the urban cities. As example the inheritance of traditional earth brick construction has been substituted by red or concrete brick. The main radical change is focussed on the traditional wood roof now substituted by a simple reinforced concrete structure in urban areas. The key Technical-Social issue of scarcity is the continuity of use of local human resources. Urban materials such as brick and concrete are commonly



Family enabling the steel foundations

Member of the family developing a brick wall



Members of the family preparing concrete for the roof.



If the owner of the dwelling is not able to do additional services such as electricity or plumbing, he commonly will take advantage of a skilful friend or neighbour by service exchange tactics. Painting is also done by the owner.

C1.4 Design Tactics

Environmental- Technical

Maximizing use of local natural resources



Local

The main design tactic consist in **maximizing the use of local natural resources** -ie brick and concrete. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

Financial support/subsidies to encourage applications of well managed Earth programme.
Community Management of natural resources supplies. It means local resources planning, monitoring, implementation and evaluation.
Integrating of traditional knowledge system into natural

Technical- Social

Maximising use of Local Natural & Human Resources Local skills, abilities and personnel



Local

The main design tactic consist in **maximizing the use of local human resources** -ie local skills and techniques-. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

Use of local skills and simple traditional techniques
Local people's traditional knowledge of construction
Use of local raw materials for construction
No highly industrialised techniques



Local

Inhabitants of Colonias Populares such as El Punhuato commonly work long days in the city. It could be better if they are supported by the agency to add some value to his services through different workshops.

El Punhuato

C1.3 Abstraction

Economical -Technical

Indeterminancy of £ Force to have Flexible Financial of housing = Flexible Space, space mutation and indeterminate space



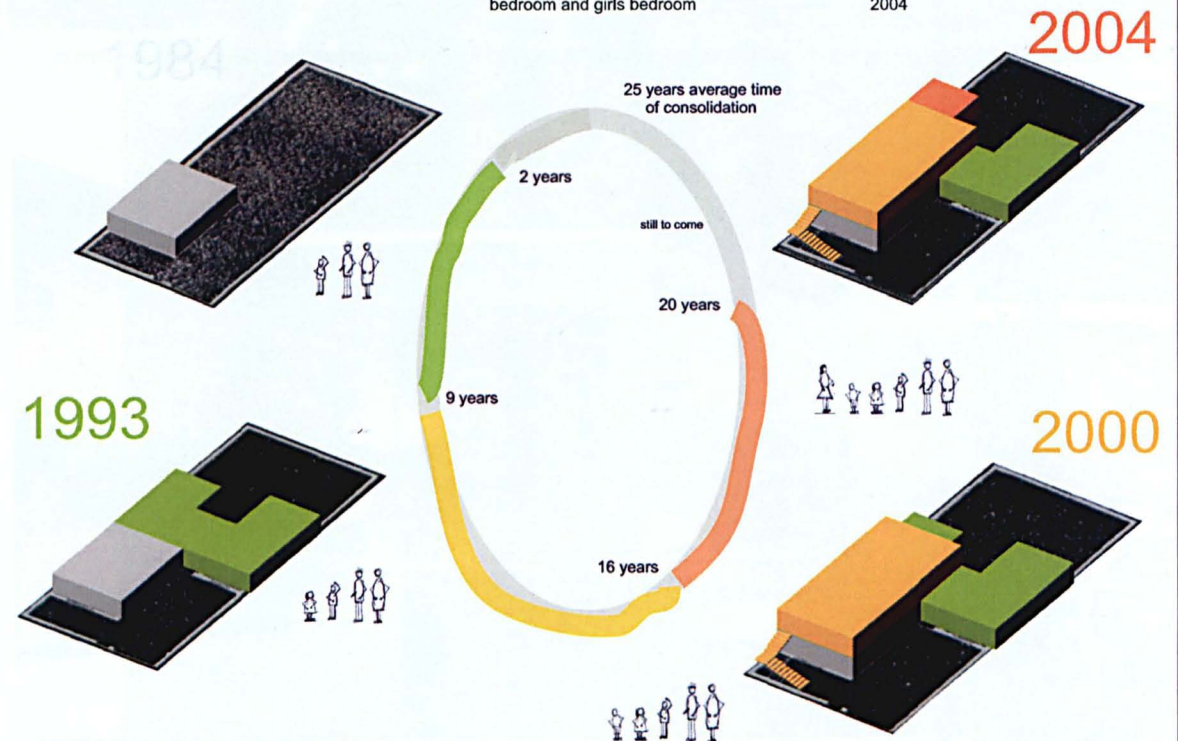
Flexible Financial= Flexible Space.

The settlers of El Punhuato have been limited of economic resources, under this circumstances they had learnt to develop the Boxes progressively in different stages. In other words due the necessity of flexible financial a flexible space has being the answer. As a result, the same space accepts different uses, is open to

Open to Modifications
Innovative use of space
Not fixed to spatial labels
Space diversity
Star of the same, but evolves to give

Evolution of settlement

1st. stage:	1 basic room= Bedroom + Kitchen	1984
2nd. stage:	1 basic room = Kitchen + living & dining 2 additional rooms = 2 bedrooms + shared toilet	1993
3rd. stage:	1 room = Kitchen 1 room = Dining + Living area 1 room = Master bedroom 2 rooms = Girl's bedroom + Boy's bedroom	2000
4rd. stage	Idem + 2 additional in suite toilets in master bedroom and girls bedroom	2004



El Punhuato

C1.3 Abstraction

Technical-Economical

Traditional Self-Construction

Traditional knowledge of construction
Saving economic resources
Self-increasing of value, self-equity
Avoiding bureaucratic processes and its



Traditional Self-Construction

95% of the settlers of El Punhuato have developed their own dwelling and community in the last few decades by self construction techniques. Commonly, their settlers are limited by economic resources and they can not afford to pay someone else to built their own housing as it happens in regular settlements. In this circumstances the most common tactic had been a tradition of self-building. This activity is already well stabilised as part of community's vernacular knowledge. Such knowledge has passed from previous generations that use to live in



Family enabling the steel foundations



Member of the family developing a brick wall



Members of the family preparing concrete for the roof.



Box Housing developed in full by traditional self-construction technique

El Punhuato

C1.4 Design Tactics

Technical

Flexible Tactics Workshop Self-Construction



As part of the design tactic consist in maximizing the use of local traditional self construction techniques and understand its rich background. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

- Flexible financial
- Maximizing traditional self-construction
- Additional tools to improve self-help
- Flexible space
- Space mutations
- Hybrid mix of materials
- Open to Modifications
- Innovative techniques



Flexible Financial



Mutation
Hybridism

El Punhuato

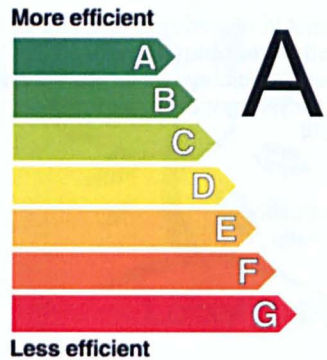
C1.3 Abstraction

Environmental- Technical

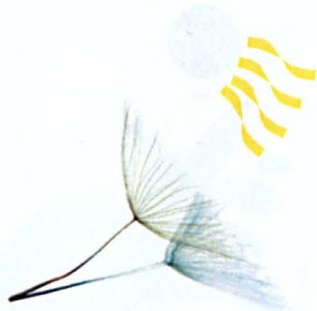
Low Energy Consumption: Natural light, natural ventilation and low impact waste

Local raw materials as alternative energy resources.

Low energy consumption



Due the settlers of El Punhuato have been limited by economic resources, they highly rationalise the use of electricity and gas in order to avoid expensive bills. As one of the main design tactics they take advantage of natural ventilation and natural illumination in most of the interior spaces in order to decrease electricity consumption. The use of highly industrialised systems for heating and cooling are avoided. Only essential electric or gas devices are adopted such as: fridge, and gas stove. 99% of the settlers use gas stove rather than electrical due to it is more efficient. In most cases they still do not use washing machines or vacuum cleaners. Those activities are still done manually. The geographical location allows them to do also other homework activities such as draying clothes taking advantage of natural ventilation and sunshine instead artificially. Other devices such as tv, radio or microwave are considered not essential but



Natural ventilation and illumination



Natural ventilation, illumination and low use of electric devices in the interior of a kitchen



Local markets no use packing, users commonly have reusable bags and trolleys. Markets are in walking distances, no cars are necessary, no parking, use of streets on one day. No use of processed meals, no use of freezers. You can find highly fresh variety and organic food. Markets support local economies. Organic waste is used as an aliment for pork farms or as a compost for a nursery.

El Punhuato

C1.3 Abstraction

Environmental

Cyclical life principal
Materials for long term life, multiple uses and recycling



Cyclical life principal

Due the settlers of El Punhuato have been limited by the use of local raw materials such as brick, stone and concrete; they have learnt to use them rationally, for multiple applications, extend its life use and recycle them. The main issue is that they clearly understand the cyclical life principal. If they can not afford brick or concrete they



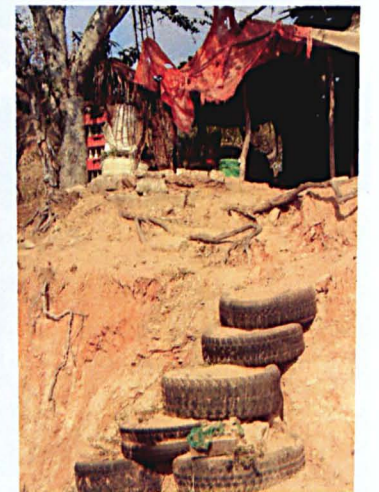
Red brick and concrete housing



Tyres used as a container wall



Local wood has a high level of multiple uses and long term life with adequate maintenance



Use of tyres as a stairs

EL Punhuato

C1.3 Abstraction

Environmental

Vernacular Landscape

Use of native plants
Low maintenance
Return of biodiversity



Use of native plants

The settles of El Punhuato live next to an ecological reserve which is full of native plants and damaged forest. As a result it is priority to establish the respect and care of the ecological reserve through a re forestation programme and native ecology conservation.

Native plants Landscape design and reforestation



Local native plants

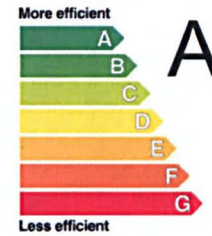
In addition, to take the animals to eat grasses, the Landscape is used as a recreation area as well. Picnic days are common in this area.

El Punhuato

C1.4 Design Tactics

Environmental

Maximising the use of local materials for long term life, multiple uses, low impact and recycling



Low energy consumption and low impact

The main design tactic consist in **maximizing the use of low energy consumption techniques-**. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

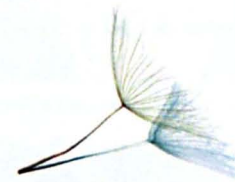
Natural ventilation and Illumination
Maximising use of local raw materials for long term life



Low impact waste



Long term life cycle



Natural ventilation and Illumination



Vernacular landscape

El Punhuato

Socio-Economical

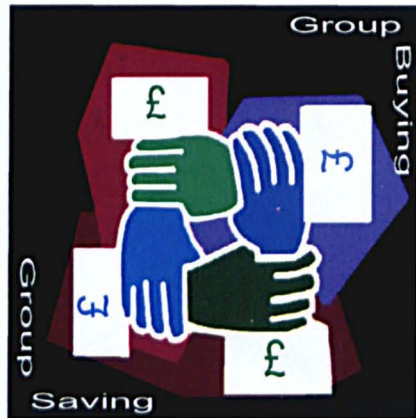
Flexible and non for profit financial
Group Savings & Service Exchange



Flexible Financial

Traditional Self-Construction

The settlers of El Punhuato have developed their community since the origin by progressive self-planing. This means without a traditional master planing and full provision of services since the beginning. As a result the intervention of state agents and banks support is not an issue. Under this circumstances tactics such as group saving and service or goods exchange were stabilised as some kind of flexible financial. This means that different services such as plumbing, electrician, etc. are afforded



1 Person = £5 + 0.5 credit fee charge
+0.5 delivery = £6



5 People (£1)= £5 paid in cash
+ 0.5 delivery = £ 5.5

5 People (£5)= £25 paid in cash
+ free delivery= £ 5

50 People (£1)=£50 cash in a wholesale store = 12 sacks + free delivery + fixed price for 5 coming times. Price per sack = £ 4.16

Total difference= £1.84 = 31% in savings



Service & Goods exchange is a legal practice that allows settlers to avoid paying 15% of tax and quote fair exchange prices due direct friends providers.

El Punhuato

Socio-Economical

Informal settlements = Informal economies
Need microcredits & Cooperative organizations.



Informal economies

Informal settlements also mean informal economies. In other words, most of the basic services and goods inside Colonias Populares such as El Punhuato are provided without paying taxes. Settler will use their own housing to open an informal shop or workshop which after some years became legal. Also streets can be used one day per week for a Tianguis (street market). Settlers prefer buying in local informal economies due to competitive prices, fresh products and are more accessible than big malls or big companies. Also some of the informal local economies support local jobs and are part of families income support. In this circumstances it is necessary



Additional women workshop

El Punhuato

C1.4. Design Tactics

Socio-Economical

Local Support Bank



Group Saving Bank (Tanda) 0% interest
Service Exchange Bank
Cooperatives incubator
Microcredits - Subsidies - Donors
Group Buying
Community goods and services swap
Immigrants revenue investment



Coop



The main design tactic consist in establish a local economic support to **maximise informal local economies and informal economic tactics**. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

Flexible financials
Cooperatives support
Microcredits
Formalising group saving and service and goods exchange
Immigrants revenue transfer and advice
Financial support/subsidies to encourage applications of well managed forest programme or other products (wool)
Community Management of natural resources. It means local resources planning, monitoring, implementation and evaluation.
Integrating of indigenous knowledge system into natural resources management.
Promoting local raw materials for construction, furniture and alternative uses
Additional tools, equipments or machinery to reduce waste and add value
Keeping simple policy -Non highly bureaucratic process



Flexible financial



Group Exchange



Exchange

El Punhuato

C1.3. Abstraction

Socio-Economical

Local Consumption, Informal settlements = Informal economies



Local

Local and low consumption.

One of the main Socio- Economical issues of scarcity is the use of local and low consumption of El Punhuato inhabitants. A huge variety of local fruits, drinks, meals, cereals, grains can be reached locally at street markets or local business. Basic goods such as shoes and clothes are also available. Also other basic services such as butcher, corner shop, hairdresser, carpenter, mechanic, electricians, plumbers, etc. are well established at Colonias Populares. Recently, big formal companies created some business specifically designed



Local fruits, drinks and meals are sold at informal economies such as street markets or informal establishments



Cereals, grains also can be found at street markets



Example of spare pieces to fix a blender

Clothes and shoes



Informal economies shops

El Punhuato

C1.3. Abstraction

Socio-Economical

Community Coalition = Communal services Self- Helped or Self-Determined

Communal water collection and supply



Communal services

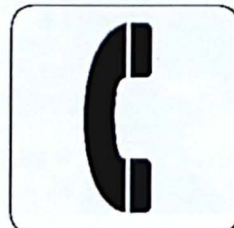
The settlers of El Punhuato have been limited by economic resources under this circumstances they have learnt to share basic services rather than individual. In this sense they have develop a strong sense of communal values to achieve more. Also they have learnt to achieve them progressively by a community coalition. This tactic can force the government to provide some basic services or



Street with a footpath and electricity post awaiting for paving and electricity supply.



Diablitos para la luz
Pipas



Additional services such as:
water collection, potable
water taps and telephone
also work in communal basis



Voluntary rubbish collector, who will receive tips and recycle materials to make profit



Cheap public transport options are minivans or bicycles.
The use of cars for this settlers is very limited.



Pitches,

El Punhuato

C1.3. Abstraction

Socio-Economical

Communal Celebrations



Communal Celebrations

The settlers of El Punhuato have been limited by economic resources under this circumstances they have learnt to share also celebration expenses. In this sense they have develop a



Day of the death



Light and sound event at the Cathedral



Local parade on the streets



El Punhuato

Socio-Economical

Organic Grow



Note:

It is necessary to do this exercise with more people and identify additional issues of scarcity

Probably considering this activity as part of the Participatory design stage will be necessary

Workshop: Issues of scarcity abstraction

Those cards can act as a support to detonate further cards development.

The final set of cards can act as a tool for Participatory design in the Architecture of Scarcity's Game



Case Study 3- c1

Villas del Pedregal

Environmental- Technical

Use of Local Natural Resources



Use of Local Natural Resources-Raw materials.

The "Low income boxes" are the most significant material element in the new modern suburban developments. Those are marginalised in a different way if one compares them to previous Boxes of *Colonias Populares*. The massive new low income housing developments are located on cheap land on the edges of the cities. Its segregation exists due the special position of a vast majority of the population who can only afford a low income wages mortgage for this specific housing scheme supported by the government. Commonly these only covers the most basic amenities for living. One of the main Technical- Environmental issues of scarcity is to produce a monolithic structure using local concrete in order to decrease the cost. Developers had

Local raw materials for construction
Maximizing local



WOOD

The deciduous forest of the surrounded rural towns provides pine wood which is transformed by local workshops. This is

Steel + Brick + Stone =

Steel plus cement are basic ingredients for a reinforced concrete roof.

Brick plus cement are the basic ingredients for a wall

Use of local stones for paving

Use of local stones for foundations

Villas del Pedregal

Technical- Social

Local Human Resources : Local skills, techniques, abilities as part of self-construction

Use of local skills and techniques

Use of Local Human Resources and techniques



It is possible to say metaphorically speaking that the extensions of Semi- Informal Modernism housing are the son of Informal Modernism practice. In other words, actual techniques of self-construction of Semi- informal extensions have their main roots based on techniques of informal areas, those take advantage of different materials provided by the urban cities. As example the inheritance of red brick or concrete construction is used as part of the extension construction method. The main radical change is focussed on the extension design which now will imitate more architecturally design housing in a small scale. Those extensions design are going to be commonly provided by a imitation of a skilfully builder, some architectural students or architectural magazines. The key Technical-Social issue of scarcity is the



Monolithic process construction of the Low income housing

Finalised homogenous low income



Basic Low income housing showing the extension process on the top

Medium low income housing with extension on the front

Villas del Pedregal

C1.4 Design Tactics

Environmental- Technical

Maximizing use of local natural resources



Local

The main design tactic consist in **maximizing the use of local natural resources** -ie brick and concrete. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

Financial support/subsidies to encourage applications of well managed Earth programme.
Community Management of natural resources supplies. It means local resources planning, monitoring, implementation and evaluation.
Integrating of indigenous knowledge system into natural

Technical- Social

Maximising use of Local Natural & Human Resources Local skills, abilities and personnel



Local

The main design tactic consist in **maximizing the use of local human resources** -ie local skills and techniques-. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

Use of local skills and simple traditional techniques
Local people's traditional knowledge of construction
Use of local raw materials for construction
No highly industrialised techniques



Local

Villas del Pedregal

C1.3 Abstraction

Economical -Technical

Indeterminacy of £ Force to have Flexible Financial of housing = Flexible Space, space mutation and indeterminate space

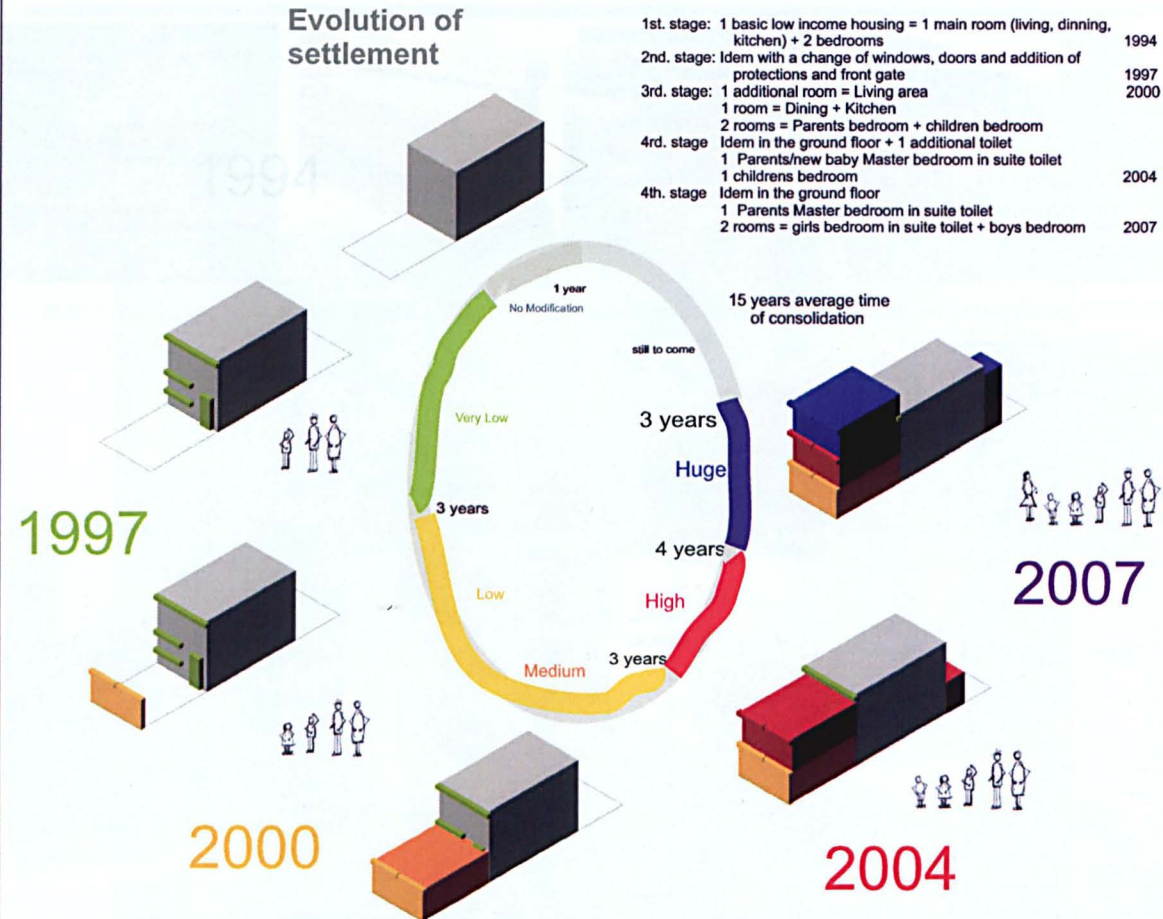
Open to Modifications
Innovative
Not fixed to spatial labels
Space diversity
Star of the same, but evolves to give



Flexible Financial= Flexible Space.

The settles of Villas del Pedregal are commonly limited to low income wages, under this circumstances they had learnt to take advantage of the basic *low income housing* subsidised by the government. Next, they will extend it progressively in different stages according to different circumstances. In other words, due the necessity of economic financial they do not have another choice to afford a house. As a result, even when the housing is limited and the spaces are not highly flexible, spaces are used in different ways to allocate

Evolution of settlement



Villas del Pedregal

C1.3 Abstraction

Technical-Economical

Traditional Self-Management and Construction of extensions

Traditional knowledge of construction
Saving economic resources
Self-increasing of value, self-equity
Avoiding bureaucratic processes and its



Government Subsidy and Traditional Self-Construction of extension

95% of the settlers of Villas del Pedregal chose their dwelling thinking in modify it later. This means that even so the basic housing did not satisfy their full needs at the moment they decided to took advantage of government subsidy. As a result in a few months after opening, individual dwellings and the hole community will suffer some kind of modification though next years. Commonly, settlers are limited by low income wages and they can not afford to pay an architect or building company to do the extension as it happens in regular settlements. In this circumstances the most common tactic had been a self-direct extension management which will ask a local or friend builder to take



Local red brick awaiting to be used in extension.

Member of the family developing a brick wall



Basic Housing suffering an extension in the front

Example of different low level modifications, on the left a front gate extension, on the right windows and doors protections.

Villas del Pedregal

C1.4 Design Tactics

Technical

Flexible Tactics Workshop Self-Construction



As part of the design tactic consist in maximising **the use of local traditional self construction techniques and understand its rich background**. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

- Flexible financial
- Maximizing traditional self-construction
- Additional tools
- Flexible space
- Space mutations, materials mutation
- Open to Modifications
- Innovative
- Not fixed to spatial labels



Flexible Financial



Mutation Hybridism

Villas del Pedregal

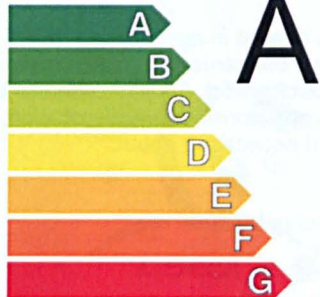
C1.3 Abstraction

Environmental- Technical

Low Energy Consumption: Natural light, natural ventilation and low impact waste

Local raw materials as alternative energy resources.

More efficient

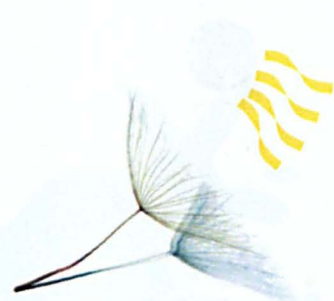


Less efficient

A

Low energy consumption and waste production

Due the settlers of Villas del Pedregal have been limited by economic resources, they highly rationalise the use of electricity and gas in order to avoid expensive bills. As one of the main design tactics they take advantage of natural ventilation and natural illumination in most of the interior spaces in order to decrease electricity consumption. At night they normally use saving bulbs. The use of highly industrialised systems for heating and cooling are avoided. Only essential electric or gas devices are adopted such as: fridge, and gas stove. 99% of the settlers use gas stove rather than electrical due to it is more efficient. In most cases they still do not use washing machines or vacuum cleaner. Those activities are still done manually. The geographical location allows them to do also other homework activities such as draying clothes taking advantage of natural ventilation and sunshine instead artificially. Other devices such as tv,



Natural ventilation and illumination



Natural ventilation, illumination and low use of electric devices in the interior of a kitchen



Local shops & markets no use packing, users commonly have reusable bags and trolleys. Those are in walking distances, no cars are necessary, no parking, use of streets on one day. No use of processed meals, no use of freezers. You can find highly fresh variety and organic food. Local Shops & Markets support local economies. Organic waste is used as an aliment for pork farms or as a compost for a nursery.

Villas del Pedregal

C1.3 Abstraction

Environmental

Cyclical life principal
Materials for long term life, multiple uses and recycling

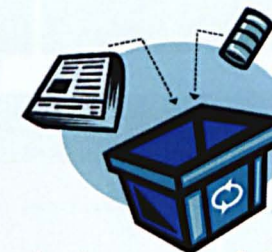


Cyclical life principal

The settles of Villas del Pedregal have a recycling programme stabilised by the developer. They have learnt to receive the



Advertisement indication how to recycle in one of the collecting points of Villas del Pedregal



Different materials such as glass, cardboard, metal are source of small economic benefit.

Villas del Pedregal

C1.3 Abstraction

Environmental

Vernacular Landscape

Use of native plants
Low maintenance
Return of biodiversity

Use of native plants

The settles of Villas del Pedregal live next to an ecological reserve which is full of native plants. As a result it is relevant to establish the respect and care of the ecological reserve through a reforestation programme, use of native plans for landscape and conservation of native ecology.



Native plants Landscape design



Local native plants

Villas del Pedregal

C1.4 Design Tactics

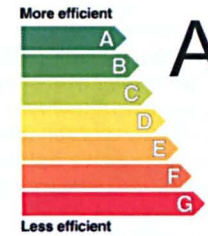
Environmental

Maximising the use of local materials for long term life, multiple uses, low impact and recycling

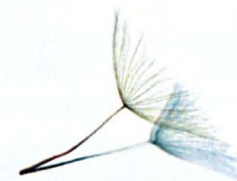
Low energy consumption and low impact

The main design tactic consist in **maximizing the use of low energy consumption techniques**-. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

Natural ventilation and Illumination
Maximising use of local raw materials for long term life



Long term life cycle



Natural ventilation and Illumination



Vernacular landscape

Villas del Pedregal

Socio-Economical

Flexible and non for profit financial
Group Savings & Service Exchange



Flexible Financial

Flexible financial

The community of Villas del Pedregal has been developed by traditional master planing. Developers had provided elemental housing and services such as water, electricity and paving since the beginning. However, extension to the basic housing start taking place after few months. Settles begin to fill the gaps and give individuality to their housing progressively. In this circumstances tactics such as group saving and service or goods exchange were stabilised as some kind of flexible financial. This meas that different services for the



1 Person = £5 + 0.5 credit fee charge
+0.5 delivery = £6



5 People (£1) = £5 paid in cash
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5 People (£5) = £25 paid in cash
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50 People (£1) = £50 cash in a wholesale
store = 12 sacks + free delivery + fixed price
for 5 coming times. Price per sack = £ 4.16

Total difference = £1.84 = 31% in savings



Service & Goods exchange is a legal practice that allows settlers to avoid paying 15% of tax and quote fair exchange prices due direct friends providers.

Villas del Pedregal

Socio-Economical

Informal settlements = Informal economies
Need microcredits & Cooperative organizations.



Informal economies

Even so Villas del Pedregal was developed by formal planning including some areas for shopping, after few months settlers start developing a full range of informal economies. In other words, most of the basic services and goods inside Villas del Pedregal are provided by small local businesses. Commonly, settlers will use their own housing or front area to begin an entrepreneurial experience. After months or years of consolidation informal economies would become legal. Settlers of Villas del Pedregal will

Different examples of informal local economies



Front housing doors and windows protections workshop

Front housing and Pick Up fruit and vegetables sale

In-house meals making to sale



In-house hair dressing

In-house electric and plumbing equipment shop

In-house tortilla making

In-house shop

Villas del Pedregal

Socio-Economical

Local Support Bank



- Group Saving Bank (Tanda) 0% interest
- Service Exchange Bank
- Cooperatives incubator
- Local business improvement
- Microcredits - Subsidies - Donors
- Group Buying
- Community goods and services swap



Coop



Flexible financial



Group Buying



Exchange Goods

The main design tactic consist in establish a local economics support to **maximise informal local economies and informal economic tactics**. Additional tactics to achieve such aim could involve consultancy, negotiation, information, workshops and networking about:

- Flexible financials
- Cooperatives support
- Microcredits
- Improving local businesses
- Formalising group saving and service and goods exchange
- Immigrants revenue transfer and advice
- Financial support/subsidies to encourage applications of well managed business plan.
- Community Management of local economies. It means local resources planning, monitoring, implementation and evaluation.
- Integrating of popular knowledge system into legal

Villas del Pedregal

Socio-Economical

Local Consumption, Low consumption



Local

Local and low consumption.

One of the main Socio- Economical issues of scarcity is the use of local and low consumption of Villas del Pedregal inhabitants. A huge variety of local fruits, drinks, meals, cereals, grains can be reached locally at street markets or local in-house business. Basic goods such as shoes and clothes are also available. Also other basic services such as butcher, corner shop, hairdresser, carpenter, mechanic, electricians, plumbers, etc. are well established inside



Local fruits, drinks and meals are sold at informal economies such as street markets or informal establishments



Cereals, grains also can be found at street markets



Example of spare pieces to fix a blender



In-house shop



In-house services

Villas del Pedregal

Socio-Economical

Community Coalition = Communal services and amenities
Self- Helped or Self-Determined
Communal amenities

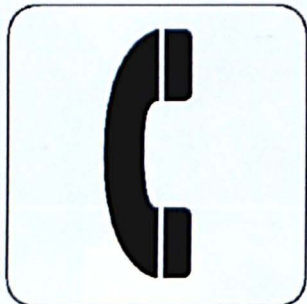


Communal services

The settlers of Villas del Pedregal received their community with most of the basic services such as : water, electricity, paving, etc. However, they lack of other communal amenities such as primary school, secondary school, clinic, sports, communal centre, etc. In this sense they have develop a strong sense of communal values to achieve more. They have learnt to achieve them progressively by a community coalition. This tactic can force the government to provide some additional services or at least supply some of them



Schools



Clinic



Football Pitch

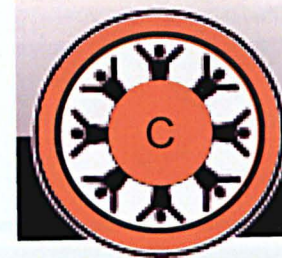


Cheap public transport options are minivans or bicycles. The use of cars for this settlers is very limited. Communal Centre

Villas del Pedregal

Socio-Economical

Communal Celebrations



Communal Celebrations

The settlers of Villas del Pedregal have been limited by economic resources in this circumstances they have learnt to share also celebration expenses. In this sense they have



Day of the death



Catedral de Morelia

Light and sound event at the Cathedral



Local parade on the streets



Villas del Pedregal

Socio-Economical

Organic Grow



Note:

It is necessary to do this exercise with more people and identify additional issues of scarcity

Probably considering this activity as part of the Participatory design stage will be necessary


Workshop: Issues of scarcity abstraction

Those cards can act as a support to detonate further cards development.

The final set of cards can act as a tool for Participatory design in the Architecture of Scarcity's Game

Appendix 3

CATALOGUE OF INSTITUTIONS of support


 Architecture of ScarCity

 Architecture of ScarCity

CATALOGUE OF INSTITUTIONS of support

D. Appraisal
D1. Institutions

Environmental Natural Resources



SEMARNAT
SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES

English

La Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT). The Secretary of Environments and Natural Resources has the aim to protect, restore and preserve the Mexican natural biodiversity. This institution takes care and use in a sustainable way all natural resources, goods and environmental services.

Spanish

La Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) es la dependencia de gobierno que tiene como propósito fundamental "fomentar la protección, restauración y conservación de los ecosistemas y recursos naturales, y bienes y servicios ambientales, con el fin de propiciar su aprovechamiento y desarrollo sustentable" (Ley Orgánica de la Administración Pública, Artículo 32 bis reformada en el DOF del 25 de febrero de 2003).

Support to

TRADITIONAL VERNACULAR

INFORMAL MODERNISM


SEMI-INFORMAL MODERNISM

FEDERAL

SEMARNAT

D. Appraisal
D1. Institutions

Technical Natural Resources



CONACYT

English

The National Council for Science and Technology is an educational autonomous institution which is responsible for Mexican science and technology policies.

Spanish

El Consejo Nacional de Ciencia y Tecnología fue creado por disposición del H. Congreso de la Unión el 29 de diciembre de 1970, como un organismo público descentralizado de la Administración Pública Federal, integrante del Sector Educativo, con personalidad jurídica y patrimonio propio. También es responsable de elaborar las políticas de ciencia y tecnología en México. Desde su creación hasta 1999 se presentaron dos reformas y una ley para coordinar y promover el desarrollo científico y tecnológico y el 5 de junio del 2002 se promulgó una nueva Ley de Ciencia y Tecnología

Support to

TRADITIONAL VERNACULAR

INFORMAL MODERNISM


SEMI-INFORMAL MODERNISM

FEDERAL

CONACYT

D. Appraisal
D1. Institutions

Social Natural Resources



CDI
COMISIÓN NACIONAL PARA EL DESARROLLO DE LOS PUEBLOS INDÍGENAS

English

The National Commission for the Indigenous Towns Development is an institution that aims to support and promote an integral and sustainable development of indigenous citizens. According to the article n. 2 of the Mexican constitution.

Spanish

El 21 de mayo de 2003 se publicó en el Diario Oficial de la Federación el Decreto por el cual se expide la Ley de la Comisión Nacional para el Desarrollo de los Pueblos Indígenas y se abroga la Ley de Creación del Instituto Nacional Indigenista. Este Decreto entró en vigor a partir del 5 de julio de 2003.

La Comisión Nacional para el Desarrollo de los Pueblos Indígenas es un organismo:

- Descentralizado de la Administración Pública Federal
- No sectorizado
- Con personalidad jurídica y patrimonio propio
- Con autonomía operativa, técnica, presupuestal y administrativa

Misión
Orientar, coordinar, promover, apoyar, fomentar, dar seguimiento y evaluar los programas, proyectos, estrategias y acciones públicos para alcanzar el desarrollo integral y sustentable y el ejercicio pleno de los derechos de los pueblos y comunidades indígenas de conformidad con el artículo 2º. de la Constitución Política de los Estados Unidos Mexicanos.

Support to

TRADITIONAL VERNACULAR

I.e.


Economic resources

FEDERAL


CDI

D. Appraisal
D1. Institutions


Technical Natural Resources



International



Mexico



Michoacan

English

ICOMOS is an international non-governmental organization of professionals, dedicated to the conservation of the world's historic monuments and sites.

The ICOMOS MEXICANO has a diverse set of activities. The main one is acting as assessor of public or private institutions for World Heritage Sites applications and assessor for Heritage sites refurbishment or interventions.

Spanish

El ICOMOS Mexicano, A.C., es el Comité Nacional Mexicano del Consejo Internacional de Monumentos y Sitios, organismo "A" de UNESCO de carácter no gubernamental y fines no lucrativos, que reúne actualmente a más de 200 países a través de Comités Nacionales, agrupando personas e instituciones que trabajan en la conservación de monumentos, conjuntos y sitios, de interés arqueológico, histórico o artístico. México es miembro del mismo desde su inicio en 1965 y fue uno de los países que firmaron la "CARTA DE VENEZIA", documento elaborado para la protección del patrimonio.

La labor del ICOMOS MEXICANO ha sido diversa; presta asesorías a entidades públicas y privadas a través de convenios de diversos tipos; colabora en las propuestas de Sitios y Monumentos para su ingreso en la Lista del Patrimonio de la Humanidad de la UNESCO y coadyuva en la formación de los expedientes necesarios, ya que es el órgano encargado de dar seguimiento a los Sitios y Monumentos incluidos en la lista.

Support to


TRADITIONAL VERNACULAR

INTERNATIONAL * FEDERAL

ICOMOS

D. Appraisal
D1. Institutions

Economical Natural Resources **D 1. Institutions**



INFONAVIT

English

The National Housing Fond for Workers Institute is the mexican body that give mortgages to workers. According to the Mexican law, the equivalent of 2% of worker's wages needs to be paid to this fond. The amount is not discounted from the salary. Companies or bosses need to pay this amount. This can be translated as "tax for workers' housing".

Spanish

Es el instituto del fondo nacional de la vivienda para los trabajadores. Es una institucion mexicana dedicada al credito de vivienda para trabajadores. Es por ley el 2% del sueldo base de cotizacion del trabajador, eso no se descuenta del sueldo sino lo paga como prestacion extra el patron.

Support to

INFORMAL MODERNISM


SEMI-INFORMAL MODERNISM

STATE

INFONAVIT

D. Appraisal
D1. Institutions

Social Natural Resources **D 1. Institutions**



English

The Secretary of Social Development coordinates the Mexican social policy and governmental subsidies for this aim.

Spanish

La Secretaría de Desarrollo Social formula y coordina la política social solidaria y subsidiaria del gobierno mexicano.

Support to

TRADITIONAL VERNACULAR

INFORMAL MODERNISM

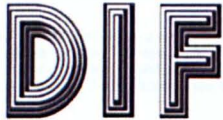
SEMI-INFORMAL MODERNISM

FEDERAL

SEDESOL

D. Appraisal
D1. Institutions

Social Natural Resources **D 1. Institutions**



English

The National System for the Family Integral Development, is the public institution that support and apply public policies of social assistance.

Spanish

El Sistema Nacional para el Desarrollo Integral de la Familia (SNDIF), es el organismo público encargado de instrumentar, aplicar y dar dimensión a las políticas públicas en el ámbito de la asistencia social.

Support to

TRADITIONAL VERNACULAR

INFORMAL MODERNISM


SEMI-INFORMAL MODERNISM

STATE

DIF

D. Appraisal
D1. Institutions

Social Natural Resources **D 1. Institutions**



English

The Ministry of Health is the public institution that coordinates additional health public institutions. This institution has the aim to apply social health policies.

Support to

TRADITIONAL VERNACULAR

INFORMAL MODERNISM

SEMI-INFORMAL MODERNISM


FEDERAL

SECRETARIA DE SALUD

D. Appraisal
D1. Institutions

Social Natural Resources

D 1. Institutions



English

The Postgraduate School of Architecture of the University of Michoacan has strong research in the area of Heritage site history, restoration and conservation. They have Master and PhD programmes in this field of architecture.

Spanish

La División de Estudios de Posgrado de la Facultad de Arquitectura de la Universidad Michoacana de San Nicolás de Hidalgo nació gracias a la iniciativa de un grupo de especialistas en la conservación del patrimonio edificado. Se creó en 1994 y abrió la primer convocatoria para los programas de Maestría en Arquitectura, Investigación y Restauración de Sitios y Monumentos y Especialidad en Restauración de Sitios y Monumentos en el año de 1995.

Support to

TRADITIONAL VERNACULAR

INFORMAL MODERNISM

SEMI-INFORMAL MODERNISM


STATE

FAUM

D. Appraisal
D1. Institutions

Social Natural Resources

D 1. Institutions



English

The Faculty of Wood Technology Engineering has strong tradition of society's contribution through research. Their main contributions include wood management processes in indigenous communities and forest secretary. At the same time they offer workshops and consultancy to provide technical improvement and better quality in wood products.

Spanish

La Facultad de Ingeniería en Tecnología de la Madera ha contribuido con la sociedad mediante el desarrollo de investigaciones dirigidas a proponer alternativas de solución a problemas en procesos industriales de la madera en las comunidades indígenas y propietarios del recurso forestal; asimismo se han desarrollado cursos, talleres y asesorías encaminadas a proveer elementos técnicos para mejorar la calidad de sus productos a base de madera.

Support to

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INFORMAL MODERNISM

SEMI-INFORMAL MODERNISM


STATE

TECNOLOGIA DE LA MADERA

D. Appraisal
D1. Institutions

Social Natural Resources

D 1. Institutions



English

The Universidad de Michoacan de San Nicolas De Hidalgo, founded in 1540, is one of Mexico's oldest and most respected public universities. The University has around 60,000 students including students from all Latin America.

Spanish

La Universidad Michoacana de San Nicolás de Hidalgo, es en la actualidad la institución de educación superior de mayor tradición en el estado de Michoacán.

Support to

TRADITIONAL VERNACULAR

INFORMAL MODERNISM

SEMI-INFORMAL MODERNISM


STATE

UMICH

D. Appraisal
D1. Institutions

Technical Natural Resources

D 1. Institutions



English

The National Commission of Water has the aim to administrate, exploit and take care of national water resources in a sustainable way with the society's participation.

Spanish

La Comisión Nacional del Agua consiste en administrar y preservar aguas nacionales, con la participación de la sociedad, para lograr el uso sustentable del recurso.

Support to

TRADITIONAL VERNACULAR

INFORMAL MODERNISM


SEMI-INFORMAL MODERNISM

FEDERAL

CONAGUA

D. Appraisal
D1. Institutions

Social Natural Resources **D 1. Institutions**



Secretaría de Cultura

2008 - 2012 MICHOCÁN

English

The Culture Secretary of the State of Michoacan promotes, support and sponsor different activities related to cultural dissemination.

Spanish

Support to

TRADITIONAL VERNACULAR


INFORMAL MODERNISM

SEMI-INFORMAL MODERNISM

SECRETARIA DE CULTURA DEL ESTADO

D. Appraisal
D1. Institutions

Technical Natural Resources **D 1. Institutions**



Instituto de Vivienda del Estado de Michoacán

2008 - 2012 MICHOCÁN

English

The Institute of Housing of the State of Michoacan support policies and initiatives towards the workers' housing improvement.

Spanish

Support to

TRADITIONAL VERNACULAR


INFORMAL MODERNISM

SEMI-INFORMAL MODERNISM

STATE **IVEM**

D. Appraisal
D1. Institutions

Economical Natural Resources **D 1. Institutions**



Secretaría de Desarrollo Económico

2008 - 2012 MICHOCÁN

English

The Secretary of Economic Development of the state of Michoacan promotes the local economic investment and also gives credit for new micro companies. Also support the new employment creation.

Spanish

Support to

TRADITIONAL VERNACULAR


INFORMAL MODERNISM

SEMI-INFORMAL MODERNISM

STATE **SEDECO**

D. Appraisal
D1. Institutions

Technical Natural Resources **D 1. Institutions**



gira

English

The Interdisciplinary Group for Appropriate Rural Technology is a research centre focussed on the rural improvement sector of the state of Michoacan. However their research has been applied nationally and internationally . The most well known example is the design of Patsari stove, winner of the Asden Award 2006 in London, UK. GIRA also has strategic collaboration with academic and public organizations.

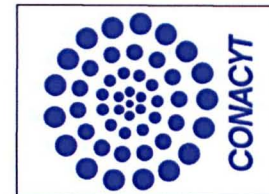
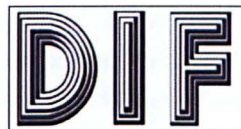
Spanish

El grupo Interdisciplinario de Tecnología Rural Apropiada es un centro de investigación enfocado al la mejora del sector rural del-estado de Michoacan. sin embargo su investigación ha sido aplicada nacional e internacionalmente. El mas claro ejemplo es el diseno de la estufa Patsari ganadora del Asden award 2006 en Londres. GIRA tambien cuenta con colaboraciones estrategicas con el sector academico y publico.

Support to

TRADITIONAL VERNACULAR

CIVIL SOCIETY **GIRA**



Appendix 4: Letter of Ethical approval of the Architecture of Scarcity Game testing



The
University
Of
Sheffield.

School
Of
Architecture.

Mr Axel Becerra Santaacruz
School of Architecture
University of Sheffield
The Arts Tower
Western Bank
Sheffield
S10 2TN

Wednesday, 06 May 2009

Judith Torrington

School of Architecture
The Arts Tower
Western Bank
Sheffield
S10 2TN

Telephone: +44 (0) 114 2220346
Fax: +44 (0) 114 279826
Email: j.m.torrington@sheffield.ac.uk

Dear Axel,

PROJECT TITLE: Architecture of Scarcity

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 05/05/2007 the above-named project was unconditionally **approved** on ethics grounds, on the basis that you will adhere to the following document that you submitted for ethics review:

- University research ethics application form (revised version) (08.04.2007)
- Participant information sheets
- Participant consent forms

If during the course of the project you need to deviate significantly from the above-approved document please inform me since written approval will be required. Please also inform me should you decide to terminate the project prematurely.

Yours sincerely

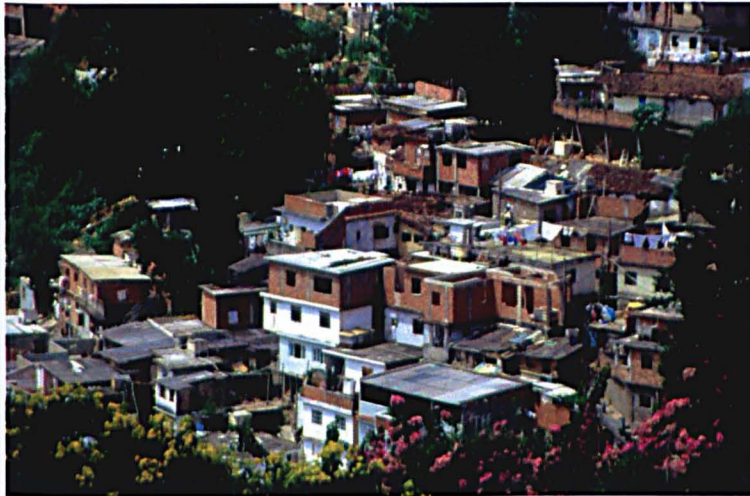
A handwritten signature in blue ink, appearing to read 'Judy Torrington'.

Judy Torrington
Ethics Administrator



Appendix 5: Information sheet

The Architecture of ScarCity Game



While individuals and their economies are necessarily governed by **scarcity** and efficiency that living matter in general is governed by the steady and luxurious flow of energy from the sun, which must be expended either in growth or in some form of luxury".

George Bataille

19th May 2009 10.00 am & 2.00 pm room 15.D.

Arts Tower, University of Sheffield

Information sheet

Background

The importance of this thesis is to contribute to the debate on the future of Mexican architecture and to promote a critical understanding for adopting a sustainable path. This thesis argues for considering *Architecture of Scarcity* as an alternative design process of sustainable architecture to face the challenges of marginalised areas of mass urbanised cities in Mexico or other developing countries with similar characteristics.

In other words, the whole thesis explores the design features of the challenge of creating buildings under the condition of scarcity. This means withstanding the vagaries of inequity (limited economic resources of part of the population) multicultural diversity, globalization, migration and struggles of rapid growth and change (everyday solutions and chaotic organization). The starting question is; *can one formulate a new approach to Mexican future architecture based on the idea of Scarcity?* The thesis suggests and explores the concept termed *Architecture of Scarcity*.

What is *Architecture of Scarcity*?

It is argued that the resources and priorities in the developing world are very different from those of the developed global North, and yet many of the concepts of architecture and sustainability have been uncritically taken from one context to another. The result is that issues of sustainability in the architecture of the global South remains under-theorised. *Architecture of Scarcity* is a potential approach that attempts to address economic, social, environmental and technical issues in a sustainable way based on the idea of scarcity. It is defined as architecture created by the idea of not having sufficient resources to fulfil unlimited relative needs. In other words rather to consider architecture from the perspective of commodity and abundant control of resources to produce a 'perfect' product, it considers the features of production of architecture in a condition of limited in resources and open to 'imperfection'.

The project: the *Architecture of Scarcity* Game

In order to make sense of the concept of *Architecture of Scarcity* in practice, participants of this project will take part in a board game entitled the *Architecture of Scarcity* Game. The game aims to simulate the building up of a Scar-City, a community which has limited resources. Participants will be playing on different layout abstractions of real case studies. Next they will be interacting with a proposed Agency which support and encourage sustainable architecture production. Through this process participants will be encourage organising themselves, designing, planning, built and consolidate their community.

To achieve such goal participants will learn that *Architecture of Scarcity* is not only about building up Physical Architecture but it is also about developing a Strategic Framework (Non-Physical-Processes). By Strategic Framework means that this game is also about promoting the participants' capacity of reflexion, organization and decision within an abstract scarce community. This game first explores the building up of social networks, environmental links and a series of actions to achieve later physical architecture in a community. In short this tool aims to unlock collective consciousness about their capacity to generate, claim, change, participate and transform the built environment. If *the Architecture of Scarcity Game* can reflect these issues and transfer them to the participants through this test we have achieved our goal.

Methodology

Participants will play the board game of *Architecture of Scarcity* over the minimum time of one hour; however participants can keep playing for 30 additional minutes. Participants will play in two main stages.

that the Agency makes to organisation, the power of collective endeavour, access to other types of skills & resources and economies of scale. In short, this stage guides the participant to recognise what the added value is of visiting the Agency. What makes the built environment different with the Agency's intervention? What is the Agency main contribution? How does the Agency accelerate a successful process?

At the end participants will be asked to complete a questionnaire giving general perception about their experience.

What are the possible disadvantages and risks of taking part?
There is no risk of physical or psychological injury.

What are the possible benefits of taking part?
It is hoped that this work will transfer some of the lessons or design tactics of *Architecture of Scarcity* to the participants. In the future it is hoped that this tool can help planners, architects, designers and more importantly the government to support and get involved in marginalised areas of the Mexican population or others with similar characteristics.

Will my taking part in this project be kept confidential?

The first stage and –the didactical part- entitled “Pre-agency” addresses what can be learnt from the existing features of the architecture produced by a condition of scarcity? This stage helps the participants to understand why, even under the condition of scarcity, there is a huge amount of architectural production. In other words, this stage of the game aims to teach the participant some lessons in building your housing or neighbourhood even when you do not have all the necessary funding to do it in one go. (Even with out state agents, bank support, mortgages or huge savings).

The second stage and -the practical part- entitled “Post-agency” promotes how such lessons could be used as a new set of design tactics to challenge contemporary architectural design process production. For example the possibilities of do it progressively by “improvised or imperfect” processes. This stage introduces to the participants what can be the new architect's role inside these marginalised communities which is represented by an Agency. In other words, participants will learn how the condition of scarcity might inform an alternative sustainable design process? Also, how the Agency can use such lessons to alter the design process once collective resources are pooled. This stage mainly demonstrates the difference. All the information that we collect about you during the course of the research will be kept strictly confidential. You will not be able to be identified in any reports or publications.

Who is organising and funding the research?

This project is carried out with support from CONACYT (Mexican Council of Science and Technology)

Who has ethically reviewed the project?

This project has been approved via the School of Architecture ethics review procedure.

Contact for further information

If you have any questions, complaints or comments please feel free to contact me, Axel Becerra Santacruz (A.becerra@sheffield.ac.uk) The School of Architecture, University of Sheffield, The Arts Tower, Sheffield S10 2TN, Tel. 0114 222 0366, or my supervisor Professor Sarah Wigglesworth (s.wigglesworth@sheffield.ac.uk). If you feel your complains has not been handled to your satisfaction, you can contact the University of Sheffield's 'Registrar and Secretary' (<http://www.shef.ac.uk/registrar/>).

Appendix 6: Participant Consent form



Architecture of Scarcity
Participant Consent Form

Participant Identification Number:

Please initial box

- 1. I confirm that I have read and understand the information sheet dated 05 May 2009 for the above project and have had the opportunity to ask questions. All queries regarding the project and participation can be directed to Axel Becerra Santacruz (A.becerra@sheffield.ac.uk) School of Architecture, University of Sheffield, Arts Tower, Sheffield S10 2TN, Tel. 0114 222 20340.
- 2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason.
- 3. I understand that my responses will be anonymised before analysis. I give permission for members of the research team to have access to my anonymised responses.
- 4. I agree to take part in the above research project.

.....
Signature of the participant Please PRINT name Date

.....
Signature of the researcher Please PRINT name Date

Appendix 7: Questionnaire after the Architecture of Scarcity Game session and second part of analysis

Questionnaire

1.-Which of the following design tactic is essential to produce architecture of scarcity?

- A) To get a mortgage and buy your housing
- B) To design considering to build your housing progressively according to changing circumstances
- C) To receive a marriage house gift from your parents.
- D) To contract an architect to design your entire housing and then receive bank support

2. - Which of the additional design tactics are also parts of architecture of scarcity?

- A) Use of local materials, techniques and personnel
- B) Use of sophisticated techniques that need highly qualified personnel
- C) Use of imported materials and techniques.

3.-Who are the main actors of this game?

- A) Bankers, developers, architects and users
- B) Politicians and institutions
- C) Citizens, Institutions (academic, political and economic) and alternative architects

4. - What is the main change in architect's vision and way of thinking working in Scar-City?

- A) He needs to keep designing buildings
- B) He will consider architecture from the perspective of commodity and abundant control of resources to produce a 'perfect' product
- C) He will consider the features of production of architecture in a condition of limited resources and open to 'imperfection'.

5. - What is the key issue for a successful application of Architecture of scarcity?

- A) To have a well defined master planning
- B) To have a strongly researched Strategic Framework
- C) To have an iconic building design

6. - What is the main meaning of Strategic Framework in this game?

- A) It is a set of final drawings to build up an iconic building
- B) It is a well supported business plan to create a big profit
- C) It is a set of tools to un-lock collective consciousness about citizen's capacity to generate, claim, change, participate and transform the built environment.

7.-How will the Strategic framework of scarcity design tactics will be delivered?

- A) The clients need to visit an architectural office
- B) The architect will establish a local Agency
- C) The client will have to look online

8. - What are the main duties of the architect working for the ScarCity's Agency

- A) Only to Design
- B) To Inform , consult, negotiate, and design
- C) To sell and let properties.

9. – How will you as an architect economically support your Agency?

- A) You have to be very wealthy like Bill Gates and then do it for charity
- B) You will be looking for institutional support and also charge small fee
- C) You will charge a normal RIBA fee for every design

10. - What is the meaning of sustainability in this game?

- A) It is an Ethical Framework which is flexible enough to recognise local conditions, but robust enough to guide the participants to achieve a sustainable path.
- B) A new path of progress that allows satisfying the necessities and aspirations of the present without jeopardising the capacity of future generations to satisfy its own necessities.
- C) An Agency that sell solar panels

11. - Do you think this game can be a didactical tool to exemplify future interventions in ScarCity, the marginalised areas of Mexican population?

12.-Would you like to play this game in the future?

13.-Would you recommend playing this game to somebody else?

14. - Would you like to include some additional cards for the next game?

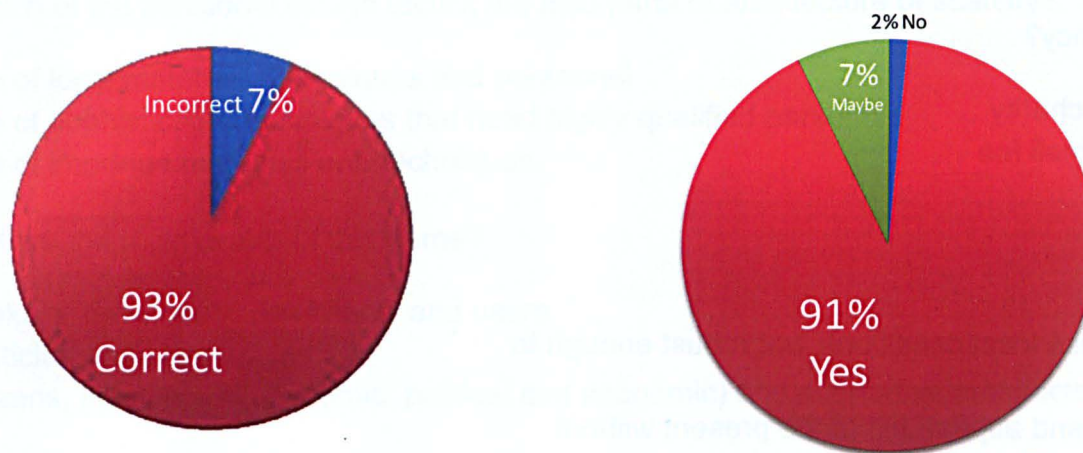
Individual Family Support Cards	Community Support Cards	Contingency Cards
Composting Toilet	Primary School	Bad rain
Organic food & farming	Paving, Clinic	Additional subsidy
To add.	To add.	To add.

15. - Do you have any additional comment or suggestion to improve the Architecture of Scarcity Game?
Did the game transfer any additional message to you?

Second part of questionnaire analysis

3 additional questions had three variables (yes, maybe or no). Those were. Q11. Do you think the game was a didactical tool to understand the non- prescribed process of informal developments in Mexico? Q12 Would you like to play this game in the future and Q 13 would you recommend this game to someone else? Within these answers it is interesting to highlight that only 1 participant from a total of 46 considered that the game is not a useful didactical tool and 1 more participant from the total of 46 does not want to play this game in the future anymore.

The final patterns of all the questions confirm the understanding and acceptance of the main issues. On the left final pattern of Q1 to Q10 on the right final pattern of Q11 to Q13 (figs. 8.72 & 8.73)



The open question

Finally two open questions were posed in order to gather a set of diverse ideas related to the final perception of the game. The Q14 and Q15 were: Do you have any additional comment or suggestion to improve the Architecture of Scarcity Game? Did the game transfer any additional message to you? 27 students from a total of 46 (equal to 59%) added further comments. These answers informed the proposed outcome.