



저작자표시-비영리-변경금지 2.0 대한민국

이용자는 아래의 조건을 따르는 경우에 한하여 자유롭게

- 이 저작물을 복제, 배포, 전송, 전시, 공연 및 방송할 수 있습니다.

다음과 같은 조건을 따라야 합니다:



저작자표시. 귀하는 원저작자를 표시하여야 합니다.



비영리. 귀하는 이 저작물을 영리 목적으로 이용할 수 없습니다.



변경금지. 귀하는 이 저작물을 개작, 변형 또는 가공할 수 없습니다.

- 귀하는, 이 저작물의 재이용이나 배포의 경우, 이 저작물에 적용된 이용허락조건을 명확하게 나타내어야 합니다.
- 저작권자로부터 별도의 허가를 받으면 이러한 조건들은 적용되지 않습니다.

저작권법에 따른 이용자의 권리는 위의 내용에 의하여 영향을 받지 않습니다.

이것은 [이용허락규약\(Legal Code\)](#)을 이해하기 쉽게 요약한 것입니다.

[Disclaimer](#)

Ph.D. Dissertation of Seoul National University

The Scope of Prolonged  
Responsibility of the Architect in  
Incremental Housing  
– Based Upon Two Case Studies –

점진적 완성 주택의 실천과정개선을 위한  
건축가의 역할범위에 관한 연구: 칠레의 두 사례를  
바탕으로

August 2016

Graduate School of Engineering  
Seoul National University  
Architecture

Goran Ivo  
Marinovic

The Scope of Prolonged  
Responsibility of the Architect in  
Incremental Housing  
– Based Upon Two Case Studies –

Academic adviser Jin Baek

Submitting a Ph.D. Dissertation of Public Administration  
August 2016

Graduate School of Engineering  
Seoul National University  
Architecture  
Goran Ivo Marinovic

Confirming the Ph.D. Dissertation written by  
Goran Ivo Marinovic  
August 2016

Chair

金光鎔 (Seal)

Vice Chair

백진 (Seal)

Examiner

최재환 (Seal)

Examiner

스피드 Paul Speed (Seal)

Examiner

최영준 (Seal)

# Abstract

Incremental housing is a process of open-ended housing construction, which challenges current assumptions about the relationships between formal and informal, bottom-up and top-down housing development. It represents an inversion of the formal process of building and financing a house. Governments deliver low-income families the most basic features of a house, which can be upgraded later in accordance with the financial capacity of the families. This strategy of housing has become increasingly popular in developing countries that struggle with economic scarcity for supporting low-income families. Despite the promise of incremental housing in addressing the low-income housing in which roughly one third of the world's population lives, the model in its current form has shortcomings. Its current structure restrains the participation of low-income families and creates an onerous living environment during the inhabitation of the initial house. This dissertation examines these issues in the context of incremental housing in Chile.

In Chile, the incremental housing is an essential part of social housing policies. Under the aegis of the United Nations Human Settlements Program, the Chilean government has supported the self-building process of low-income families since the mid-twentieth century. This dissertation examines two case studies of incremental housing projects from the Santiago, Chile metropolitan area, Chile. Focusing on the Elemental Lo Espejo and Las Higuera housing projects, the examinee used qualitative methods such as observation, semi-structured interviews, photo-elicitation interviews, architectural drawings of houses, and surveys. Las Higuera is representative of the incremental houses delivered by the Chilean government, while Elemental Lo Espejo is representative of private efforts.

This dissertation argues for the prolonging of the responsibility of the architect in incremental housing by reviewing two Chilean cases, while criticizing the conventional role of the architect as a key agency for the top-down approach in social housing programs. This is achieved by proposing the architect which is embedded in dialogue with low-income families, thus transforming the relationship between low-income families and professionals. This proposition is presented in the form of a working template, outlining the phases that the architect should follow for strengthening communication with low-income families; such communication would directly influence the outcome of the housing solution. In this regard, the architect should follow proposed phases before, during and after the design of the base house.

The working template for before design of the base house proposes a set of tasks for the architect to perform in preparation for the design process. This preparation work of the architect aims to contextualize the design process and set a platform for a good cooperation between the family and the professional. The working template for during the design of the base house provides suggestions for avoiding design and organizational mistakes. These suggestions are based on findings from fieldwork conducted for seven months in Chile. Finally, the working template for after the design of the house enables the architect to support the customization process performed by the family.

As a result, the proposed framework of incremental housing represents the shift from an organizational way of designing a house to stressing the importance of the individual perception of the house. It proposes dialog based on a design process embedded in the coexistence between the family and the architect. This proposed framework can serve as a foundation for future incremental housing projects in the developing world.

**Keyword :** incremental housing, the base house, customization, the working template.

**Student Number :** 2010-31303

# Table of Contents

Abstract .....	i
Table of Contents.....	iv
Declaration .....	viii
Abbreviations.....	ix
List of Tables .....	x
List of Figures .....	xiii
Chapter 1. Introduction.....	01
1.1 Problem Statement .....	01
1.2 Aims, Specific Objectives, and Research Questions .....	09
1.2.1 Research Aims and Objectives .....	09
1.2.2 Research Aims and Objectives .....	11
1.3 Research Methodology .....	13
1.4 Organization of Dissertation.....	20
1.5 Research Limitation.....	25

Chapter 2. The Importance of the Base House .....	29
2.1 Current Structure of Incremental Housing .....	29
2.2 The Base House.....	40
2.3 Customizations to the Base House.....	45
2.4 History of Developing the Idea of the Base House .....	52
2.5 The Architect’ s Current Role in Incremental Housing ..	57
Chapter 3. Two Base House Case Studies.....	64
3.1 Elemental Lo Espejo, Santiago .....	64
3.2 Las Higuera, Santiago.....	71
3.3 Sampling Families of two Case Studies.....	81
3.4 The Architect’ s Plan for Customization of the Base House .....	85
Chapter 4. The Report from Fieldwork.....	89
4.1 Problem–Centered Interview with Observation .....	89
4.1.1 Sample of Interview Transcripts .....	93
4.2 Sample of Questionnaire .....	99
4.3 Observations on Living Experience from Las Higuera..	102

4.4 Sample of Photo–Elicitation Interview (PEI) .....	107
4.5 Analytical Drawings of Customized Houses .....	112
4.5.1 Elemental Lo Espejo .....	114
4.5.2 Las Higuera.....	122
Chapter 5. Designing and Inhabiting the Base House.....	135
5.1 Analyzing the Design of the Base House .....	135
5.2 Designing the Base House Founded on Families’ Needs .....	146
5.3 Inhabiting and Adjusting the Base House.....	151
5.4 Lessons of Designed Houses .....	154
5.5 The Architect’ s Responsibility through Delivering the Base House .....	159
Chapter 6. Customizing the Base House Initiated by Dwellers’ Motivation and Organization.....	165
6.1 Analyzing Realized Customization .....	165
6.2 Dwellers’ Motivation to Customize their House .....	176
6.3 Dwellers’ Organization of Customizing their House ...	178

6.4 Outcome of Realized Customization.....	181
6.5 Positioning the Architect in the Context of Customization .....	185
Chapter 7. The Proposed Working Template for Incremental Housing .....	189
7.1 The Architect’ s Prolonged Responsibility.....	189
7.2 Structure of the Working Template for Incremental Housing .....	194
7.3 The Working Template for Preparing the Design of the Base House.....	197
7.4 The Working Template for Designing Houses.....	200
7.5 The Working Template for Customizing Houses .....	205
7.5.1 The Framework for the Working Template of Customization .....	210
Chapter 8. Conclusion.....	222
Bibliography.....	228
Abstract .....	235
Acknowledgments .....	238

# Abbreviations

CAS	Committee for Social Assistance
CASEN	National Socioeconomic Characterization Survey
CORVI	Chilean Housing Corporation
FSV1	Solidarity Housing Fund 1 (for the first income quintile)
FSV2	Solidarity Housing Fund 2 (for the second income quintile)
DS40	Solidarity Fund 40 (for the third income quintile)
MINVU	Ministry of Housing and Urban Development
SERVIU	Housing and Urban Development Services
UF	Unit of Account to Index Costs, Debts and Payments
EGIS	Entity of Managing Social Property
IDB	The Inter-American Development Bank
SODIMAC	Home Center, Company Distributing Construction Materials
OSB	Sterling Board or Oriented Strand Board

# List of Tables

Table 1. Research questions and objectives .....	12
Table 2. Methods for collecting data .....	14
Table 3. The structure of dissertation.....	21
Table 4. The structure of incremental housing.....	34
Table 5. FSV1’ s regulation for design of the base house.....	38
Table 6. FSV1’ s regulation for design of the base house.....	39
Table 7. Structure of the role of the architect .....	60
Table 8. The Demographic characteristics of families.....	84
Table 9. Families’ previous living experiences.....	150
Table 10. Transition from the slum to the base house .....	151
Table 11. maintaining of the originally delivered base house .....	153
Table 12. Families’ encounter with delivered houses .....	158
Table 13. The working template for preparing design.....	159
Table 14. The working template for designing the base house ..	161
Table 15. Dwellers’ motivation for customizing their houses .....	176
Table 16. Families’ investment in customization of the house.....	179

Table 17. Families’ organization for customizing houses .....	180
Table 18. Recorded customization of the base house .....	183
Table 19. Framework for proposed working template .....	195
Table 20. The working template for preparing design.....	198
Table 21. The structure of the introduction of the base house ..	198
Table 22. Collecting data about families’ expectations .....	199
Table 23. The structure of presenting the design solution .....	199
Table 24. Presenting limitations of the base house.....	199
Table 25. Preparing families to inhabit the house .....	200
Table 26. The working template for designing .....	200
Table 27. Design of the base house, subcategory b1.....	201
Table 28. Discussion with families, subcategory b2 .....	202
Table 29. Inhabiting the house, subcategory b3 .....	202
Table 30. Maintenance of the house, subcategory b4.....	203
Table 31. Supporting customization, subcategory b5.....	204
Table 32. The working template for customizing the house .....	207
Table 33. Introducing the template to families .....	207
Table 34. Discuss the possibilities of the template .....	207

Table 35. The template and families' financial possibilities .....208

Table 36. Limitation of the template .....208

# List of Figures

Figure 1. Depiction of the base house .....	44
Figure 2. Example of the base house in Antofagasta .....	44
Figure 3. History line of developing the concept .....	54
Figure 4. Location of Elemental Lo Espejo.....	64
Figure 5. Elemental Lo Espejo site plan .....	65
Figure 6. Vista Hermosa settlement.....	66
Figure 7. Front facade of Vista Hermosa settlement .....	67
Figure 8. Elemental Lo Espejo site plan .....	68
Figure 9. The base house of Elemental Lo Espejo .....	68
Figure 10. Elemental, original designed floor plan .....	69
Figure 11. Elemental, before and after extension .....	70
Figure 12. Elemental, after modification by dwellers.....	70
Figure 13. La Toma de Peñalolén, Santiago.....	73
Figure 14. La Toma de Peñalolén, Santiago.....	73
Figure 15. Location of Las Higuera Higuera .....	76
Figure 16. Las Higuera site plan, Santiago.....	77

Figure 17. Las Higuera site plan.....	78
Figure 18. Floor plan of basic house of Las Higuera.....	79
Figure 19. Las Higuera houses before customizations .....	80
Figure 20. Las Higuera houses after customizations .....	81
Figure 21. Elemental Lo Espejo, Elemental.....	87
Figure 22. Six phases of customizing base houses .....	88
Figure 23. Four categories of customizations .....	113
Figure 24. Drawings of modified E1 house.....	114
Figure 25. Drawings of modified E2 house.....	115
Figure 26. Drawings of modified E3 house.....	116
Figure 27. Drawings of modified E4 house.....	117
Figure 28. Drawings of modified E5 house.....	118
Figure 29. Drawings of modified E6 house.....	119
Figure 30. Drawings of modified E7 house.....	120
Figure 31. Drawings of modified E8 house.....	121
Figure 32. Drawings of modified H1 house .....	122
Figure 33. Drawings of modified H2 house .....	123
Figure 34. Drawings of modified H3 house .....	124

Figure 35. Drawings of modified H4 house .....	125
Figure 36. Drawings of modified H5 house .....	126
Figure 37. Drawings of modified H6 house .....	127
Figure 38. Drawings of modified H7 house .....	128
Figure 39. Drawings of modified H8 house .....	129
Figure 40. Drawings of modified H9 house .....	130
Figure 41. Drawings of modified H10 house .....	131
Figure 42. Drawings of modified H11 house .....	132
Figure 43. Drawings of modified H12 house .....	133
Figure 44. Drawings of modified H13 house .....	134
Figure 45. Proposed layout of the base house .....	206
Figure 46. Proposed layout of the template A .....	211
Figure 47. Proposed layout of the template B.....	213
Figure 48. Proposed layout of the template C.....	214

# Chapter 1. Introduction

## 1.1. Problem Statement

The dissertation argues for the prolonging of the responsibility of the architect in incremental housing by reviewing two Chilean cases, while criticizing the conventional role of the architect as a key agency for the top-down approach in social housing programs. I used Martin Buber's philosophy of the *I and Thou* for developing the theory of the relational architect.<sup>1</sup> The relational architect represents the shift from the organizational way of designing houses to stressing the importance of individual perception of the house. It proposes a dialogue-based design process embedded in the coexistence between families and the architect. The relational architect perceives houses not as an object to be designed, but as an opportunity to trigger dialogue with low-income families. This mode of developing future incremental housing projects represents the proposed paradigm shift in the role of the architect.

Current incremental housing projects are delivered to low-income families as a base house with the top-down approach of design. This approach represents the design solution of the base house without consolidation with low-income families. In this regard, I agree with Gabriel Arboleda's critique that "often incremental housing development projects are implemented in a top-down approach."<sup>2</sup> From my experience of fieldwork, I notice that this top-down approach is present in both case studies, Elemental Lo Espejo and Las Higuera. In this regard, Arboleda acknowledges that donors and architects are not always accepted and well received by communities. Consequently, for the Arboleda community, involvement in, and acceptance of projects is essential.

---

<sup>1</sup> Martin Buber, "I and Thou," (2010), Martino Publishing.

<sup>2</sup> Gabriel Arboleda, "Incremental Housing Design Consideration," In Laura Delgado, Xenia Antipova, "Incremental Housing and Haiti," (2010), UN World Urban Forum Rio, Global University Consortium.

This means that incremental housing projects “cannot be designed on an architect’s desk, but rather must be developed through a participatory, case-by-case process. Furthermore, such a process helps ensure cultural appropriateness and long-term sustainability of the project.”<sup>3</sup> In this regard, I present the hypothesis that the united structure of the incremental housing embodied within the proposed working template could achieve a better platform for future incremental housing projects. Examining the families’ struggle to inhabit their base house and their motivation and organization for customization provides a good platform for better quality of future incremental housing projects.

Furthermore, the architect proposes phases of customization as the only plausible solution to complete the house. These phases do not represent the realized customization in the field. This mode of designing houses resembles the architect’s position of *I Know Best*. According to Geoffrey Payne the common claim by architects is that “they are the leaders of the built environment professions encourage them to see themselves as more influential in creating and managing the built environment.” He continues, “‘I know best’ syndrome seems to sit particularly comfortably on the heads of architects and does their professional reputation no favors.”<sup>4</sup> This critique of the architect’s position reflects the current condition of professionals in incremental housing.

In contrast, I propose that architects need to relinquish their I Know Best tendencies and replace it with a horizontal structure of design of incremental houses embedded in communal relationships and dialogue between community members and the architect. This horizontal structure of incremental housing represents the platform for the role of the architect embedded in community organization. In this regard, I agree with Michael Nickerson’s idea that “

---

<sup>3</sup> Gabriel Arboleda, “Incremental Housing Design Consideration,” In Laura Delgado, Xenia Antipova, “Incremental Housing and Haiti,” (2010), UN World Urban Forum Rio, Global University Consortium.

<sup>4</sup> Geoffrey Payne, “Are Architects and Planners Obstacles to Slum Upgrading? Papers from a seminar in Barcelona in April 2008,” Dick Urban Vestbro: Stockholm, Sweden, Royal Institute of Technology, (2008): 13-20.

architects, when they are able, should humbly join ranks with and learn from organizations like Mumbai's National Slum Dweller's Federation, rather than simply advise and instruct them." In addition, the embedded architect needs to address not only the community as a whole with advice and instructions, but they must engage families on a relational level. This relational level derives from the philosophy of Martin Buber.

Martin Buber, an Austrian–Jewish philosopher, educator, theologian of the 20th century, had a simple idea at the core of his complex relational philosophy that could be useful for my argument of prolonged responsibility of the architect. In Buber's seminal work, *I and Thou*, he said people have a twofold attitude about regarding the world and others. In one posture, represented in the word pair I–It, the person turns to the world around and others as objects, empirically. Buber likes to use the word experiential, but he means it as empirical, as "content." This is important, but it's not "life" or "living" for Buber. The other side is when we turn to others and the world around us as persons, in I–Thou (you and me), relationally. This is not about content but about presence. This is less and less common in our society, because it is more geared towards intentionality, which always turns us towards the I–It side of things. In this regard, we have the empirical and the relational. We have the intentional and the unintentional. We have content and presence.

From this dualistic perception of the world, this dissertation supports the notion of the architect as a social agent who is capable of perceiving his or her design solution through relational attitude with low-income families. In this regard, the architect overcomes the empirical (I–It) and embraces the relational (I–You) attitude of designing houses for low-income families. In this regard, Buber noticed, "the I of the basic word I–it appears as an ego and becomes conscious of itself as a subject (of experience and use)." In opposition, "the I of the base word I–You appear as a person and become conscious of itself as subjective (without

any dependent genitive).”<sup>5</sup> Buber argues that a person appears only by entering into relations with others. In the same manner, the design of the base house does not appear as a valid solution for low-income families through *experience and use*, but its full potential derives from close association between families and the architect.

This relational attitude is realized with constant communication of the architect with families during three proposed phases of design, in particular: preparing the design, designing, and supporting customization of incremental houses. These three phases of design directly oppose the current top-down approach of incremental housing and engage the community on the level of particularity of every single family. In this regard, by refusing the top-down approach the architect chooses to perceive housing design through the eyes of the low-income families.

The architect who defends the top-down approach to incremental housing and perceives it as an exclusive design issue harms low-income families. This outcome of this damage is recorded with high dissatisfaction of families during inhabiting, adjusting and customizing of the initial delivered base house. Families perceive incremental housing as another slum with poor living conditions. From this drawback of incremental housing, I look at the base house as the platform for reaching the ground for dialogue and re-evaluation of the incremental idea of housing. Due to this, I propose that the architect should prolong their responsibilities by designing and engaging with, in more essential ways, on the one hand with the community and on the other with the needs of every particular family.

This dissertation challenges current responsibility with additional tasks that the architect should achieve for delivering high-quality incremental houses. These additional responsibilities of the architect are presented in the form of a working template for incremental housing. Based on fieldwork, I propose a working

---

<sup>5</sup> Martin Buber, “I and Thou,” (2010), Martino Publishing.

template for preparing the design, designing, and supporting customization of the base house. From this framework of the working template, the incremental housing solution would be realized with near collaboration between the architects and low-income families. In this regard, the architect would learn from community organization and implement these lessons in their design solution.

In this regard, incremental housing represents an open-ended housing platform, which depends on dweller's self-building logic. Developed by governmental funding, incremental housing stands for unfinished houses delivered to families. These unfinished houses are referred as *the initial phase, sanitary units, or core units*. In regards to these terms, this dissertation uses the base house for studying the first phase of incremental construction. The base house refers to a 40 square meters housing unit which contains a kitchen, a bathroom, a dining room and two bedrooms. In most cases, these houses are two stories delivered to families with a void for spatial customizations. In order to attain a complete functional house, dwellers need to adapt the base house.

Incremental housing signifies housing solutions that depend on dweller's self-managing practices. This housing approach of *build as you go* represents alternative solutions to conventional and informal ways of housing development. The incremental housing solution encourages dwellers' personalization of their base houses. Chilean academics Margarita Greene and Eduardo Rojas investigated incremental housing as "programs that are developed to support the gradual process of construction, extension and upgrading of dwellings that is undertaken by many families."<sup>6</sup> This notion of *housing as a process* derives from the work of John Turner, academics, and architects who investigated urban squatter settlements.<sup>7</sup> John Turner wrote about conventional housing

---

<sup>6</sup> Margarita Greene, Eduardo Rojas, "Incremental Construction: A Strategy to Facilitate Access to Housing," *Environment and Urbanization* 20, (2008): 89-108.

<sup>7</sup> John Turner, Robert Fichter, "Freedom to Build, Dweller Control of the Housing Process." (1972), Collier Macmillan.

projects where "developing governments take the perspective of the elite and act as if the process of low/moderated-income houses were the same as in high-income countries and the same as for the small upper-middle class of their own countries."<sup>8</sup> Bruce Ferguson supports this argument with his critique of distributing finished houses for low-income populations with long term payments which harm the beneficiary.

According to Patrick Wakely and Elizabeth Riley, "urban squatter settlements and slums grew rapidly on illegally invited and subdivided land, but those highly visible, informal, and incremental processes were in no way seen as a legitimate means to provide housing. It was only in the 1960s that this view began to change."<sup>9</sup> This change was largely due to the research of a small group of academics, such as John Turner,<sup>10</sup> William Mangin,<sup>11</sup> Charles Abrams<sup>12</sup> and John Habraken.<sup>13</sup> Bruce Ferguson noticed that "scholars from John Turner<sup>14</sup> to Jorge Hardoy<sup>15</sup> and David Satterthwaite have emphasized that in Latin American, Asian and African cities low-income families built their house without the support of formal institutions. Typically, low/moderate-income households construct their own units over five to 15 years."<sup>16</sup> I argue that this practice of constructing houses today is more relevant than ever. Peter Ward describes "the process of self-help housing production which usually begins with the low-cost

---

<sup>8</sup> John Turner, "Future Direction of Housing Policy," *Habitat International* 10, (1986):7-26.

<sup>9</sup> Patrick Wakely, Elizabeth Riley, "The Case for Incremental Housing," *Cities Alliance Policy Research and Working Papers Series 1*, (2011): 1-56.

<sup>10</sup> John Turner, "Barriers and Channels for Housing Development in Modernizing Countries," *Journal of the American Institute of Planners* 33, (1967): 167-181.

<sup>11</sup> William Mangin, "Latin America Squatter Settlements: A Problem and a Solution." *Latin American Research Review* 2, (1967): 65-98.

<sup>12</sup> Charles Abrams, "Housing in the Modern World: Man's Struggle for Shelter in an Urbanizing World," (1969), Faber and Faber.

<sup>13</sup> John Habraken, "Supports: An Alternative to Mass Housing," (1972), Architectural Press.

<sup>14</sup> John Turner, Robert Fichter, "Freedom to Build," (1973), Collier Macmillan.

<sup>15</sup> Jorge Hardoy, David Satterthwaite, "Squatter Citizen: Life in the Urban Third World," (1989), Routledge.

<sup>16</sup> Bruce Ferguson, "Micro-finance of housing: a key to housing the low or moderate-income majority?" *Environment and Urbanization* 11, (1999): 185-200

acquisition of un-serviced land through illegal or informal means, and shows how this is followed by a gradual process of physical dwelling consolidation whereby a provisional 'shack' is upgraded through self-build processes over a number of years into a brick built dwelling, sometimes occupying two floors."<sup>17</sup>

In contrast to this progressive idea of housing, Ferguson noticed that "governments think of housing as complete units built by developers that households must purchase with a long-term loan rather than as a progressive process."<sup>18</sup> In this regard, Turner argued that supporting the incremental process of constructing buildings is a more realistic way to tackle the housing deficit in developing countries. Turner rightly claimed that low-income people prefer unfinished houses that can be gradually enlarged and modified instead of the standard finished units offered by conventional projects.<sup>19</sup> This idea of progressive construction represents a theoretical platform for incremental housing projects.

Turner defines housing of less privileged groups in a society as a never-ending process. The outcome of a housing process is not an appreciative object, but it represents lessons for better living of low-income families. In this regard, incremental housing embodies ongoing customization performed by families. It acknowledges the importance of particular urban locations, community organizations, mechanism of financing, design strategies and constructing methods. The most important aspect of incremental housing is the significance of the base house. This importance is measured with the qualitative level of the layout of the base house.

---

<sup>17</sup> Peter Ward, "Issues in Self-Help and Self-Managed Housing," In Peter Ward, "Self-help Housing: A Critique," (1982), Mansell.

<sup>18</sup> Bruce Ferguson, Jesus Navarrete, "New approaches to progressive housing in Latin America: A key to habitat programs and policy," *Habitat International* 27, (2003): 309-23.

<sup>19</sup> John Turner, "Housing Priorities, Settlement Patterns and Urban Development in Modernizing Countries," *Journal of the American Institute of Planners*, (1968): 354-363.

In this dissertation, I argue for the importance of the architect in the context of incremental housing. I examine the current position of the architect and its contribution to incremental logic of housing low-income families. Furthermore, I argue that the current position of the architect is not efficient enough to accommodate families' needs. This statement is supported with findings from fieldwork. In this regard, I propose that the architect should have additional responsibilities that will improve the overall quality of houses. Focusing on the additional responsibility of the architect, this dissertation provides the working template before, during, and after design of the base house.

From this framework, this dissertation examines the incremental housing projects in Santiago, Chile. In Chile, incremental housing is an essential part of social housing policies. According to the United Nations Human Settlements Program, the Chilean government has supported the self-building process of low-income families since the mid-twentieth century."<sup>20</sup> Since the 1990s, Chilean cases of incremental housing represented successful examples of housing for low/moderate-income families. Major financial institutions such as the World Bank and the Inter-American Development Bank praised the program for its efficiency and transparency. These financial institutions continue to financially support this housing solution. From this support of incremental housing, this program had important influences for developing social housing programs in countries such as: Haiti, Costa Rica, South Africa, India, and others.

It is of significant importance to examine current housing projects, which are by international architectural audience praised as innovative design strategies. Despite the notion that financial institutions praise the Chilean incremental housing program, this dissertation exposes the limitation of incremental housing due to the responsibility of the architect and the outcome of the program regarding the needs of low-income families. One limitation is the

---

<sup>20</sup> United Nations Human Settlements Programme (UN-Habitat), "The Challenge of Slums: Global Report on Human Settlements," (2003), Earthscan Publications Ltd.

architect' s biases about participation of low-income families to develop high quality houses.

From interviews with architects from the Elemental Architectural Office and architects of the Ministry of Housing and Urban Development, I learned about their distant responsibility in the design of incremental housing. Although these architects support the idea of dwellers' involvement in the housing process, they would prefer their contribution to be as minimal as possible. Furthermore, these architects defend their responsibility in housing projects strictly as designers. This minimal involvement by the architect as a designer is present in recent incremental housing projects. From 2004 when the Chilean incremental housing project achieved international recognition, the architect until now has taken insignificant responsibility of improving design and quality of incremental housing.

From this submissive role of the architect, this dissertation challenges the current design solution of base houses and its customizations. It aims to improve the structure of incremental housing by extending the responsibility of the architect. These additional responsibilities are based on the proposed working template for incremental housing. This working template enables the architect to unite organization, management, and design of incremental houses. This unity is perceived as a relational platform of housing low-income families.

## **1.2. Aims, Specific Objectives, and Research Questions**

### **1.2.1. Research Aims and Objectives**

This dissertation examines the current structure of incremental housing and possibility for upgrading. In doing this, I collected data about how low-income families perceive and value their adjusted base houses. Understanding dwellers' commitment to customizing their base house provides a platform for introducing

changes and adjustment of current housing strategies. Furthermore, these changes in the form of a working template depend on the position of the architect within the incremental process. In this regard, this dissertation focuses on examination of base houses and how the architect engages in design and organization of incremental process. From this framework of the dissertation, I will introduce three specific objectives.

The first specific objective is evaluation of the base house. This specific objective aims to examine dwellers' experience of living within a base house. These base houses were designed by the architect and financed by the Chilean government. The focus of this objective is to understand instruments that low-income families developed while inhabiting their basic house. For this objective, I used problem centered interviews with questionnaires, thirty days living experience in Las Higuera, particular observations, and architectural drawings. The problem centered interview focused on dwellers' stories about moving into their base houses. The questionnaire focused on the dweller evaluation of their neighborhood and organization of housing community. The questionnaire was given to interviewees after oral interviews. Architectural drawings represent visual analysis of this objective.

The second specific objective is customization of the base house. I use this objective to examine organization issues that family members experience during incremental construction. The aim of this objective is to investigate how low-income families modify their houses. These achievements are measured regarding categories such as task division, time, and money invested by dwellers in incremental construction. For analyzing this objective, I used problem centered interviews, photo-elicitation interviews, thirty days living experience in Las Higuera, focused observations, and architectural drawings. During oral interviews I asked dwellers questions about their problems and difficulties in customizing their houses. These statements were reviewed by data collected with photo-elicitation interviews and my personal experience of thirty days living in the houses located in Las Higuera project. Additional

method of analyzing this objective represents drawings which I developed during fieldwork.

The third specific objective is the additional role of the architect by designing the base house and its customization. From analysis of the base house at initial phase and customization, the aim of this objective is to deliver a working template for improving current design of the base house and its customization. To support this specific objective, I used problem centered interviews with questionnaires, photo-elicitation interviews, and descriptive observations. The problem centered interview with questionnaires was used for shaping starting points in the development of the working template for a new structure of incremental projects.

### **1.2.2. Research Aims and Objectives**

The aim of this dissertation is to propose a working template for improving current structures of the base house and its customization. In comparing the conceptual notion of base houses and practical implementation of these ideas, I argue for the importance of upgrading incremental housing with a set of rules for designing the base house. These rules are presented as templates for customizing base houses.

In correlation to this aim and three specific objectives of the dissertation, I present the following research questions:

- (1) What is the design outline of the base house?
- (2) What are the critical problems of the base house?
- (3) How low-income family inhabit their base house?
- (4) What motivates customizations of base houses?
- (5) How families organize customization processes?
- (6) How successful are dweller' s customizations in respect to the design of the basic house?
- (7) Is the current role of the architect enough for delivering high quality incremental housing projects?

(8) How to extend the role of the architect with the intention of improving the current structure of incremental housing projects?

(9) How to implement the working template for extending the responsibilities of the architect without reducing the participation process by low-income dwellers?

Research Objectives	Research Questions
(a) The evaluation of the basic house.	(1) What is design outline of the base house? (2) What are the critical problems of the base house? (3) How low-income family inhabits their base house?
(b) Customization of the basic houses.	(1) What motivates customizations of base houses? (2) How families organize customizations process? (3) How successful are dweller's customizations in respect to design of the basic house?
(c) The architect's role in the incremental construction process.	(1) Is the current role of the architect enough for delivering high quality incremental housing project? (2) How to extend the role of the architect intended for improving the current structure of incremental housing projects? (3) How to implement the working template for extending the responsibilities of the architect without reducing the participation process by low-income dwellers?

Table 1. Research questions and objectives

This dissertation provides evaluation of the Elemental Lo Espejo and the Las Higuera housing project. The latter is representative of the incremental houses delivered by the Chilean government. This evaluation supports the construct of the argument for readjusting the incremental housing in the context of the role of the architect. In addition to this aim, I ask question such as, how we can adjust old systems of incremental construction to appropriate contemporary *needs* of low-income families. How important is the design solution of the base house? What this design solution means for customization performed by dwellers? What can the architect do to improve the current incremental process of housing low-income families in the developed world? How to improve the current structure of incremental housing by extending the responsibilities of the architect without reducing the participation process by low-income dwellers?

These research questions deal with two different ranges of incremental housing projects. The first level of incremental housing is the quality of the base house. I examine how these houses, in Lo Espejo and Las Higuera housing projects, are organized, regarding their layout, size of spatial elements, such as kitchen, bathroom, and staircases. The second level of incremental housing examines customization of base houses. On this level, I examine how families overcome difficulties during adjustment of their houses. Furthermore, I ask families about their perception of their base house and experience of living within a small scale house.

Taking into account these two levels of incremental housing, this dissertation takes the notion that the current system of incremental housing does not challenge existing top-down strategies of housing processes by low-income families. I argue that a well-implemented incremental process of building supported by the architect, could lead low-income families out of poverty and toward prosperity. This notion of well-implemented strategy depends on good planning of the incremental housing project approved by the architect. The hypothesis of this dissertation is that the additional responsibilities of the architect in the form of the working template, can directly determine construction quality of the base house and its customizations. In this regard, I notice that a current design practice of the base house and its customizations does not produce the best solution for low-income families.

### 1.3. Research Methodology

"One has to get inside of the defining process of the actor in order to understand his action."<sup>21</sup>

In addition to interviews and questionnaires, I used photo-elicited interviews and architectural drawings for arguing for the

---

<sup>21</sup> Herbert Blumer, "Symbolic Interactionism: Perspective and Method," (1986), University of California Press.

importance of the base house and its customizations. Photo-elicited interviews represent methods of dwellers, recording modification of their houses. During my fieldwork, members from low-income families took photos of good and bad quality elements of houses. These photos were supported with their narratives. In addition, I developed analytical drawings about customization of twenty one (21) houses that were studies in this dissertation. These drawings of customized houses support my argument for the necessity of adjusting the incremental housing program. This method of collecting data about the incremental housing enabled me to structure the working template for future incremental housing projects. Following up on this principle, I concluded my dissertation with the argument about the architect's extended position in the construction process. Extending the architect's role in incremental construction would enable low-income families to achieve a higher quality customization of their houses.

Research Objectives	Problem-Centered Interview	Questionnaire	Photo-Elicitation	Living Experience in Las Higuera	Specific Observation	Architectural Drawings	General Observation
(a) <b>The evaluation of the basic house.</b>	Collect information about dweller's experience inhabiting the basic house.			Examine common issues of families inhabiting basic houses.	Particular observation	Evaluates quality level of basic house	Observation during the first two months
(b) <b>Customization of the basic houses.</b>	Investigate dwellers' difficulties of modifying their houses.		Examine the structure of modified houses and its process.		Focused observation	Provides analysis of modification process with four categories	Observation during interviews
(c) <b>The architect's role in the incremental construction process.</b>	Capture dweller's story about housing programs and the architect's contribution to these programs.		Collect data from dwellers for valorization of basic houses and modification process.		Descriptive observation		

Table 2. Methods for collecting data from two incremental housing projects

I used five methods for collecting data: the problem-centered interview, the photo-elicitation interview, different observation methods, the thirty days living experience in Las Higuera, and architectural drawings (table 1). The first method is the problem-

centered interview. This research modifies Andreas Witzel's problem controlled interview.<sup>22</sup> Witzel's qualitative interview comprises of a proceeding short questionnaire. This questionnaire is designed to support the narrative string developed by the interviewee. Moreover, it supports collecting the data that are less relevant to the core questions of the interview before the actual interview. This approach allows the interviewer to shorten the list of questions for the actual interview, reducing the time of interview and to focus on topics that are more essential.

In contrast to Witzel's approach, I positioned the questionnaire at the end of the oral interview. This logic prevents interviewee's pre-structure answers that are imposed on the dialogue during the actual interview. In this regard, the questionnaire is left to participants to fill in after the oral interview and to be collected not more than one week later. In case families did not complete the questionnaire in the given time, the researcher conducted an additional session for completing it together with the family. The questionnaire broadened the issues of incremental housing and collected additional information about the urban setting of the neighborhood that was left out of the actual interview. Besides verbal answers from interviewees during oral interviews, additional time was provided to participants to reflect on the interview questions and provide more information about their housing and their urban setting. Moreover, interviews provided multiple views from participants and enabled the interviewer to get a critical understanding of base houses.

The second method of collecting data for research is photography. Photography in this research was used for a more comprehensive and holistic representation of living conditions in base houses. In this regard, using a camera allowed for non-responsive observation. Photography for sociologist Norman Denzin is a less selective tool of observation: "cameral are incorruptible in terms of their perception and documentation of the

---

<sup>22</sup> Andreas Witzel, "The problem-centered interview," *Qualitative Social Research* 1, (2000), <http://nbn-resolving.de/urn:nbn:de:0114-fqs0001228>.

world [...] however, photographs also transform the world, which they shape in a specific shape."<sup>23</sup> From this limitation of the camera as a manipulation of the world, this dissertation introduces two ways of using photographic material. First is the photographs taken by the researcher during the observation process. Photography in this part serves as sources for backing up the observation process. It was used for supporting main argumentation and to provide a view of material and physical properties of base houses. In addition, this method combined with measurement and spatial analysis of houses, resulted in architectural drawings and diagrams. The second method introduces photography as a medium of analyzing resident's perceptions of their living environment. This method is based on Roland Barthes's examination of the relation between researchers and researched.<sup>24</sup> He defines four different situations where photography plays important roles in gathering additional information about research topics. One of these categories describes the researcher's position of observing participants taking photos of their living environment.

After the problem-centered interviews, I asked family members to participate in photo-elicitation interviews (PEI). Photographer and researcher John Collier proposed, "Photo interviewing as the solution to a particular problem"<sup>25</sup> to reduce misunderstanding between the researcher and the interviewee.<sup>26</sup> According to him, photo-interviews depend on, direct researcher response to the particular problem and on the other hand to the temper of the informant.<sup>27</sup> The approach of using photo-

---

<sup>23</sup> Norman K. Denzin, "The Research Act: A Theoretical Introduction to Sociological Methods," (2009), Aldine Transaction.

<sup>24</sup> Roland Barthes, "Camera Lucida: Reflections on Photography," (1982), Hill and Wang.

<sup>25</sup> John Collier, "Photography in Anthropology: A Report on two Experiments," *American Anthropologist* 59, (1957): 843-859.

<sup>26</sup> Doug Harper, "Talking about Pictures: A Case for Photo Elicitation," *Visual Studies* 17, (2002): 13-26.

<sup>27</sup> John Collier, "Photography in Anthropology: A Report on two Experiments," *American Anthropologist* 59, (1957): 843-859.

interviews in this research continued the methodology of Collier's work, which was published ten years later (in 1967).<sup>28</sup> According to American sociologist and photographer Doug Harper, Collier's use of photography becomes the standard introduction to the use of visual methodology in anthropology and sociology. Harper defines four subject areas implementing photo-elicitation, which are social organization, community, identity and culture.<sup>29</sup> This research is positioned in the area of identity photo-elicitation. I used identity photo-elicitation to examine the dwellers' personal perception of their house. From photographs taken by dwellers and their explanation of these photos, I pointed out problems of base houses.

The third method of collecting information of base houses is participation observation. During my first months of fieldwork in Santiago, I used to visit different incremental housing projects. From these visits, I used general observation of neighborhoods, which were mostly about forma adaptation and urban context of incremental housing projects. After this general observation, I selected Elemental Lo Espejo and Las Higuera for deeper observation. Deeper observation represents engaging with low-income families who inhabit these two housing projects. I spent five months observing houses of twenty-one families from both neighborhoods. This shift from general to particular observation had the aim to position the researcher within a society which is important to gain participants' trust. The position of the researcher during visits to communities influences observation phenomenon due to the process of observation.

Danny Jorgensen defines this research method as "a logic and inquiry that is open ended, flexible, opportunistic, and require constant redefinition of what is problematic."<sup>30</sup> For him,

---

<sup>28</sup> John Collier, "Visual Anthropology: Photography as a Research Method," (1967), Holt, Rinehart and Winston.

<sup>29</sup> Doug Harper, "Talking about Pictures: A Case for Photo Elicitation," *Visual Studies* 17, (2002): 13-26.

<sup>30</sup> Danny L. Jorgensen, "Participant Observation: A Methodology for Human Studies," (1989), Sage Publications.

observation methodology is efficient and appropriate for research when it is used with other methods of gathering information. In addition, Sociologist Norman Denzin defines participation observation as "a field strategy that simultaneously combines document analysis, interviewing of correspondence and informants, direct participation and observation, and introspections."<sup>31</sup>

From this background of observation methodology, this dissertation adopts James Spradley's three phases of observation: descriptive, focused and selective.<sup>32</sup> The first phase, descriptive observation, allows the researcher to grasp the complexity of the field that is studied. This phase provided the orientation of the study and possibility to develop more concrete research questions. Since the study is conducted within the setting of foreign culture and social patterns, this phase provided an essential platform for gathering information on Chilean incremental housing. This observation is more on the level of neighborhood and contextualization of incremental housing within the metropolitan area of Santiago.

The second stage is focused observation that narrows down processes and problems that are relevant for incremental houses. This phase examines the issue of customizing houses within incremental logic of building. It intends to understand households' investments in adopting their houses. This phase examines dwellers' perspectives of modification. Toward the end of collecting information, I introduced selective participatory observation. This final phase of observation focuses on the present condition of housing. Moreover, it examines the plans of families for further modification of incremental houses.

The fourth method used in this dissertation is thirty days living experience in Las Higuera. I use this method to improve understanding of previously collected information about incremental houses. During one month of residential experience

---

<sup>31</sup> Norman K. Denzin, "Interpretive interactionism," (2001), Sage Publications.

<sup>32</sup> James P. Spradley, "Participant Observation," (1980), Holt, Rinehart and Winston.

with the Rozarion family from Las Higuera neighborhood, I focused primary on dialogue with members of the hosting family and their neighbors in order to get diverse stories about their lives. This part of the research used non-structured dialogue with family members and was of vital importance to illuminating the researcher's position. I used every day events such as breakfast, supper, teatime, and weekend casual activities to talk with family members about their houses. This relationship and dialogue between researcher and subjects is elaborated by the corpus of work by an ethnographer Dwight Conquergood. Conquergood frames dialogue as "dialogical performance" in which researcher and participant question, debate, and challenge each other.<sup>33</sup> About the importance of dialogue, ethnographer Soyini Madison stresses the importance of living communication as sensitive engagement between humans.<sup>34</sup> For Conquergood, this dialogue is open and ongoing conversation. It resists conclusion and represents both agreement and disagreement.<sup>35</sup> From this discourse of dialogue, I created several events with families in which we discussed, among other things, the living conditions of their houses.

The final method of research is architectural drawings. Terry Rosenberg understood architectural drawings as a mode of knowledge construction.<sup>36</sup> For him, drawings are validated as a tool in the process of construction and communication of academic knowledge. This notion of architectural drawings is adopted in this dissertation. I do not use drawing as a mechanical way of recording changes in houses, but they hold different connotations depending on housing construction of basic houses. Therefore, the

---

<sup>33</sup> Dwight Conquergood, "Performing as a Moral Act: Ethical Dimensions of the Ethnography of Performance," *Literature in Performance* 5, (1982): 1-13.

<sup>34</sup> Soyini Madison, "Critical Ethnography: Method, Ethics, and Performance," (2011), Sage Publications Inc.

<sup>35</sup> Dwight Conquergood, "Ethnography, Rhetoric, and Performance," *Quarterly Journal of Speech* 78, (1992): 80-97.

<sup>36</sup> Terry Rosenberg, "New Beginnings and Monstrous Births: notes towards and appreciation of ideational drawing," In Steve Garner, "Writing on Drawing: essays on drawing practice and research," (2008), Bristol, Intellect.

interpretation of drawings is linked to the context of the base house.

## 1.4. Organization of Dissertation

For collecting data about incremental housing, I used methodology of research and specific objectives in this dissertation. In addition, this dissertation has eight chapters (table 01). The first chapter represents the introduction to the research, the structure of the dissertation, and limits of the research. The second chapter represents the literature review of incremental housing and discursion of the current role of the architect. In the third chapter, I introduce incremental housing projects in Chile. I present two Chilean cases studies Elemental Lo Espejo and Las Higuera. In the fourth chapter, I analyze data of Chilean incremental housing. In the fourth chapter, I present report from the fieldwork and analytical drawings of the base house and its customization. Chapter five represents evaluation of the base house based on the data collected from the fieldwork. Chapter six represents examination of realized customizations based on experience from the fieldwork. Chapters five and six are used for argument of extended responsibility by the architect. In the chapter seven, I discuss the additional responsibility of the architect in the context of incremental housing. I propose adjustments to the current responsibility of the architect with a working template to the designing of the base house and templates of customizations. The fifth chapter is concluding remarks of the dissertation and its limits.

01 Introduction	Aims, Specific Objectives, and Research Questions Research Methodology Research Limitation	
02 The Importance of the Base House	Current Structure of the Incremental Housing  History of Developing the Idea of the Base House The Architect's Current Role in Incremental Housing	The Base House Customizations of the Base House
03 Two Case Studies of the Base House	Elemental Lo Espejo Sampling Families of two Case Studies The Architect's Plan for Customization of the Base House	Las Higuera
04 The Report from the Fieldwork	Problem-Centered Interview Sample of Questionnaire Analytical Drawings of Customized Houses	Experience from Las Higuera Photo-Elicitation Interview
05 Designing and Inhabiting the Base House	Analyzing the Design of the Base House Designing the Base House Founded on Families' Needs Inhabiting and Adjusting the Base House Lessons of Designed Houses The Architect's Responsibility through Delivering the Base House	
06 Customizing the Base House Initiated by Dwellers' Motivation and Organization	Analyzing Realized Customization Dwellers' Motivation to Customize their House Dwellers' Organization of Customizing their House Outcome of Realized Customization Positioning the Architect in the Context of Customization	
07 The Proposed Working Template for Incremental	The Architect's Prolonged Responsibility Structure of the Working Template for Incremental Housing The Working Template for Preparing the Design of the Base House The Working Template for Designing Houses The Working Template for Customizing Houses	
08 Conclusion	The relational architect embedded in a dialogue with low-income families	

Table 3. The structure of the dissertation

In the introduction, I introduced the prolonged responsibility of the architect embedded into the community practice. In relation to the philosophy of Martin Buber, I constructed the argument of the relational architect who approaches the design of incremental houses as a platform for dialogue with low-income families. In addition to this notion of the architect, I presented aims of the research, research objectives and questions. Furthermore, I offered the qualitative research methods used in this dissertation. Examples of these methods are general, descriptive, focus and selective observation methods. In addition to these observations, I used problem-centered interviews that were followed by questionnaire. For documenting modification of houses, I used photo-elicitation interviews and living experiences in Las Higuera. Photo-elicitation interviews are supported by architectural drawings that represent captured processes of modification of houses. From this outline, I introduced research limits and the dissertation structure.

The second chapter holds the theoretical framework of incremental housing and the literature review. This framework is presented with three categories of incremental housing, base house, its customization, and the architect's responsibility. Furthermore, I examined these three categories by reviewing existing literature. In addition to reviewing literature, I presented a short history of incremental housing. The concluding part of this chapter is the current role of the architect based on my experience from fieldwork. This current role is presented as an example of I-It relation in which the house is perceived as an object to be organized and designed. This organizational approach of incremental housing is evaluated with data from fieldwork.

In the third chapter, I introduced two Chilean case studies of houses constructed in the Metropolitan area of Santiago, Elemental Lo Espejo and Las Higuera. These two projects were chosen because they embodied the outcome of housing policies active during 2007/08. This period is selected for the dissertation because to evaluate the program we must take in account the

analysis of customized base houses. According to Greene and Rojas, it takes at least five years to complete the base house. In this regard, projects from 2007/07 are best suited for evaluation and drawing lessons from them. In addition to two case studies, I presented sampling techniques of low-income families, and provide their basic description. This chapter is concluded with examination of current structures of the base house. This structure of incremental housing exemplifies a top-down approach of housing which this dissertation criticizes.

In opposition to current practice, the fourth chapter introduces research methods that will be used for argument of relational design practice. This chapter embodied the report from the firework. In this part of the dissertation, I presented samples of the data. Besides the data about the base house and customization, I present here interviews with architects from MINVU and Elemental. Furthermore, this chapter contains the analytical drawings of the base house and its customization from both projects.

In chapter five, I presented qualitative evaluation of the base house from Elemental Lo Espejo and Las Higuera. Separate analysis of both projects is presented using collected data from fieldwork. I analyzed individual houses within these two neighborhoods without mutual comparison. Furthermore, in this chapter I presented the dwellers' situation of inhabiting the base house. This chapter derives from the first set of research questions. This set of questions addresses the architect's involvement in inhabiting and designing the base house. Inhabiting and designing aspects of the base house are used for the argument of extending the role of the architect. This additional role of the architect is defined as opposition to the architect's mono-logical perception of housing the people. This notion of housing is dominated by the architect's design of houses and neglects inter-human relationship between families.

In chapter six, I analyzed motivations and organizations of dwellers' customization process. Furthermore, I analyzed

realized customizations and presented lessons from current practice. These lessons are used for the argument of the relational architect. Motivation, organization, and realized customization are parts of the methods of the relational architect. The relational architect is embedded within community organization and constantly challenges their members. Addressing the community as a whole and individual family with design proposals, the relational architect creates a platform for incremental construction intertwined with social activism.

In chapter seven, I continue to argue for the role of the relational architect in future incremental housing projects. This argument is based on the argument of the working template that creates a coherent structure to incremental housing. I synthesized all aspects of three sets of research questions to provide structure for the working template. In the final chapter, I concluded this dissertation by emphasizing the importance of the research and acknowledging its limits. I argued for the importance of the working template for future incremental housing projects. Furthermore, with the development of the working template I presented the importance or paradigm shift in incremental housing embedded in the relational role of the architect. The final part of the dissertation is the bibliography.

In this dissertation, I used terms such as incremental housing, base house (adaptation of terms such as initial phase, basic house, core units, and sanitary unit from literature), and customizations. Each of these terms represents a category of the incremental construction. The key term of this dissertation is the examination of the base house, which represents deliberately unfinished houses left to dwellers to inhabit and personalize. The base house relates to *site and services programs*, which delivered a small-scale sanitary box to families as the initial phase of housing. These programs correlate to the initial phase of incremental housing. The initial phase of incremental housing represents the construction of half a house, in most cases a bathroom, a kitchen, and two rooms, within an area of 40 square meters that were delivered to low

income families. In addition, customization represents the work done by dwellers in regards to spatial, formal, functional and ornamental adaptation of houses. Finally, terms, which are present throughout this dissertation, are dweller or low-income families. Dwellers are subjects who participated in this research. In chapters five, six and seven, I addressed low-income families who took part in this research as families with their appointed symbol; an example is the family E1. These families take central role in the housing process.

## 1.5. Research Limitation

I have focused on the architectural outline of base houses and their customizations. I have looked at individual houses within row houses of incremental projects. Analyzing these houses, I collected data about their condition during their initial phase and lasting adaptations performed by dwellers. This collected data has enabled me to construct practical understanding of base houses and to suggest additional responsibility of the architect embodied in the working template of designing the base house and templates of customizations.

According to Laura Delgado and Xenia Antipova, the role of the architect in the incremental process should not be viewed narrowly as a designer.<sup>37</sup> It is a fact that base house designs may not demonstrate the full design capabilities of architects. However, architects should play a variety of roles beyond designer that range from direct engagement with the low-income community to organizing with planners and builders to the construction of actual units. Although the allusion of the architect as disconnected and self-involved during the incremental process is not justified, I

---

<sup>37</sup> Laura Delgado, Xenia Antipova, "A Debate on Incremental Housing: Can an Old Answer be the New Solution for how to best rebuild Haiti?" (2010), UN World Urban Forum Rio, Global University Consortium.

argue in this dissertation for the architect' s role as designer and mediator of incremental housing projects.

According to Ethnographic Non Arkaraprasertkul, "when the architects know for whom they are building, when they have experienced the communities firsthand, they can design better and thus improve the long-term success of the incremental solution."

<sup>38</sup> This notion of the architect' s responsibility corresponds to findings from my fieldwork. Furthermore, Arkaraprasertkul suggested "architects should enter the field to find out what people want and need, to reduce the chance of architects designing what they think people need as opposed to what they actually need, as incremental housing lasts for a lifetime. This shows that knowing fast facts about a community will not reveal all the underlying complexities and emotions. The questions of why people expanded in the first place, how they hope to expand, why and from where they moved, and similar other ones, can only be answered by personally witnessing the community under scrutiny." <sup>39</sup> This critique of current incremental housing projects corresponds to findings from my fieldwork. The actual information learned from the community would benefit the architect in designing within a particular context. The observations on living experiences in the Las Higuera housing project could shed light on the different rationality under which different communities operate. This knowledge could represent good platforms for a working template on incremental housing projects.

The results of this dissertation should be viewed in light of the study' s limitations and strengths. First, despite the low-income families of two case studies from which this research sample was drawn, we must keep in mind that data from the current study

---

<sup>38</sup> Non Arkaraprasertkul, "Linking Architects, Planners, Builders, and Community in an Incremental Housing Approach," In Laura Delgado, Xenia Antipova, "Incremental Housing and Haiti," (2010), UN World Urban Forum Rio, Global University Consortium.

<sup>39</sup> Non Arkaraprasertkul, "Linking Architects, Planners, Builders, and Community in an Incremental Housing Approach," In Laura Delgado, Xenia Antipova, "Incremental Housing and Haiti," (2010), UN World Urban Forum Rio, Global University Consortium.

were collected solely from the Santiago Metropolitan area. Therefore, we cannot assume that these findings hold for areas outside of Santiago with similar income and gender distributions. Replications of similar research designs are needed in other areas of Chile. Keeping this in mind, I plan in the near future to continue this research by examining more case studies of Chilean incremental housing.

Another limitation of this dissertation is the importance of different actors and their contribution to incremental housing. Apart from the architect, this housing solution depends on different actors, in particular policy makers, non-governmental organizations, religious organizations, private companies associated with construction of the base house, and artisans hired to perform the customization of the houses. Furthermore, the architect follows the structure already established by these actors. One aspect of this pre-established structure of incremental construction is housing policy FSV1, which directly influenced the design solution of the two case studies. I presented the basic outlines of this housing policy (in subchapter 1.1), which existed from 2002 until 2012 when together with FSV2 they were replaced with DS49. However, I was not able to examine in detail the structure and aims of this housing policy. This limit of my dissertation prohibits me to compare this housing policy with more recent housing regulations. Furthermore, my data do not support the study that would valorize the housing regulation of the FSV1 program. Keeping this limit in mind, I plan to continue this research by examining governmental programs of housing low-income families.

A further limitation of this dissertation is the examination of the financial structure of the program. In the last decades we saw that the financial structure of incremental housing rapidly increased. One reason for this increase is ongoing finance to the developing world provided by the World Bank, the United Nation Habitat, and the Inter-American Development Bank (acronym: IDB). The IDB financed the housing program in Chile from the

early 70' s, and is still the major financial source for housing projects. In 2013, the financial structure of incremental housing projects doubled. From 7,500 Chilean pesos in 2007, current incremental housing projects are subsidized with 15,000 Chilean pesos. My data do not take into account the changing financial structure of incremental housing. Furthermore, I take in account that this changing financial structure is beyond the scope of my research.

## Chapter 2. The Importance of the Base House

### 2.1. Current Structure of Incremental Housing

“Latin America is Africa, Asia and Europe at the same time.”<sup>40</sup>

According to the Inter–American Development Bank (IDB) and the United Nations Human Settlement Program (UN–Habitat), the Latin American region is the most urbanized globally, with 75.7 percent of the population living in cities in 2000. This figure is expected to increase to 85 percent by 2030.<sup>41</sup> An example of this growth is Chile. In 2010, approximately 15.2 million people in Chile lived in urban areas, representing around 89 percent of its population.<sup>42</sup> The urban population grew at an annual rate of 1.38 percent between 2000 and 2010, above the national population growth rate of 1.04 percent over the same period.<sup>43</sup> According to Alan Gilbert, “Latin America has a large housing deficit made up both by a shortage of homes and by deficiencies in the existing housing stock.”<sup>44</sup> According to one set of estimates, Gilbert argues that the deficit is equivalent to just over “half of the current housing. However, the seriousness of the housing problem varies greatly within the region: between countries, within countries and within cities.”<sup>45</sup>

---

<sup>40</sup> Félix Guattari, Suely Rolnik, “Molecular Revolution in Brazil,” (2007), *Semiotext(e)*.

<sup>41</sup> César Patricio Bouillon, “Un espacio para el desarrollo: Los mercados de vivienda en América Latina y el Caribe,” (2012), Banco Interamericano de Desarrollo. [In Spanish]

<sup>42</sup> The United Nations Statistical Division, (2015): <https://data.un.org/CountryProfile.aspx?crName=CHILE>.

<sup>43</sup> United Nations, “World Urbanization Prospects: The 2011 Revision,” (2013), United Nations.

<sup>44</sup> Alan Gilbert, “Housing in Latin America,” *Inter–American Development Bank Working Paper Series I–7UE*, (2001): 1–79.

<sup>45</sup> Alan Gilbert, “Housing in Latin America,” *Inter–American Development Bank Working Paper Series I–7UE*, (2001): 1–79.

According to UNECLAS, in 1995 South America had 69.549 estimated stock housing units, 18.063 quantitative deficits and 19.402 qualitative deficits.<sup>46</sup> In the same time, Chile in 1995 had estimated deficits of housing: 3.098.000 permanent dwellings, quantitative deficit of 13.2 percent, qualitative deficit of 9.6 percent, which results in 704.000 total deficits or 22.8 percent of all housing units. The quantitative deficit equals the differences between the number of households and the number of permanent homes. The qualitative deficit equals the proportion of houses not supplied with drinking water.<sup>47</sup>

Regarding this background of housing, this dissertation introduces the incremental housing in Chile. The focus of this dissertation is the base house that is left unfinished by architects. The base house is initially designed with the void for extension by dwellers. From this setting of incremental housing, the dissertation analyses in detail different scenarios of customizations of base houses. This phenomenon of spatial, formal and functional adjustments of units is defined as incremental housing (Spanish *vivienda progresiva*).

Incremental housing represents open-ended housing platforms, which depend on dweller's self-building logic. According to Esin Hasgül, the "incremental housing approach is based upon the principle of increasing the responsibility of individual households by encouraging decision making and responsibility so that they take care of the aspects of housing for which they are in the best position to take."<sup>48</sup> This can also be a kind of progressive configuration of the house in order to be built for people.

Developed by governmental funding and supported by the private market, incremental housing stands for unfinished houses delivered to families to adopt into a complete house. These

---

<sup>46</sup> UNECLAS "Situación de la vivienda en Américas Latinas y el Caribe," (1996), Santiago. [In Spanish]

<sup>47</sup> Ibid.

<sup>48</sup> Esin Hasgül, "Incremental housing: A participation process solution for informal housing," *ITU*, (2016): 15-27.

unfinished houses also known as the base house or *core units* contain a kitchen, a bathroom, a dining room and two bedrooms. The base house in Chile and other countries of the developing world enclose an area of 40 square meters. In order to attain a completely functional house, dwellers need to customize their base house. In this regard, the incremental house represents a structural frame that encourages dweller's to adapt it for their *needs*. In this regards, incremental housing represents an alternative solution to housing people. Instead of getting low quality small scale finished houses, the incremental strategy introduces two phases, base house and long customization process, which are better solutions for low-income families.

This housing solution stresses the importance of dwellers' personalization of their base houses. Furthermore, within incremental logic of construction, dwellers take active roles in the building process. Margarita Greene and Eduardo Rojas investigated incremental housing as a program that is developed to support the gradual process of construction, extension and upgrading of dwellings that is undertaken by many families.<sup>49</sup> Furthermore, John F. Turner argues for *housing as a process*.<sup>50</sup> Turner defines housing of less privileged groups in a society as a never-ending process. The outcome of a housing process is not an appreciative object, but it represents lessons for better living of low-income families. In this regard, incremental housing represents synthesis of functional, formal, and spatial modifications of the base house. It acknowledges the importance of particular urban location, community organization, mechanism of financing, design strategies and constructing methods.

According to Greene and Rojas, incremental housing can be described as an inverted version of the formal process of building

---

<sup>49</sup> Margarita Greene, Eduardo Rojas, "Incremental Construction: A Strategy to Facilitate Access to Housing," *Environment and Urbanization* 20, (2008): 89-108.

<sup>50</sup> John Turner, Robert Fichter, "Freedom to Build, Dweller Control of the Housing Process." (1972), Collier Macmillan.

and financing a house.<sup>51</sup> John Turner provided a platform for this housing solution. Turner rightly claimed that low-income people prefer unfinished houses that can be gradually enlarged and modified instead of the standard finished units offered by conventional projects.<sup>52</sup> This idea of progressive construction represents the base for incremental construction. The initial phase of incremental construction is the base house with its customizations performed by dwellers.

The base house is acquired with the most basic features and is upgraded later, at a pace based on financing capacities. This upgrade is based on families' personal savings, micro loans or self-help, which implies waiting until the final stage to obtain the completely finished house. Jan Van Der Linden acknowledges that this incremental housing system performs better than public attempts to build finished housing units in a number of respects. Van Der Linden noticed that base houses "were flexible and responsive to the changing needs and unstable fortunes of poor urban families."<sup>53</sup> In continuation, the base houses were self-managed and they met the needs of the rapidly growing urban population of the developing world. Bruce Ferguson points out that this housing solution support diversity in the city and already presents patterns of construction. Ferguson notices that this housing solution "offers the low/moderate-income majority a means for affordable homeownership unavailable otherwise."<sup>54</sup> Ferguson argues that these families also build much of the physical layout of the city with minimal assistance or funding from government and from formal-sector institutions.

---

<sup>51</sup> Margarita Greene, Eduardo Rojas, "Incremental Construction: A Strategy to Facilitate Access to Housing," *Environment and Urbanization* 20, (2008): 89-108.

<sup>52</sup> John Turner, "Housing Priorities, Settlement Patterns and Urban Development in Modernizing Countries," *Journal of the American Institute of Planners*, (1968 ): 354-363.

<sup>53</sup> Jan Van Der Linden, "Sites and Services Approach Renewed," (1986), Ashgate Publishing Limited.

<sup>54</sup> Bruce Ferguson, Jesus Navarrete, "New approaches to progressive housing in Latin America: A key to habitat programs and policy," *Habitat International* 27, (2003): 309-23.

Incremental housing represents processes that enable low-income people to “acquire, extend, improve, and service their dwellings over time.”<sup>55</sup> From this definition, incremental housing is long-term investment. According to Greene and Rojas, it does “not aim to deliver complete houses.”<sup>56</sup> It provides households with services that they cannot obtain on their own, such as access to suitable lots for residential use and technical assistance for the most complex tasks during construction. Greene and Rojas continue to argue that, incremental housing construction is a widespread practice and has strong influence on the development of low-income housing projects.

Greene and Rojas noticed “households of all income levels expand and improve their homes throughout the family life cycle to adjust them to their changing needs, increase their market value, or accommodate productive or recreational activities.”<sup>57</sup> In this regard, we can conclude that all households are incremental builders. However, here it is important to underline the difference between a widespread notion of incremental construction based on adjustment performs after architects have left the premises and customizations of base houses which are dictated by architects from the beginning of the design process.

Incremental housing observed from an architectural point of view represents a flexible base house left open for dweller customizations. According to Greene, the two-step incremental process, basic house and customization, represents the core of the program (table 02).<sup>58</sup> This core of incremental housing is analyzed in respect to three phases of construction. Greene and Rojas identify three main phases of incremental housing, “access to land for residential use, the construction of a basic, habitable

---

<sup>55</sup> CHF, "Strategic Assessment of the Affordable Housing Sector in Ghana," (20 04), CHF International.

<sup>56</sup> Margarita Greene, Eduardo Rojas, "Incremental Construction: A Strategy to Facilitate Access to Housing," *Environment and Urbanization* 20, (2008): 89-108.

<sup>57</sup> Ibid.

<sup>58</sup> Margarita Greene, "The Progressive Housing Program in Chile 1990 - 2002," (2004), Inter-American Development Bank Sustainable Development Department

nucleus, and the incremental improvement of the dwelling.”<sup>59</sup> Although this focus on three phases of incremental process reflects the reality of incremental housing projects, they neglect complex structures behind the single phase of incremental construction. This dissertation attempts to highlight concerns, gaps and opportunities at various phases of the incremental process.

INCREMENTAL HOUSING	DESIGN OF THE BASE HOUSE (40M2)	MULTIPURPOSE ROOM (35M2)
		ONE BEDROOM (5M2)
	CUSTOMIZATION OF THE BASE HOUSE	COMPLETE THE HOUSE THROUGH SELF-HELP
		PROVIDE MATERIALS FOR CONSTRUCTION
		SUPPLY LABOUR FOR INCREMENTAL CONSTRUCTION THROUGH COMMUNITY HELP

Table 4. The structure of incremental housing

The first phase of incremental construction is *addressing land*. This phase specifically looks at issues of land and location within urban settings. How sites for incremental housing projects are chosen? (i.e. location)? How the site zoning is implemented? This also includes the layout of houses. This dissertation does not address issue of land and zoning issue of incremental houses.

The second phase of incremental construction is *the core site inputs and designs*. This phase requires intensive investment on the site. This investment results in construction of base houses which change the outline of the site. According to Western Cape Department of Human Settlements, “the core site inputs might range from simple basic services all the way to a starter house.”<sup>60</sup> In continuation, these inputs require organized engagement and guidance at the project level including the provision of skills training, education, construction support and potentially the organization of small contractors. This phase of incremental

<sup>59</sup> Margarita Greene, Eduardo Rojas, "Incremental Construction: A Strategy to Facilitate Access to Housing," *Environment and Urbanization* 20, (2008): 89-108.

<sup>60</sup> Western Cape Department of Human Settlements, “Incremental housing: research paper,” (2013), African Centre for Cities.

construction corresponds to design and construction of base houses. This phase separates incremental solution from other housing attempts for low-income families.

The third phase is *incremental consolidation*. This phase represents prolonged construction process in the form of extension and different customizations of base houses. During this phase of incremental construction, the household rather than the project manager drive housing development more directly. “The scale through which the state works to guide the development of the settlement is at the (geographical) area scale rather than specific to projects.”<sup>61</sup> The second and third phase of incremental housing is the focus of this dissertation.

From this structure of incremental housing, this dissertation introduces current structure that supports this housing solution. The Chilean housing sector has a rich history of housing policies. According to Axel Borsdorf, Rodrigo Hidalgo, and Hugo Zunino “one of the first regulations in relation to popular housing issued in Latin America was the Chilean 'Law for Workers' Housing' of 1906.”<sup>62</sup> They argue that this legislation encouraged the construction of low-cost housing units through direct governmental intervention. The main effect was “the demolition of *conventillos*, small but crowded low-income residential complexes built in the 19th century in the core of the city.”<sup>63</sup> From 1906 until present, Chilean housing policies underwent major changes that are beyond the limit of this dissertation.

In order to target the poorest families, in 2003 the Ministry of Housing and Urban Development (acronym MINVU) created three subsidy programs that operated within the framework of the demand-side subsidies. These programs are FSV1 (Fondo Solidario de Vivienda, for the first income quintile), FSV2 (Fondo

---

<sup>61</sup> Western Cape Department of Human Settlements, “Incremental housing: research paper,” (2013), African Centre for Cities.

<sup>62</sup> Axel Borsdorf, Rodrigo Hidalgo, Hugo Zunino, "Social housing policies under changing framework conditions in Santiago de Chile," *Forschen im Gebirge Christoph Stadel zum 75*, (2007): 233-248.

<sup>63</sup> Ibid.

Solidario de Vivienda, for the second income quintile) and DS40 (Decreto Supremo 40, for the third income quintile). The level of *income quintile*<sup>64</sup> was achieved through socioeconomic surveys and additional targeting mechanisms such as the price gaps imposed by different programs.

The *Fondo Solidario de Vivienda* 1 (Funding for Cooperative Housing 1, anonym FSV1) program existed from 2002 until 2012 when together with FSV2 they were replaced with DS49. FSV1 targeted the most vulnerable households. It was designated as a public provision with subsidizes for almost 100 percent of the price of the house. According to Slaven Antonio and Razmilic Burgos, with the FSV1 program, "the government developed the projects, contracted their construction, and then assigned the units to families that needed to provide a minimum savings requirement."

<sup>65</sup> Furthermore, government engaged in a complementary mortgage loan to low-income families.

FSV1 provided up-front subsidies of US\$8,400 per household.<sup>66</sup> With this up-front subsidy policy, the future tenant needed US\$300 of savings and a housing proposal to apply for housing. The subsidy covers the cost of land and the construction of around 30 square meters of housing unit. This means that the beneficiaries were released from mortgage obligations, which provided opportunity for the saving of economic and material resources to gradually transform their basic housing unit into a home. According to Alejandro Aravena and Andres Iacobelli, "this process stops when the residences achieve around 70 to 80 square

---

<sup>64</sup> Income quintiles are a way to classify a population of households according to their income. Each quintile corresponds to the fifth or 20% of households ranked in ascending order according to per capita household autonomous, where the first (quintile I) represents the poorest 20% of households and the fifth quintile (Quintile V income) the richest 20% of these households. Chilean Ministry of Social Development: [http://www.ministeriodesarrollosocial.gob.cl/casen/preguntas\\_frecuentes.html#8](http://www.ministeriodesarrollosocial.gob.cl/casen/preguntas_frecuentes.html#8)

<sup>65</sup> Slaven Antonio Razmilic Burgos, "Property Values, Housing Subsidies and Incentives: Evidence from Chile's Current Housing Policies," *Department of Urban Studies and Planning*, (2010): 1-35.

<sup>66</sup> Mario Navarro, "Housing Finance Policy in Chile: The Last 30 Years," *Land Lines* 17, (2005): 12-14.

meters."<sup>67</sup> This housing policy represents the base of two case studies examined in this dissertation.

From this financial structure of incremental housing, this dissertation introduces the architectural framework based on the FSV1 housing policy. According to Article 14 of the FSV1, housing projects must include a number of housing solutions that are equal to the number of applicants who make up the group.<sup>68</sup> This regulation opens the platform for the technical requirements of construction process. According to paragraph 8 article 19, base houses must meet the minimum standard pointing to this Article and with the dimensions and minimum clearances given in table 2 and 3. The surface of the base house is not less than 45m<sup>2</sup>, depending on customizations. Contemplated and planned extension of base houses should reach the total area not less than 55m<sup>2</sup> which includes a third bedroom.<sup>69</sup>

---

<sup>67</sup> Alejandro Aravena, Andres Iacobelli, "Elemental: Incremental Housing and Participatory Design Manual," (2013), Hatje Cantz; Box Blg edition.

<sup>68</sup> Regulation of Solidarity Housing Fund 1, "Texto Actualizado del Decreto Supremo: N<sup>o</sup> 174," (2006), MINVU. [in Spanish]

<sup>69</sup> Ibid.

PROGRAMA ARQUITECTONICO MINIMO Y MOBILIARIO - FONDO SOLIDARIO DE VIVIENDA			
Comedor	1 mesa comedor para 4 personas	Cocina	1 lavaplatos 1 mesa cocina 1 artefacto cocina 1 refrigerador
Estar	1 cama	Dormitorio 1	1 cama de 2 plazas
Vivienda	4 closets + 1 despensa	Dormitorio 2	2 camas individuales en planta
COMEDOR		ESTAR	
		COCINA	
		DORMITORIO 1	
		Cama 2 plazas	

Table 5. FSV1' s regulation for design of the base house, Source: Regulation of Solidarity Housing Fund 1, "Texto Actualizado del Decreto Supremo: N° 174," (2006), MINVU. [in Spanish]

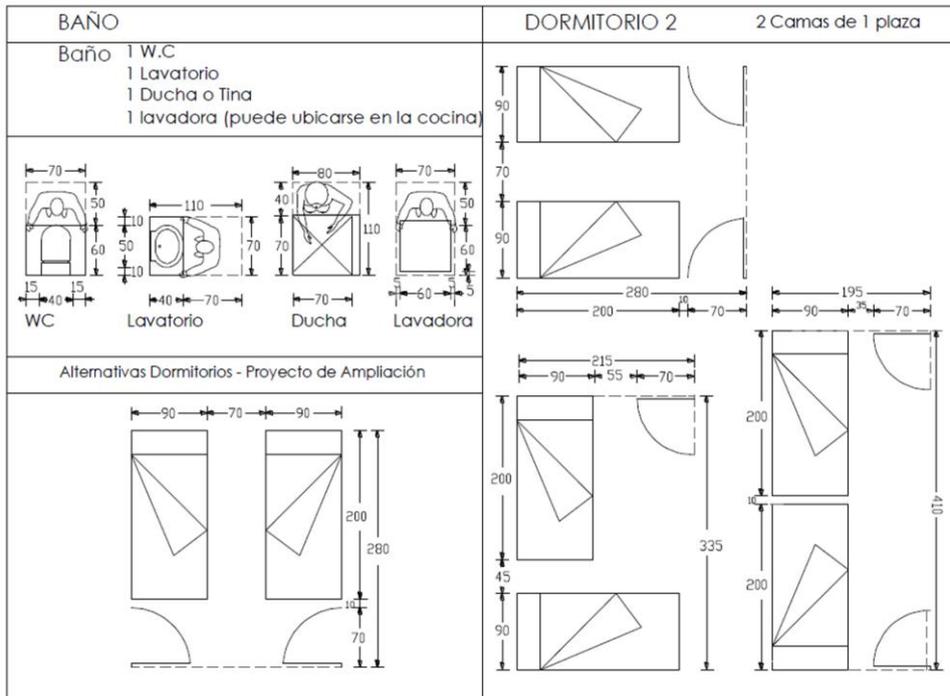


Table 6. FSV1' s regulation for design of the base house, Source: Regulation of Solidarity Housing Fund 1, "Texto Actualizado del Decreto Supremo: N° 174," (2006), MINVU. [in Spanish]

According to FSV1 regulations, customizations of base houses are not allowed to adversely affect the dimensions and minimum clearance of partitions of the structural framework.<sup>70</sup> Furthermore, these customizations must have building permits and pay municipal construction fees. Materials used for construction of base houses must meet certain technical specifications and be approved by resolution of MINVU. If base houses have a multipurpose room, the calculation of the minimum area of the multipurpose room is distributed to half of the houses from the project. The minimum area of the multipurpose room may not be less than 35 m<sup>2</sup>.<sup>71</sup> The architectural program should include at least three areas: a multifunctional space, two bathrooms, and bathroom.

<sup>70</sup> Regulation of Solidarity Housing Fund 1, "Texto Actualizado del Decreto Su premo: N° 174," (2006), MINVU. [in Spanish]

<sup>71</sup> Regulation of Solidarity Housing Fund 1, "Texto Actualizado del Decreto Su premo: N° 174," (2006), MINVU. [in Spanish]

Facing the limited budget for design and construction of base houses, the architect is a mere designer with the logic of designing incremental housing from their office. The community leader holds the only link between the architect and low-income families. In both case studies, these community leaders are involved in politics and most of time does not inform the architect of complex demands by low-income families. The complexity of community organizations and dwellers' demands are repressed or lost on the way to the architect. This current position of the architect as a distant professional involved in the design of base houses is grounded on secondary sources about community organization. This notion of the current structure of incremental projects represents the platform for researching base houses in Chile.

## 2.2. The Base House

The base house represents the first phase of incremental processes, which derives from *the core house* or *sanitary unit* system. According to Joan Mac Donald, the core house (Spanish: *La Mediagua*) represents a wooden structure usually with dimensions of 3m in length and 6m in depth located on the periphery of the cities where land is affordable for social housing.<sup>72</sup> According to Mark Napier, “the core was to be built by formal contractors.”<sup>73</sup> Napier argues that the customization of the base house was to be built according to plans supplied by the project developer. The main innovation in practice for its time was the enablement of a limited self-help contribution by the occupying household, supported by the stimulation of the materials supplier and small contractor sectors. Napier argues, “the core housing was thus a highly managed and limited form of assisted self-help.”<sup>74</sup>

---

<sup>72</sup> Joan Mac Donald, " Viviend Progresiva," (1987), Corporación de Promoción Universitaria, Santiago. [In Spanish]

<sup>73</sup> Mark Napier, “The Origins and Spread of Core Housing,” (2002), MIT Press.

<sup>74</sup> Ibid.

Governmental programs of distributing this type of one room shelter with land and infrastructure is identified as *site and services program* for upgrading shantytowns in the developing world. This basic core house with its limited dimensions represents the platform for extension by dwellers. This phenomenon of managing the existing one room house represents the foundation of incremental housing.

Base houses represent the initial phase of incremental construction. This initial phase is based on a 40m<sup>2</sup> unit. The base house does not represent the unitary whole instead, it represents an open frame that instigates a process of transformation by their dwellers. These 40m<sup>2</sup> units delivered to dwellers depend on extension and additional adjustments by dwellers to achieve a completed house. The base house represents the idea of *process-oriented* housing solution. About this idea of housing low-income families, Benedict Clouette and Marlisa Wise noticed that houses were built with "scraps of found material, the architect achieve immortality through his own disappearance, as the creator of the structure, the frame." The architect leaves to dwellers to decide construction details such as the paint colors, the furniture, and the interior finishes of the base houses.

From this notion of building, Nabeel Hamdi argues for housing that encourages rather than "inhibit pluralism in built form."<sup>75</sup> He argues for housing that is tolerant of all the inventive surprises and improvisations that are a daily and productive part of informal building. Hamdi examines possibilities of architectural interventions – the choice of physical and nonphysical elements, their size, position, configuration and hierarchies of it. For Hamdi, "the objective is to describe housing as a multidisciplinary and non-sartorial bound system of activities"<sup>76</sup> These activities are likely to expend the services of architects without losing the specificity of architecture. This notion of modifying base houses

---

<sup>75</sup> Nabeel Hamdi, "Housing without Houses: Participation, Flexibility, Enablement", (1995), Practical Action.

<sup>76</sup> Ibid.

represents the core idea of incremental construction. About this notion of modification of houses Roderick Lawrence noticed that the *needs* of the resident or of a household, “do not correspond to a constant norm but are defined by a complex matrix of interrelated factors that change during the course of time.”<sup>77</sup> This notion of changing needs of residents present the main argument to customizations of the base house.

The origin of the base house is a *site and services* program, part of a government intension to uplift illegal neighborhoods of developing countries. Edwin Haramoto Nishikimoto and his coauthors examined this program during the period of dictatorship in Chile.<sup>78</sup> They recorded different strategies of extending core units that represent lasting process. Greene continued this project with examination of this housing program during the first two democratically elected Chilean governments from 1990 to 1998.<sup>79</sup> From examination of the *site and services*, the *sanitary core* and the incremental housing program, Margarita Greene and Enrique Gonzalez argued that these programs were developed to support the progressive process of construction, “extension and upgrading of dwellings that is undertaken by many families.”<sup>80</sup>

Joan Mac Donald’ s argues for the importance of progressive *housing*. For Mac Donald, the base house represents the origin of contemporary incremental housing projects. The main argument is that the base house is supposed to be physically extended by time. According to Mac Donald, in Chile “further growth of the small

---

<sup>77</sup> Roderick Lawrence, "Public and Private Responsibilities in the Definition of Housing Quality," In Nicholas Wilkinson, "Quality in the Built Environment: Public and Private Responsibilities in Housing Design and Settlement Planning," (1989), The Urban International Press.)

<sup>78</sup> Edwin Haramoto Nishikimoto, Pamela Chiang Miranda, Ruben Sepulveda Ocampo, Ivan Kliwadenko Treuer, “Vivienda Social: Tipología de Desarrollo Progresivo,” (1987), Instituto de la Vivienda, Facultad de Arquitectura y Urbanismo, Universidad de Chile.

<sup>79</sup> Margarita Greene, “The Progressive Housing Program in Chile 1990 – 2002,” (2004), Inter-American Development Bank Sustainable Development Department

<sup>80</sup> Margarita Greene, Enrique Gonzalez, "Chile Vivienda Incremental: Una Investigación del Banco Interamericano de Desarrollo," *Banco Interamericano de Desarrollo IDB-DP-219*, (2012): 1-8. [In Spanish]

housing is produced by adding very similar structures.”<sup>81</sup> In most cases, the outcome of this practice is growth on surfaces of the house that is surprisingly large, considering the strong constraint of available economical resources. The main argument of this program is growth of house by time, which depends on dwellers’ effort to adopt their base houses. Because of housing deficit, in Chile, social houses were mostly basic units, which shaped most of urban periphery, semi-rural, and rural planning. Julia Ferrero supports this concept of housing with the argument for "the potential for improvement processes of housing."<sup>82</sup> Ferrero takes adaptation of houses as an inevitable positive aspect of creating dwellings for low-income families. This dissertation adopts Ferrero ’ s argument of necessity for improving current incremental housing projects.

Greene provides examples of site and services housing projects that are equivalent to incremental housing solutions. These projects were constructed throughout Chile from 1992 to 2002, and were delivered in two phases.<sup>83</sup> The first phase was a sanitary unit that included at minimum; a kitchen, a bathroom with a toilet and sink and shower (figure 2). This phase was delivered to families in order to extend their sanitary unit with their own means and methods. It is important to stress that a variety of designed houses were implemented throughout different regions of Chile always adopting modular logic to local construction companies and managing agencies (figure 3). The outcomes of this governmental project were houses that effectively decreased housing deficit and provided emerging shelters to low-income families. The consequences from this governmental action were low quality housing situations with low maintenance by dwellers

---

<sup>81</sup> Joan Mac Donald, " Viviend Progresiva," (1987), Corporación de Promoción U niversitaria. [In Spanish]

<sup>82</sup> Julia Ferrero, "La Vivienda Evolutiva," *Vivienda Popular* 3, (1998): 5-11. [In Spanish]

<sup>83</sup> Margarita Greene, "The Progressive Housing Program in Chile 1990 – 2002," (2004), Inter-American Development Bank Sustainable Development Department

and high deterioration. This housing program established a platform for current incremental housing projects.

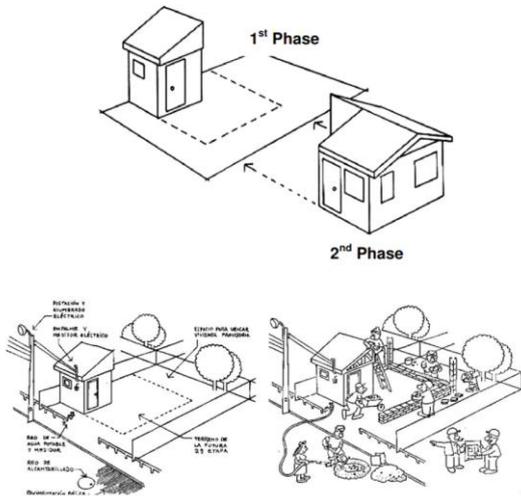


Figure 1. Depiction of incremental housing, Chile Source: MINVU / DITEC (1994), Program de Vivienda Progressiva, Muestra Gráfica, MINVU.

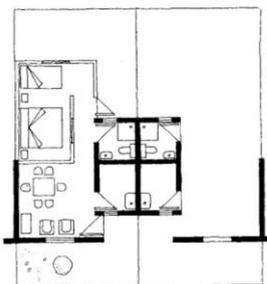


Figure 2. Example of the base house in Antofagasta, Chile, Source: MINVU / DITEC (1994), Program de Vivienda Progressiva, Muestra Gráfica, MINVU, Santiago.

According to Greene and Rojas, "the design of the basic housing nucleus determines its expansion options in terms of size and quality."<sup>84</sup> In continuation, the construction quality of the finished house depends on whether the process is handled entirely by family members or with some technical assistance. This aspect of incremental housing directly influences the outcome of housing programs.

### 2.3. Customizations to the Base House

John Habraken noticed "much more important to understand how a dwelling comes about than what it looks like."<sup>85</sup> For him, conventional housing takes away a man's act, and presents him with a form; it seeks to provide a comfortable form to be used by people who do not have to lift a finger to influence it. Here Habraken argues that the immediate satisfaction of the complete dwelling comes with a high price for the whole society. He argues for "the importance of including individuals within the building process."<sup>86</sup> Following this line of thought, in order to reflect on the problem of housing we must examine what has been lost in the long preoccupation of conventional housing.

Viewing the housing of individuals within the whole of society with a fresh eye will direct us toward the phenomenon of *man housing himself*, no longer with the need *to be housed*. Habraken argues for a successful housing program, which encourages participation by dwellers.<sup>87</sup> He argues for the *silent struggle between man and method* that prolongs uncertainty within housing conditions.<sup>88</sup> Habraken noticed that building is a social act.

---

<sup>84</sup> Margarita Greene, Eduardo Rojas, "Incremental Construction: A Strategy to Facilitate Access to Housing," *Environment and Urbanization* 20, (2008): 89-108.

<sup>85</sup> John Habraken, "Supports: An Alternative to Mass Housing," (1972), The Architectural Press.

<sup>86</sup> Ibid.

<sup>87</sup> John Habraken, "Supports: An Alternative to Mass Housing," (1972), The Architectural Press.

<sup>88</sup> Ibid.

About customization of base houses, Fernando García-Huidobro and his coauthors argue that, “the *family evolution pattern* is the sequence in which a family satisfies its changing needs, and is key in the design of neighborhood projects planned to be self-managed or self-completed.”<sup>89</sup> García-Huidobro and coauthors argues about housing modifications that depend on unfinished designs of the base house deliberately left undefined by architects.<sup>90</sup>

According to Joan McDonald, “immediately after taking possession of a basic house nucleus, benefit carriers expand it using the precarious materials of their previous dwelling or other, generally recycled, materials those are easy to install.”<sup>91</sup> On one hand, customization of the base house, according to Greene, relates to dwellers use of pre-assembled components such as doors and window, water systems for bathrooms and kitchens, and panels partitions.<sup>92</sup> On the other, Greene argues that customization represents extension that activates more complex construction operations that often require technical skills that self-builders do not have.<sup>93</sup> These customizations often represent success of the incremental construction of low-income neighborhoods. The quickness and quality of customizations directly depend on design and structure of the base house.

The process of extending base houses has been redefined by the Elemental architectural office as *a half of a good house* strategy.<sup>94</sup> Elemental’ s methodology of creating housing for low-income populations is based on the logic “that social housing could become a social investment instead of a social expense.”<sup>95</sup>

---

<sup>89</sup> Fernando García-Huidobro, Diego Torres Torriti, Nicolás Tugas, "The Experimental Housing Project (PREVI), Lima the Making of a Neighbourhood," (2011), John Wiley & Sons Ltd.

<sup>90</sup> Ibid.

<sup>91</sup> Joan McDonald, "Vivienda Progresiva," (1987), CPU Corporación de Promoción Universitaria [In Spanish].

<sup>92</sup> Margarita Greene, Eduardo Rojas, "Incremental Construction: A Strategy to Facilitate Access to Housing," *Environment and Urbanization* 20, (2008): 89-108.

<sup>93</sup> Ibid.

<sup>94</sup> Alejandro Aravena, "Elemental a Do Tank," (2011), John Wiley & Sons.

<sup>95</sup> Ibid.

The strategy of a social investment is established by a built half of the house that is left for the inhabiting families *to grow harmoniously* into the complete whole. About this plan of action, architects of the Elemental Office explain that unfinished houses depends on the other half of the house which is going to be built by families. These architects further argue that during incremental extension of houses “architect has a big say because it can synthesize complexity without reducing it.”<sup>96</sup> This synthesis is embodied with different customization practices.

According to Aravena and Iacobelli, customization of the base house has to be designed. Following common sense and the *minimum effort law*, “the initial form has to anticipate how self-constructed will allow a family to achieve a middle-class standard.”<sup>97</sup> Their argument presupposes that extending the base houses provides a platform for low-income families to increase their living standard. Besides this conceptual framework of customization process, realized projects by Elemental do not represent this optimism in the field.

However, Julia Ferrero records the link between incremental process and families’ living standard. Ferrero noticed that the most important advantage of alternative *progressive houses* (Spanish: *crecedora*) is “the stability of the family which is rooted in similar problems and aspirations of community.”<sup>98</sup> For this notion of relationship between incremental construction and improvements of dwellers’ living standards, the base house is used as a platform for dwellers to start a small business, rent supplementary rooms for new members of the community or to enter the market of social mobility.

This dissertation approaches customization as a potential for extending the base house. Customization process does not

---

<sup>96</sup> Ken Tadashi Oshima, "Interview with Alejandro Aravena," In "Alejandro Aravena: The Forces in Architecture," (2011), Toto Publisher.

<sup>97</sup> Alejandro Aravena, Andres Iacobelli, "Elemental: Incremental Housing and Participatory Design Manual," (2013), Hatje Cantz.

<sup>98</sup> Julia Ferrero, "La Vivienda Evolutiva," *Vivienda Popular* 3, (1998): 5-11. [In Spanish]

necessarily mean the improvement of houses. The term improvement (Spanish *mejoramiento*), according to Carolina Poblete Toelg, has several translations that refer to different forms of application, among which are the actions such as “rehabilitate, renovate, remodel, repair, rebuild, among others.”<sup>99</sup> In contrast to different meanings of the term improvement, customization embodies all changes that dwellers perform during their life in their base house. In this regard, customization does not necessary need to lead toward better housing units. This aspect of customization is presented in chapter six.

This notion of customizing of base houses relates to Diego Echeverry Campos' notion of the adaptation of the habitat. Echeverry defines three phases of housing process, which are *the occupation*, *the transition* and *the consolidation*.<sup>100</sup> The occupation phase represents the beginning of the customization process. In this phase, low-income families face different issues of living in a small space. These issues relate to difficulties of numerous family members households inhabiting the small-scale house.

The second phase of incremental customization is the transition process, which "includes several stages of construction and generally consists of the improving of various spaces of the house."<sup>101</sup> Physical customization is present in this phase in which some households completely change spatial and formal properties of the house. In some cases, this customization stands against architectural regulation of incremental housing. During this customization process base houses gain more individuality and irregularity in respect to their formal and spatial appearance.

---

<sup>99</sup> Carolina Poblete Toelg, "Mejoramiento Residencial: Tipos de Mejoramiento Residencial y Conceptos Asociados," In "Mejoramiento del Parque Habitacional," *Instituto de la Vivienda (INVI), Universidad de Chile*, (2005): 28–34. [In Spanish]

<sup>100</sup> Diego Echeverry Campos, Stefano Anezellini, Rodrigo Rubio, "Vivienda Social : Antecedentes y Propuestas de Desarrollo Progresivo," (2003), Ediciones Unian des. [In Spanish]

<sup>101</sup> Ibid.

The final stage of customization is "consolidation according in which families subdivide their property into separate homes."<sup>102</sup> This phase responds to changing structures of a family, which is for example present in the generation gaps within one household. These three phases of incremental construction correspond to Greene and Rojas' s analysis of housing processes by low-income families in Chile. These three phases of incremental construction are basic house, extending, and customizing extended house.

All incremental houses have in common three phases of construction: initial habitable nucleus or basic house, spatial extension, and customizing of the whole house.<sup>103</sup> These categories represent the platform for my investigation of dwellers' adaptation and customizing of incremental houses. To understand the time-consuming incremental process of housing, this dissertation examines three phases of incremental building. The first phase is the base house, which represents a deliberately unfinished housing unit delivered to low-income families. This phase refers to the architectural idea of *a half of a house*, an unfinished house delivered to dwellers in order to adapt and make it into their home. The second phase is dwellers' work on extending their houses. This phase introduces adjustments in the form of functional, formal, spatial and ornamental properties of the base house. The final stage is customization of the expanded houses, which relates to maintenance and small interventions on finished surfaces and structural details of houses.

In regards to this positive notion of extended and customized incremental houses, this dissertation introduces four phases of analyzing different customizations of base houses: spatial, formal, functional modifications and finishing of surfaces. The first architectural categories of spatial customization relate to diversity of interior organization of houses. This aspect of the base house

---

<sup>102</sup> Ibid.

<sup>103</sup> Margarita Greene, Eduardo Rojas, "Incremental Construction: A Strategy to Facilitate Access to Housing," *Environment and Urbanization* 20, (2008): 89-108

relates to a floor plan of spatial change created by installing partitions within the house. Study of these partitions enables evaluation of distances and comfort within houses. According to Bryan Lawson, different partitions within space impose distances on users that results in “flight or fight” mechanisms within space.<sup>104</sup> Lawson adopts these two categories from a Swiss biologist Heini Hediger. Hediger examines distances in space while studying animals in captivity. Hediger defined distances between predator and animal in which animal flees or fight for their existence. Lawson uses these two mechanisms for examining social distances within space that represent distances between humans that enables society to operate successfully. For study of spatial customization this dissertation adopts Lawson ’ s examination for studying social distances between dwellers within one household. In this regard, analyzed partitions within houses enable us to collected data about dwellers’ perceptions of them.

These partitions are the result of dweller’ s modification of housing interior. Moreover, this relates to the dweller's investment to remove some division partitions and create new ones which are more suitable for their needs. In this regard, occupants themselves decide how to divide the space and how much space they will dedicate to particular activities. Beside this interior division of space, in some cases spatial reorganization signifies physical expansion of houses. Some houses on the first floor of Elemental Le Espejo condominium extend their houses beyond their formal framework. Those expansions influence the physical measure of the house and create typological diversity within condominiums.

Formal analysis is related to visual impact of the architectural envelope. The theoretical basis for this category is taken from Alejandro Zaero Polo's notion of political importance of envelope in architecture.<sup>105</sup> However, in contrast to Zaero Polo's notion of envelope as spectacular prosthesis of technological gadgets which

---

<sup>104</sup> Bryan Lawson, “Language of Space,” (2001), Routledge.

<sup>105</sup> Alejandro Zaera Polo, "The Politics of the Envelope: A Political Critique of Materialism," In Cynthia Davidson "Log 16," (2009): 76-105.

turn buildings into "high-tech drag queens," this dissertation evaluates dweller's modification of housing facades, front yard and back yard of their house, to address the changes that every base house underwent during the modification process. Moreover, this evaluation depends on the argument that the more families develop the formal property of a house the more they show belonging willingness to make those spaces their own.

The category of function is closely related to spatial changes which occur during the process of adopting initial the housing unit. Since this part of the dissertation examines houses which are constructed in stages with limited amounts of financing, every spatial change of a house reflects the functional desire or discomfort on the part of the dweller. The principle behind functionality of a house is based on the idea of the flexibility of incremental structure. The notion of flexibility is taken from Jeremy Till and Tatjana Schneider who define flexible housing as living environments which adapt to the changing needs of dwellers.<sup>106</sup> This housing platform includes the possibility of choosing different housing layouts prior to occupation as well as the ability to adjust housing units over time. Examining functional aspects of different households, this part of the dissertation examines how flexible those housing units are in practice. In this regard, the main argument of this part of the dissertation is that the base houses are practical solution for low-income families only when it allows occupants to incorporate diverse activities within a structural framework.

The last category is finishing of housing surfaces. This category relates to interior and exterior surfaces of houses. Both housing projects within investigation are delivered to beneficiaries as unfinished structure of houses. Houses are handed out to families incomplete with bare materials. Although Chilean architects support this notion of unfinished base houses, Aravena and Gubbins, low-income families who inhabited those houses had

---

<sup>106</sup> Jeremy Till, Tatjana Schneider, "Flexible Housing: The Means to the End," *Architecture Research Quarterly* 9, (2005): 287 - 296.

a hard time to adapt those spaces.<sup>107</sup> Aravena and Gubbins argue for the importance of families adapting their house in the form of finishing surfaces.<sup>108</sup> From this notion of representative function of facades, this part of the dissertation points out the importance of dweller' s investment in covering surfaces of houses according to personal preference. This means covering surfaces of walls within private and public realms of incremental houses. The notion of adapting houses supports the dweller' s personal relation to their home and to express their own style of living.

## 2.4. History of Developing the Idea of the Base House

In 1914, Swiss architect Le Corbusier created a universal building system he calls *Maison Dom-ino* (figure 4). Le Corbusier conceived this project on a grand scale. He fancied that this system would be used to rebuild cities destroyed by a great war. This dream was not realized since no government, engineer or other architect licensed Dom-ino for wide-spread application. As a consequence of this negative acceptance of this system, architects constructed theory of the importance of this open system housing for developing global cities. Despite its commercial failure, this open housing system found its application in the practice of housing construction of urban squatters. An example of this practice is the suburbs of Cairo. In these suburbs, houses are made up of thousands of medium-rise concrete frames, filled in with terracotta blocks. This practice of incremental housing represents common phenomena in every developing country.

According to Ruth McLeod and Kim Mullard this "housing procurement processes for low-income households in the informal sector take place in the opposite order of those in the formal

---

<sup>107</sup> Elemental, Interview, Santiago, Chile, 19<sup>th</sup> February 2016.

<sup>108</sup> Victor Gubbins, Interview, Santiago, Chile, 04th September 2015.

sector."<sup>109</sup> In Latin America, according to Patrick Wakely and Elizabeth Riley, urban squatter settlements and slums grew rapidly on illegally invited and subdivided land, but those highly visible, informal, and incremental processes were in no way seen as a legitimate means to provide housing."<sup>110</sup> It was only in the 1960s that this view began to change. This change was largely due to the research of a small group of academics, such as John Turner,<sup>111</sup> William Mangin,<sup>112</sup> Charles Abrams<sup>113</sup> and John Habraken.<sup>114</sup> Bruce Ferguson noticed "scholars from John Turner<sup>115</sup> to Jorge Hardoy<sup>116</sup> and David Satterthwaite have emphasized on low-income families' self-build housing strategies. Typically, low/moderate-income households construct their own units over 5 to 15 years."<sup>117</sup> In this regard, this practice of constructing houses today is more relevant than ever.

---

<sup>109</sup> Ruth McLeod, Kim Mullard, "Bridging the Finance Gap in Housing and Infrastructure," (2006), Practical Action.

<sup>110</sup> Patrick Wakely, Elizabeth Riley, "The Case for Incremental Housing," *Cities Alliance Policy Research and Working Papers Series 1*, (2011): 1-56.

<sup>111</sup> John C. Turner, "Barriers and Channels for Housing Development in Modernizing Countries," *Journal of the American Institute of Planners* 33, (1967): 167-181.

<sup>112</sup> William Mangin, "Latin America Squatter Settlements: A Problem and a Solution." *Latin American Research Review* 2, (1967): 65-98.

<sup>113</sup> Charles Abrams, "Housing in the Modern World: Man's Struggle for Shelter in an Urbanizing World," (1969), Faber and Faber.

<sup>114</sup> John Habraken, "Supports: An Alternative to Mass Housing," (1972), Architectural Press.

<sup>115</sup> John Turner, Robert Fichter, "Freedom to Build," (1973), Collier Macmillan.

<sup>116</sup> Jorge Hardoy, David Satterthwaite, "Squatter Citizen: Life in the Urban Third World," (1989), Routledge.

<sup>117</sup> Bruce Ferguson, "Micro-finance of housing: a key to housing the low or moderate-income majority?" *Environment and Urbanization* 11, (1999): 185-200.

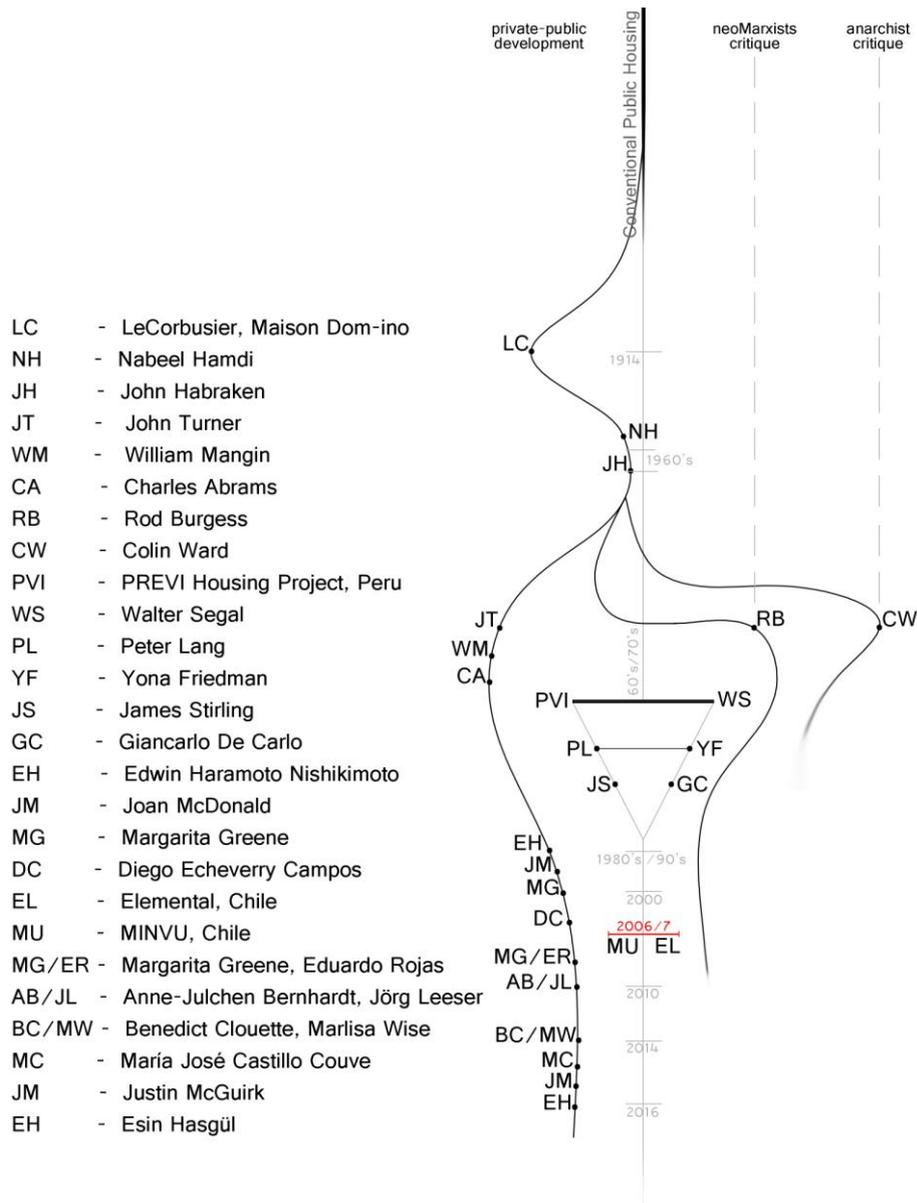


Figure 3. History line of developing the concept of the base house

Figure 3 depicts the development of the idea of the base house, which represents key figures of incremental logic of building houses. Research of these academics and architects created programs such as site-and-services and mass-constructed basic housing units. George Gattoni's work examines the impact of site-and-services project with these words, "three

decades after the first site-and-serves projects was implemented, many settlements are indistinguishable from 'regular' neighborhoods."<sup>118</sup> This positive perspective of self-built housing neighborhoods opens the discourse to the importance of base houses today.

A British anarchist writer Colin Ward's writings are characterized by theoretical discussion of anarchism with a practical sensibility that looked for empirical results. One of the key themes of his work was the promotion of cooperative self-help strategies, in the form of squatting, tenant cooperatives and self-build projects.<sup>119</sup> In *Cotters and Squatters: The Hidden History of Housing*, Ward wrote a history of informal customs for the appropriation of land. An example of this practice is the Welsh tradition of *ty unnos*, where a house is built in one night, which also has its echoes in the global South.<sup>120</sup> This idea of housing overnight represents one extreme in the importance of base houses today.

In opposition to Ward's radical idea of housing, John Turner argues for strong institutional frameworks to the illegal housing market. Turner noticed that the ignorance and misunderstanding of settlement process of the *well-intentioned* housing project provided by governments for low-income families were not only "costly, rigid, stultifying and depressive"<sup>121</sup> for their users but also created residential segregation between different communities. This critique of insufficient products of housing programs in one part derives from administrative complexity, in other from housing as a product that is disconnected with communities' requirements and needs.

---

<sup>118</sup> George Gattoni, "A Case for the Incremental Housing Process in Sites-and-Services Programs," (2009), Inter-American Development Bank, Department of International Capacity and Finance.

<sup>119</sup> Colin Ward, "Housing an Anarchist Approach," (1976), Freedom Press.

<sup>120</sup> Colin Ward, "Cotters and Squatters: The Hidden History of Housing," (2002), Five Leaves Publications.

<sup>121</sup> John F.C. Turner, "Barriers and Channels for Housing Development in Modernizing Countries," *Journal of the American Institute of Planners* 33, (1967):167-181.

For Turner, large-scale housing projects are burdened with a large administrative organization employing many professionals and highly paid administrators. At the other extreme, “customary and almost entirely self-governing squatter settlements, or the intermediate situation of the legal owner-builder or co-operative association, carry hardly any direct overheads at all.”<sup>122</sup> The housing position as the dichotomies formal/informal, household/commodity, institutional/self-help etc. alienates the housing programs and neglects the underlying goal of housing policy to improve the living conditions of individuals who need institutional support.

In this regard, Turner introduces slowly adaptable and changeable strategies of creation spaces which are in relation to the architecture of community. For him, “in the early stage, for instance, a market can be a collective of stalls on an open plaza, later to be occupied by shops and apartments.”<sup>123</sup> Turner's idea of different phases of developing spaces derives from member involvement and a bottom-up approach of adapting space for human needs. This approach depends on organization and positioning of individuals within a community. In this regard, the community architecture directly derives from the relationship between individual and the whole of society. Defining differences between an individual and socio-political setting enables community architecture to fulfill the aim of social responsible design. From these two platforms of understanding base houses, this dissertation adopts the middle ground. It uses lessons from Ward's theory of adaptation of houses by dwellers. At the same time, this dissertation adopts Turner's theory of importance of well-functioning institutions in housing processes.

From these diverse theories of the base house, the main argument of this dissertation is the architect's responsibility in

---

<sup>122</sup> John F.C. Turner, *Housing By People: Towards Autonomy in Building Environments*, (2000), Marion Boyars Publishers.

<sup>123</sup> John F. C. Turner, "Barriers and Channels for Housing Development in Modernizing Countries," *Journal of the American Institute of Planners* 33, (1967):167-181.

designing and managing the housing process. Using different housing solutions which use the base house concept, I argue that we can improve the current housing solution by imposing more responsibility on the architect. In opposition to Le Corbusier's notion of the base house in which the architect completely directs the housing process on the larger scale, this dissertation proposes local housing development which is based on the additional responsibility of the architect. This responsibility is based on the internalization of the design process that depends on the architect's knowledge about unique social and special requirements of particular communities to whom the housing projects are constructed for. The new position of the architect in the context of incremental housing is relevant in that this position enables the professional to unite all phases of the construction process. This unity can strengthen the design process with future customization by low-income families.

## 2.5. The Architect's Current Role in Incremental Housing

A few examples of architects working in these contexts suggest a more appropriate role for the architect working on slum improvement projects. These examples are the practice of Hassan Fathy, Charles Correa, and Walter Segal. These architects offered promising examples for the reeducation and redefinition of professionals working in slums of the developing world, but it remains unclear the effectiveness of working at this limited scale. Sure, these architects might suggest a fresh role for professionals working in these contexts, but do their designs really make a positive difference? This question is relevant to practices of current architects such as Elemental, Teddy Cruz, and Victor Gubbins. From research and two case studies, I argue that architects need to become more involved in the development process, without over-asserting their *expertise*, as Payne warns.

As architects seek to become more engaged in incremental housing projects in the developing world, the profession will need to fully understand the existing discourse and current best practices before it asserts its *expertise*. This notion of expertise derives from Geoffrey Payne's argument about the architect's role in housing. Payne acknowledges, "the common claim by architects that they are the leaders of the built environment professions encourages them to see themselves as more influential in creating and managing the built environment."<sup>124</sup> Payne continues his argument of the 'I know best' syndrome that seems to stand particularly comfortable on the heads of architects and does their professional reputation no favors.

The Chilean architects who with their practice contributed to the argument of incremental housing are, among others, Alejandro Aravena and Victor Gubbins. These two architects created two housing projects, which represent current examples of Chilean incremental houses. Each of these architects used their idea of incremental construction process. Aravena with Elemental office identifies the set of building parameters of the base house, which will allow the house to grow over time.<sup>125</sup> They redeveloped the old strategy of physical extension of the base house, where the government financed and private companies constructed it.

For their incremental housing projects, Elemental makes use of the Chilean housing policies that are ownership oriented. Their practice is the outcome of the Chilean government encouragement for the involvement of private companies to take a leading role in social housing development. From this setting of social housing, Elemental designed incremental houses, which are delivered to families in order to be inhabited, adapted and redesigned for their use.

---

<sup>124</sup> Geoffrey Payne, Are Architects and Planners Obstacles to Slum Upgrading? Papers from a seminar in Barcelona in April 2008, Dick Urban Vestbro: Stockholm, Sweden, Royal Institute of Technology, (2008): 13-20.

<sup>125</sup> Alejandro Aravena, Andres Iacobelli, "Elemental: Incremental Housing and Participatory Design Manual," (2013), Hatje Cantz.

Dwellers of Elemental's houses receive an incomplete frame rather than a finished house that they adapt to their own needs. From their first project Quinta Monroy in Iquique, Elemental gained local and international acknowledgment for their work on housing for low-income families. In 2001, their project in Iquique housed ninety-three families on the site where they had been squatting for the last thirty years. This project was managed with a governmental grant of 7.500 dollars per family. In order to achieve this, Elemental developed duplex typology, this was delivered to families as an open-ended first half of the house. This initial phase of the house is constricted up to 40m<sup>2</sup> and represents the work of conceptual and *process-oriented Minimalism*.

About this idea of housing low-income families, Benedict Clouette and Marlisa Wise noticed that houses were built covering “the building in scraps of found material, the architect achieves immortality through his own disappearance, as the creator of the structure, the frame, the space itself, leaving someone else to decide the paint colors, the furniture, the interior finishes (if any), just as, after Conceptualism, the artist is the one who conceives the idea of the piece and then lets others carry out the work’ s realization.”<sup>126</sup> They argue that the Minimalism of Aravena is to conserve the pure, immaterial concept that underlies the ugly stucco of scrap wood covering the houses of low-income families in Chile. Clouette and Wise continue arguing that Elemental's work abandon the idea of the house as a unitary whole, instead it represents open frames that instigate a process of transformation by their dwellers. This practice of incremental construction represents the ongoing practice of housing low-income families in the developing world.

---

<sup>126</sup> Benedict Clouette, Marlisa Wise, "Hyperminimalism: Architecture of the Open Frame," *San Rocco 9: Monks and Monkeys*, (2014): 1-12.

<b>The current role of the architect</b>		
<b>Issues</b>	<b>Reasoning</b>	<b>Consequences</b>
(1) The absence of information about the structure of low-income families during design of the base house.	In both case studies, Lo Espejo and Las Higuera, the architects were contacted by MINVU to design the base house. This statement is supported by interviews of families E8 and H11. Both families represent community leaders of two neighborhoods.	(a) According to family E8, dwellers at first rejected Elemental's design solution. (b) According to family H11, the design proposal is followed by confrontation between the architect and community members. This conflict is later extended between community members which destroys organization of the neighborhood.
(2) Discontinuity between proposed plan (a singular design solution) of customization and its realization.	The architects' suggestion embodied within singular design solution of the customization process does not support dwellers' needs and motivation for customization. Low-income families have different motivations to customize their house. These motivations were not acknowledged by the architect.	(a) Low-income families widowed from the incremental construction process. (b) They reject the architect's proposed plan of customization and develop their own outline of the house.
(3) The customizations process was not adequately presented to low-income families.	Family E3 and E5 state that they did not perform customize their house. The reason of their widowed is the information from community leaves during the last meeting before inhabiting the house. Their leaders told them that they are not allowed to customize their house.	(a) Families' misunderstanding of potential of the base house. (b) Neutralizes the incremental logic of construction and presents addition problem to low-income families since they are forced to inhabit small size and unfinished living unit.
(4) The discontinuity between the construction of the base house and its customization.	This discontinuity derives from the absence of support of the construction process. The architect in current practice abandons the incremental process in the early stage. Thus, the architect leaves behind low-income families to cope with organization of customization.	Difference in the construction quality of the base house and its customization. This disproportion of the construction level on the long term presents danger to structural of the house.

Table 7. Structure of the role of the architect and consequences from their current position

In this regard, the current role of the architect resembles the top-down housing solution (table 01). This notion of housing limits families' participation in the first phase of construction. The disadvantage of the current role of the architect is the absence of information about the structure of low-income families during design of the base house. In both case studies, Lo Espejo and Las Higuera, the architects were contacted by MINVU to design the base house. This statement is supported by interviews of families E8 and H11. Both families represent community leaders of two neighborhoods. Family E8 was the community leader of Lo Espejo prior to the design solution of the Elemental Office.

According to family E8, dwellers at first rejected Elemental's design solution. They labeled the housing design as a matchbox which is not designed according to their needs. This dispute between families and architects of Elemental about the layout of the base house created additional problems for the community. However, it did not influence the design solution of the base house. Elemental kept their original design solution which they imposed on dwellers by supporting the replacement of community leaders.

In this way, Elemental delivered their original design solution without consulting the wishes and needs of the families. This notion of design was supported by families E5 and E7.

The current role of the architects in designing the base house does not represent the needs of the low-income families. The main argument is that the architects have the preconception that the families are not literate enough to influence design of the base house. This prejudice enables the architect to dismiss the families' wishes and acknowledge their needs. According to the statement of family H11, the first community meeting for designing the outline of the housing project was followed by confrontation between the architect and community members. On the one hand, most families would prefer to have a house with a front and backyard and enough space for extension. On the other, the architect forced to design the base house with a limited budget argued for the small efficient unit that would later embody families' wishes and needs. This conflict was later deepened with conflict between community members that destroyed the organization of the neighborhood.

The second disadvantage of the current role of the architect represents discontinuity between the proposed phase of incremental construction and its realization. For the incremental construction of houses, the architect designed phases which families should follow for completing their house. Architects from Elemental Office designed the base house as the initial stage of the house. This house should be extended and adjusted by families which embody the second stage of the incremental construction. For Elemental, the incremental house is presented with two stages of construction. Similar, Las Higeura was developed as the initial phase of construction. Furthermore, Victor Gubbins designed six phases of extending and adjusting houses. In summary, Las Higeura housing is presented with seven phases of incremental construction. Both strategies of incremental construction, Elemental's two phases and Gubbins' seven phases, fall short of addressing the real situation of families' construction process.

The role of the architect to design the base house with a proposed plan of customization is the platform for incremental housing. However, the architects' suggestion embodied within a singular design solution of the customization process does not support dwellers' needs and motivation for customization. The variety of solutions and organization of the customization does not reflect the architect's prediction for future customizations. Furthermore, low-income families have different motivations to customize their house. The architect did not acknowledge these motivations. The consequence from this action is on one hand low-income families were widowed from the incremental construction process. On the other, they rejected the architect's proposed plan of customization and developed their own outline of the house.

In the case of family E5, the customization process was not adequately presented to families. Family E3 and E5 stated that they did not perform customization on their houses. The reason for this was down to information from community leaders during the last meeting before inhabiting the house. Their leaders told them that they were not allowed to customize their house. This information led to families' misunderstanding the potential of the base house. As a consequence of the absence of information of customization, families such as E3, 5, 7, H5, 9, and H13 adjusted their base house with minor interventions. This situation neutralized the incremental logic of construction and presented additional problems to low-income families since they were forced to inhabit a small sized and unfinished living unit.

The final disadvantage of the current role of the architect is the discontinuity between the construction of the base house and its customization. This discontinuity derives from the absence of support in the construction process. The architect in current practice abandons the incremental process in the early stage. Thus, the architect leaves behind low-income families to cope with the organization of customization. The consequence of this action is difference in the construction quality of the base house

and its customization. This disproportion of the construction level in the long term presents a danger to the structure of the house.

In this regard, this dissertation acknowledges the troublesome situation of delivering the unfinished house to families without any support to complete their houses. These three disadvantages of the current role of the architect are acknowledged in this dissertation. Furthermore, this dissertation will resolve these disadvantages by arguing for the architect's additional responsibility in the context of incremental housing.

In conclusion, the current role of the architect represents a limitation to the discourse of designing social housing. As contemporary architects go beyond the limits of the profession, it is important to do so with well-constructed structures of actions. The current practice of architects involved in incremental housing does not achieve to deliver a concrete set of parameters for extending the limits of the profession. Presenting incremental housing as the design invention of our time without acknowledging its long history and different programs, represents a one-sided argument of the issues.<sup>127</sup> This notion of incremental housing resembles the mono-logical perception of complex and troublesome process of housing. This simplification of social issues of low-income families creates more problems than it solves.

---

<sup>127</sup> Allusion to Aravena's argument of incremental housing in "Elemental: Incremental Housing and Participatory Design Manual," which is presented as an innovative solution for housing low-income families.

# Chapter 3. Two Base House Case Studies

## 3.1. Elemental Lo Espejo, Santiago

The private sector plays an important role in the construction and delivery of incremental housing in Chile. In the last decades, the Chilean government almost fully stopped delivering social housing to low-income people. This phenomenon is a result of the argument that private markets should take over housing production. As an example of private distribution of housing, this research examines the Elemental Lo Espejo housing project. This housing neighborhood is located on the south border of the the municipality Lo Espejo (figure 4). I assigned the name of the project Elemental Lo Espejo for distinction of this project from other social housing projects, which were constructed in this county in the last few decades.

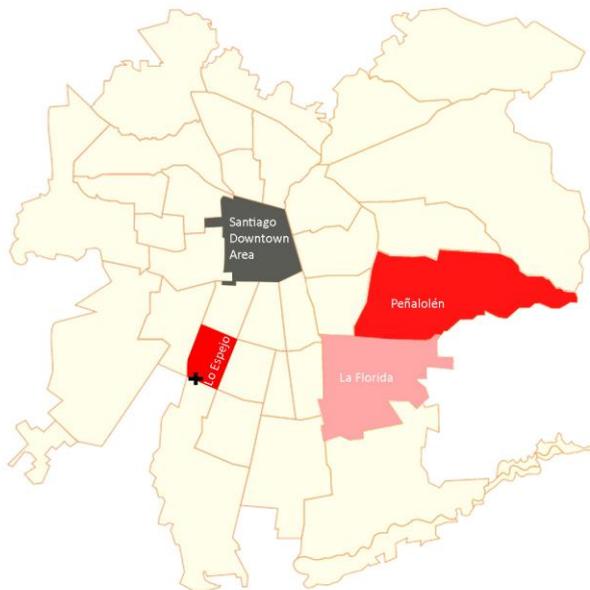


Figure 4. Location of Elemental Lo Espejo in the context of Santiago Metropolitan Area

This housing condominium is Elemental's first project in this municipality. This project is followed by Lo Espejo 2 housing project currently presented as a proposal by Elemental.<sup>128</sup> This second project is also located in Lo Espejo municipality. Lo Espejo municipality is located in the south area of the metropolitan area of Santiago. It was chosen for this study because of its long history of social programs for housing low-income families. Besides, low-income families mostly inhabited this county in the past. The percentage of low-income population changed during the last two decades. According to Vargas, in 2006 the county Lo Espejo has 19.94% poverty.<sup>129</sup>



Figure 5. Elemental Lo Espejo site plan

Elemental Lo Espejo housing is small social condominiums. The location is an area that is almost completely occupied by social and middle class housing, and industries that take advantage of the strategic location of the municipality between the two arms of the Pan American highway. This location near the highway creates a direct link to the city center and provides good opportunities for families. However, the presence of the highway

<sup>128</sup> Elemental architectural office: <http://www.elementalchile.cl/proyecto/lo-espejo-2>.

<sup>129</sup> Miguel Vargas, "Causes of Residential Segregation: The Case of Santiago, Chile," *Center for Spatial and Real Estate Economics*, (2006): 1-23.

and industrial sector creates acoustic pollution and exposes inhabitants to constant exposure to gas emissions. On the east side of the condominium is a police checkpoint and on the west is a consolidated plaza which separates the neighborhood and the Pan American highway. On the south border of the neighborhood is Lo Espejo Avenue, it stands between the housing project and industrial buildings.



Figure 6. *Vista Hermosa* settlement, Lo Espejo, Santiago, (2015) Source: by author.

Squatters inhabit land in the northern side of the project. Moreover, the neighborhood is located near a labor market that is a working place for some inhabitants of the Elemental Lo Espejo community. The plot itself occupies 1.000 square meters.<sup>130</sup> It is located at the intersection of Avenida Lo Espejo, the main route of the commune and Avenida General Velásquez, now the Central Expressway (figure 5).

---

<sup>130</sup> Alejandro Aravena, Andres Iacobelli, "Elemental: Incremental Housing and Participatory Design Manual," (2013), Hatje Cantz; Box Blg edition.



Figure 7. Front facade of *Vista Hermosa* settlement, Lo Espejo, Santiago, (2015)  
Source: by author

This project was constructed for 30 families who had long lived in the illegal settlement, a few blocks from the project site. The people from the housing condominium address this camp as a slum *Vista Hermosa* (figure 6 and 7). In order to house families from the slum Vista Hermosa, Un Tech para Chile and MINVU in association with the Elemental architectural office initiated a social housing condominium project.

The project started in 2006. According to Alejandro Aravena and Andres Iacobelli, "the real estate developer and builder Simonetti, which traditionally works for upper-class housing projects in Chile, took charge of the construction as part of its social responsibility policy." This construction company brought unprecedented good construction standards to the social housing area. Elemental designed raw-housing buildings with one-story houses units on the first floor and duplex houses on second and third floors (figure 8). The original plan of the first floor occupies an area of 6 x 6 meters with an enlargement strategy aimed horizontally toward a patio of 6 m deep, allowing residents to expand their house.

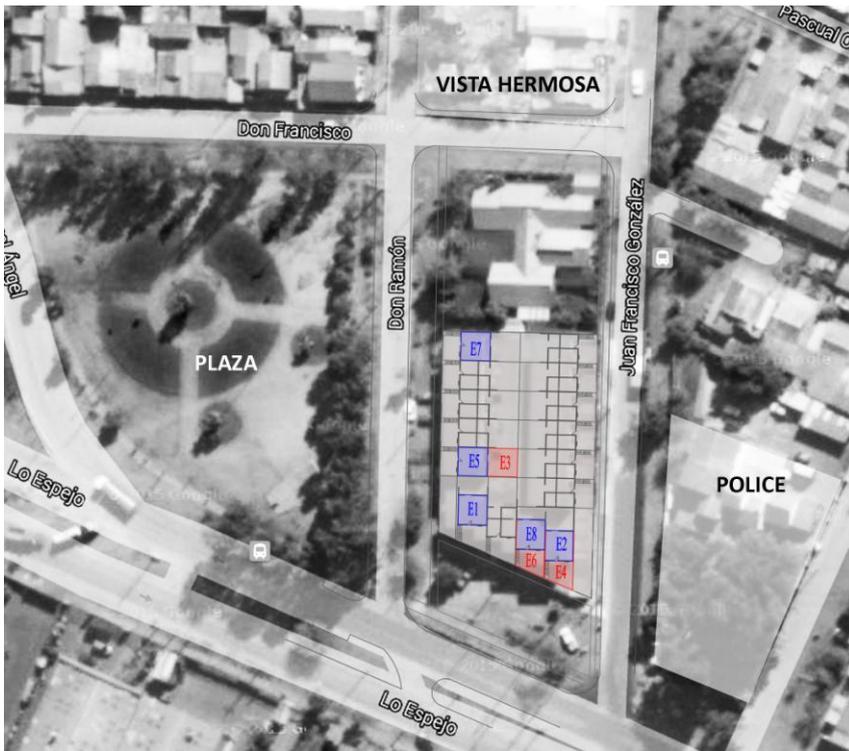


Figure 8. Elemental Lo Espejo site plan with eight researched houses: first floor houses (red), duplex houses – second and third floor (blue)

On the slab, the duplex includes an initial delivery of 3 x 6 meters on two floors and a void of the same size between each duplex, where they are expected to grow in future departments (figure 10).<sup>131</sup> In June 2007, the initial constructed houses were delivered to families.

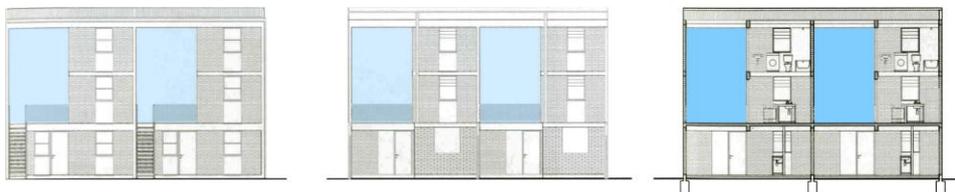


Figure 9. The base house of Elemental Lo Espejo, front facade (left), back facade (middle), section (right), Source: Alejandro Aravena, Andres Iacobelli, "Elemental: Incremental Housing and Participatory Design Manual," (2013), Hatje Cantz; Box Blg edition.

<sup>131</sup> Alejandro Aravena, Gonzalo Arteaga, Fernando García-Huidobro, "Conjunto de viviendas Lo Espejo: Lo Espejo, Chile" ARQ 69, (2008): 24-27.

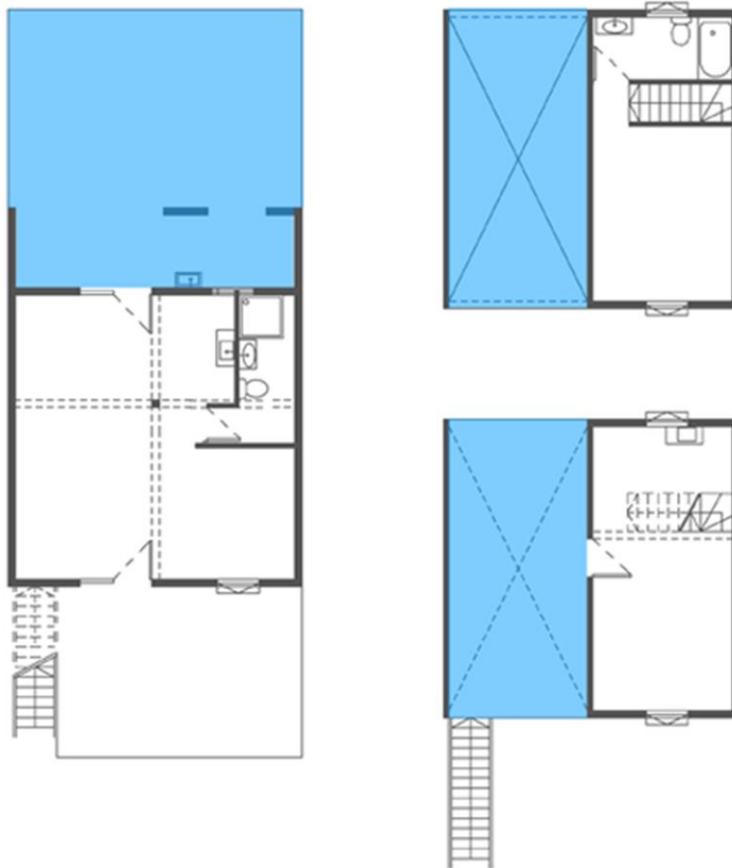


Figure 10. Elemental Lo Espejo, Elemental, original designed floor plan of first floor houses (left) and delivered to families (right), original designed floor plan of duplex houses (second and third floor)

Although the houses were designed to be extended by the dwellers, the building company Simonetti extended the houses for the families. The extensions were sponsored by the Chilean government in the form of a second subsidy for low-income families. Although these houses were spatially extended, I apply the term base houses to delivered houses (figure 10 represents designed base houses). The justification for doing so is the aspect that these houses were only spatially customized. After inhabiting base houses, dwellers from Lo Espejo customized their houses (figure 11 and 12).

The base houses in the first are longitudinal oriented. With orientation toward the back yard, these houses lack natural ventilation and illumination. Bedrooms are claustrophobic with a stuffy atmosphere. All participants closed their interior courtyards. The consequence of this action is lack of natural ventilation in the bathroom and kitchen. Apart from darkness of the interior, the entrance area is delivered with a partition that shortens the living room, creating a hallway and not a space for family gatherings. This customization of the base houses did not improve the quality of the houses.



Figure 11. Elemental Lo Espejo, Elemental, before (left side) and after extension by construction company (right side), Source: ELEMENTAL–Alejandro–Aravena–Lo–Espejo



Figure 12. Elemental Lo Espejo, Elemental, after modification by dwellers, (2015), Source: by author

## 3.2. Las Higuera, Santiago

Las Higuera is located near Avenue Departamental on the border of Peñalolen municipality. Furthermore, this housing project was part of a governmental initiative to house low-income families from Peñalolen's illegal settlement. This slum represented at the time one of the biggest illegal squatting sites in Chile. Peñalolen municipality is located in the southeast of the city of Santiago, near the Andes Mountains. Before the 1960s, this was part of Ñuñoa municipality. From the 60s on, this part was scarcely populated by the poor people from other parts of the city, "forming emblematic slums such as Lo Hermida and La Faena."<sup>132</sup> In 1981, Peñalolen was separated from the Ñuñoa municipality, and became the county with the highest level of concentrated poverty. During the 1990's vacant land in Peñalolen, its attractive location near the Andes and good connection to the city center, attracted different developers.<sup>133</sup> Currently, "Peñalolen is one of the fastest growing municipalities in the metropolitan area of Santiago, with 216,000 inhabitants as of the 2002 census [...] with more than 20% of its population under the poverty line and more than 20 percent belonging to the elite groups."<sup>134</sup> According to Vargas, in 2006, Peñalolen county had 17.91 percent poverty.<sup>135</sup>

Sabatini et al. argue that, "the squatters fight not only for the right to a house but also for the right to an adequate location in the city."<sup>136</sup> According to Chilean scholar Rodrigo Salcedo, in 1999,

---

<sup>132</sup> Rodrigo Salcedo, "The Last Slum: Moving from Illegal Settlements to Subsidized Home Ownership in Chile," *Urban Affairs Review*, (2010): 1-29.

<sup>133</sup> Pauline Stockings, "Oferta y demanda de vivienda en la periferia santiaguina: Los nuevos desarrollos inmobiliarios," In Gonzalo Cáceres, Francisco Sabatini, (2004), "Barrios cerrados en Santiago de Chile: entre la exclusión y la integración residencial," Pontificia Universidad Católica de Chile.

<sup>134</sup> Rodrigo Salcedo, "The Last Slum: Moving from Illegal Settlements to Subsidized Home Ownership in Chile," *Urban Affairs Review*, (2010): 1-29.

<sup>135</sup> Miguel Vargas, "Causes of Residential Segregation: The Case of Santiago, Chile," *Center for Spatial and Real Estate Economics*, (2006): 1-23.

<sup>136</sup> Francisco Sabatini, Diego Campos, Gonzalo Cáceres Quiero, Laura Blonda, "Nuevas formas de pobreza y movilización popular en Santiago de Chile," In Gonzalo Saraví. "De la pobreza a la exclusión. Continuidades y rupturas de la cuestión social en América Latina," (2006), Ciesas-Prometeo.

"around 1,900 families, all of them living in Peñalolen municipality at the time, seized a 16 hectares plot, creating Chile' s largest illegal settlement in more than a decade, *La Toma de Peñalolen* (figure 14 and 15)."<sup>137</sup>

According to squatters of *La Toma de Peñalolen*, land occupied by squatters was the property of the Campos family. During the 1980s, the Campos family made an agreement with Mr. Miguel Nassur, president of soccer "Club Santiago Morning," to develop the land into high-income modern housing. From troubled relationships between Mr. Nasser and the Campos family, this land was left undeveloped. According to squatters, to avoid returning land to the original owner, to the Campos family, Mr. Nassur invited low-income families of Peñalolen to invade the land in 1999. After squatters seized the land, they were confronted with problems of obtaining access to electricity, sewage, or drinking water. Families negotiated with the county to secure those urban goods. There was an impressive degree of participation and community organization. This organization was in charge of different aspects of living and their leaders worked on the negotiations with local and regional governments to obtain funds for future improvements in living conditions.

---

<sup>137</sup> Rodrigo Salcedo, "The Last Slum: Moving from Illegal Settlements to Subsidized Home Ownership in Chile," *Urban Affairs Review*, (2010): 1-29.

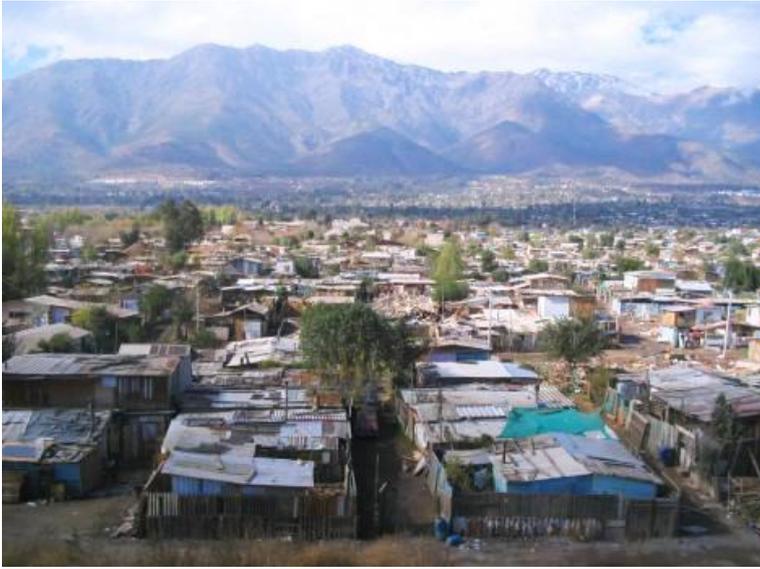


Figure 13. *La Toma de Peñalolén*, Santiago, (1998), Source: El Periodista, “Parque Peñalolén: de Toma a ‘Central Park,’ ” (01. March, 2014): <http://elperiodistaonline.cl/salud/2014/03/parque-penalolen-de-toma-a-central-park/>



Figure 14. *La Toma de Peñalolén*, Santiago, (1999), Source: María José Castillo Couve, “The ability of residents: the innovative potential for Chilean Housing Policy,” *Revista INVI 29*, (2014): <http://www.revistainvi.uchile.cl/index.php/INVI/article/view/815/1155>

Residents always thought living in this environment was a transitory condition. Salcedo captured the residential perception: “they never expected to live more than five years in the shantytown.”<sup>138</sup> Beside this temporal approach to their living conditions, throughout the years residents invested in the quality of their houses. Salcedo argued that, “once they moved out, most, if not all of houses were of decent size (65 – 74m<sup>2</sup>) and had a bathroom, shower, and some system of heat water.”<sup>139</sup> He continued to argue that in 2001 a formal negotiation process with the squatters began, acknowledging that the only possible agreement implied building subsidized units inside Peñalolen municipality.<sup>140</sup> In 2003, the Secretary of Housing and Urban Affairs, Jaime Ravinet, and the squatter leaders reached an agreement: “squatters would save their money (around US\$ 350) and apply for a governmental housing subsidy. Since the subsidy at the time did not cover the total cost of a housing unit, squatters agreed to accept a 20-year mortgage in the value of around US\$2,000.”<sup>141</sup> The government announced the construction of six incremental housing projects in Peñalolen and one in La Florida municipality. These seven projects relocated and housed about 80% of the squatting families. According to Salcedo, “the remaining 20% of families would obtain an additional subsidy allowing them to buy better housing units elsewhere.”<sup>142</sup> Unfortunately, this was not realized. The remaining 20% of families until today live in the existing illegal settlement.

According to Salcedo, who in 2010 conducted interviews with owners of incremental houses, residents' first experience of the

---

<sup>138</sup> Rodrigo Salcedo, "The Last Slum: Moving from Illegal Settlements to Subsidized Home Ownership in Chile," *Urban Affairs Review*, (2010): 1-29.

<sup>139</sup> Ibid.

<sup>140</sup> Francisco Sabatini, Diego Campos, Gonzalo Cáceres Quiero, Laura Blonda, "Nuevas formas de pobreza y movilización popular en Santiago de Chile," In Gonzalo Saraví. "De la pobreza a la exclusión. Continuidades y rupturas de la cuestión social en América Latina," (2006), Ciesas-Prometeo.

<sup>141</sup> Rodrigo Salcedo, "The Last Slum: Moving from Illegal Settlements to Subsidized Home Ownership in Chile," *Urban Affairs Review*, (2010): 1-29.

<sup>142</sup> Rodrigo Salcedo, "The Last Slum: Moving from Illegal Settlements to Subsidized Home Ownership in Chile," *Urban Affairs Review*, (2010): 1-29.

incremental home, was not a good one. He pointed to three main problems of incremental houses. First, many dwellers mistrusted financial management. Furthermore, these families were convinced that some members of the community paid less than the rest. The second problem was the size of delivered base houses. These units were smaller than the informal units in which they were living. Moreover, these units were out of the electricity network and occupants tolerated bad construction details. Finally, they strongly complained about the colors of houses. Families did not want to have the label of people who lived in governmental subsidized houses. “They just wanted to ‘pass.’”<sup>143</sup> The residents were bothered with the design and color of houses because it made them identifiable to other people in the surrounding area. Beside this negative perception of their new homes, residents always thought the location of the project was very good because it is located nearby middle-class and upper-middle-class neighbors.

---

<sup>143</sup> Ibid.

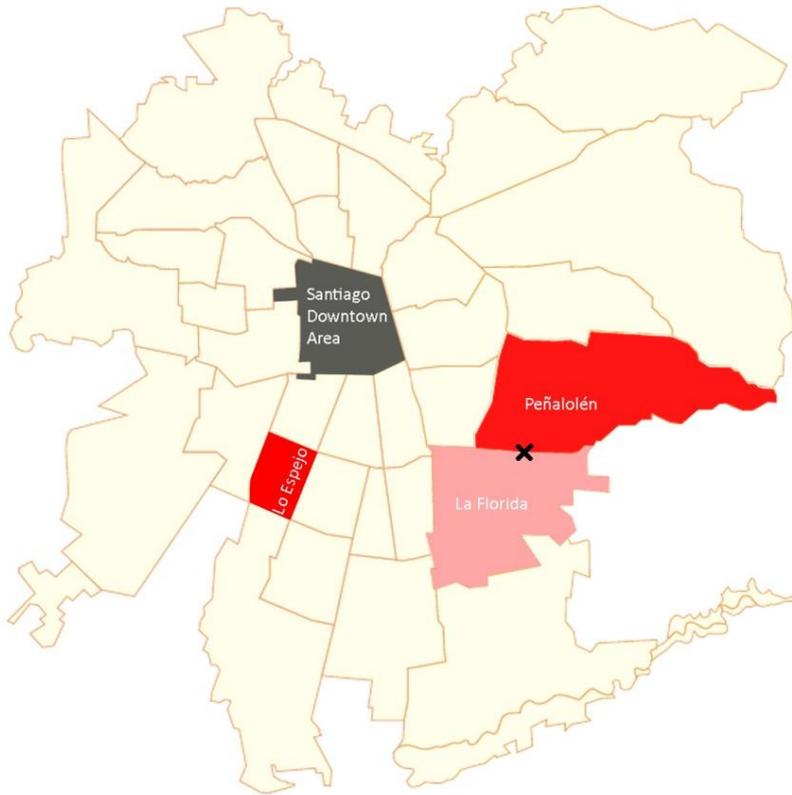


Figure 15. Location of Las Higuera Higuera in the context of Santiago metropolitan area

Today, most of the families have been able to customize their base houses. In most cases, these customizations do not correspond to original plans by the architect. These customizations have been made with high-quality materials. All the residents who have enlarged the houses believed they are now living in a nice and decent house. According to Salcedo, “the size of the unit and the rooms is adequate, and the enlargements were as easy to perform as they had been told it would be.”<sup>144</sup> The biggest challenge to families who inhabited base houses was the dual financial obligation; on one hand, the finance of the extension and customization of the house and on the other the monthly mortgage payment.

---

<sup>144</sup> Ibid.



Figure 16, Las Higuera site plan, Santiago

Las Higuera represents a governmental social, political and architectural response to one of the last unlawful communities in Peñalolen. With this project, the government took 1,900 families who were occupying the parcel of 24 hectares at the intersection of Avenida Tabalaba and Arieta Street and dislocated them in seven new locations with incremental houses. From those seven housing projects, I chose the incremental housing project Las Higuera in between Peñalolen and La Florida counties (figure 16). From descriptive observation of all seven projects, Las Higuera has the most diverse design typologies of incremental houses. Moreover, this project according to my site visits and observations has stronger neighborhood bonds than other housing projects. The project is located near the main road Tobalaba that provides a good link to the center of the Peñalolen municipality (figure 17).

On the east and the west side of the neighborhood are public housing projects from the 60' s and 70' s (figure 18). Land on the northern side of the project is an industrial facility for cleaning

water. On the south border of the neighborhood is Las Tencas street, which is the main road of the neighborhood. Within the project are a complex network of streets made of Las Taguas, Los Tordos, Las Tencas, Los Queltehues and Los Jilgueros. From literature review, the Las Higuera project has until now not been present in academic research.



Figure 17. Las Higuera site plan, thirteen houses of subjects involved in research

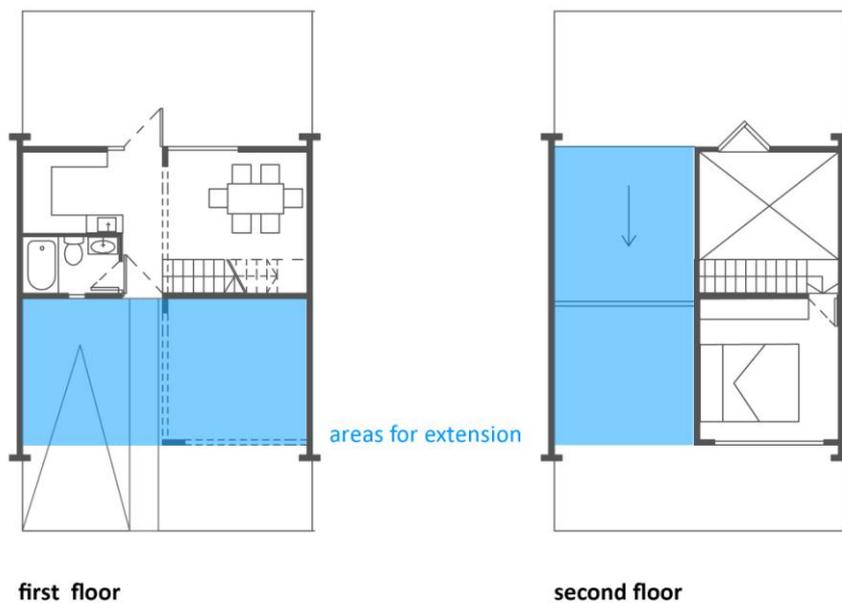


Figure 18. Original floor plan of basic house of Las Higuera

The Las Higuera project was constructed to house 145 families from the *La Toma de Peñalolen* settlement. The base houses were delivered with two modular units on the first floor and two additional modules on the second floor (figure 19). Each modular unit is 3 x 3 meters with a height of 2.8 meters. Most of the families have been able to customize their base houses. In most cases these customizations did not reflect the original plans of the architect. Customizing was achieved with high-quality materials.

Chilean architect Victor Gubbins designed these base houses with the entrance area and staircase which connects the first and second floor of the houses in the wrong location. From interviews with families, I noticed that the position of the staircase collides with the entrance door of the houses. Furthermore, staircases are positioned 90 degrees in respect to the bearing walls of the houses. This orientation of staircases creates communication problems on the second floor. This layout created many issues for

the customization of base houses. Additional design issues of base houses are small scale, such as the position of the bathroom. The bathroom doors are close to the entrance door and directly visible from the living room. These issues negatively influenced the modification of houses.

The base houses of Las Higuera were delivered as raw-houses with structural walls made of concrete frames filled with bricks (figure 19). In between those walls, modular dwelling units were positioned. The street facade of the first floor has a small bathroom window and an entrance door. The front facade of the second floor has a 2.3 meter long horizontal window (figure 19). The front yard of those base houses is an area of 6 x 3 meters. On the back facade of the base houses is a kitchen window with a back yard door and a dining room window on the first floor. On the second floor the base house was delivered with a single window of the bedroom. This window was a triangular prism attached to the surface of the house. These so delivered basic houses had undergone customizations performed by dwellers (figure 20).



Figure 19. Las Higuera houses before customizations, Source: Pamela Suarez, “La Salida de la Toma de Peñalolén,” (2006), Institute of Ecological Neighborhood.



Figure 20. Las Higuera houses after customizations, Source:

### 3.3. Sampling Families of two Case Studies

Choosing families to participate in research was completed by two methods of sampling. The first was the location of their houses within the neighborhood. From numerous sight observations, the researcher recognized different parts of neighborhoods. These parts are related to street networks within the neighborhoods. From these parts of the neighborhoods, the researcher contacted one or more families to participate in the research. In the case of Elemental Lo Espejo, he identified three sides of the project which face the streets: Don Ramon, Avenue Lo Espejo, and Juan Francisco Gonzalez. From these three sides of the project, the researcher collected data about incremental houses from families who inhabit Don Ramon and Avenue Lo Espejo. Regrettably, three families from the Juan Francisco Gonzalez' s part of the project gave up participating in the research. Two of those families withdrew from the project for personal reasons and the third did not want to participate because the Elemental Architectural Office did not confirm this research.

In the case of Las Higuera, the urban planning of the neighborhood is more complex. Urban planning was composed of one street on the border of the project, Las Tencas street, and a

triangular shape with a small playground in the center. From this outline of the neighborhood, the researcher identified six different areas from which families participated in research. These areas of the project are defined with streets they face: Las Higuera, Las Taguas, Los Chincos, Las Tencas, Los Tordos, and Los Quenteros.

The second method of sampling originated from the *Ficha-CAS* list of families who applied for subsidies, the researcher chose three groups of beneficiaries.<sup>145</sup> These groups of families will lay the framework for the sampling process for participating in the research. In the first group are the families whose house head is formed of a retired person or someone from an older generation. In this group are families whose members are retired or at the end of their professional career and live in the house alone or with their partner.

The second group are young families who used incremental housing as an opportunity to start their independent family life. With incremental housing, these households gain independence from their parents or cousins with whom they shared the house before getting the governmental subsidy. This phenomenon in Chile is called *allegados*. According to Francisca Bustamante and María Paz Sagredo, "allegados phenomenon represents about 60% of the Chilean housing deficit. In most cases, relatives are grouped into committees."<sup>146</sup>

The third group contains families that have only one parent. This category represents a single woman/man household. Traditionally, the Chilean housing policy supported families and not the housing of individuals with children. In the last few decades, this view of social housing has slightly changed. Today, Chilean policy makers are discussing the issues of not married single

---

<sup>145</sup> Ficha-CAS for Lo Espejo:

[http://reportescomunales.bcn.cl/2013/index.php/Lo\\_Espejo](http://reportescomunales.bcn.cl/2013/index.php/Lo_Espejo); Ficha-CAS for La Florida: [http://reportescomunales.bcn.cl/2013/index.php/La\\_Florida](http://reportescomunales.bcn.cl/2013/index.php/La_Florida)

<sup>146</sup> Francisca Bustamante, María Paz Sagredo, "Allegados en comités de vivienda: Un análisis exploratorio," (2009), Documento de Trabajo N°3 Centro de Investigación Social Un Techo para Chile.

headed families and their housing. For more information about this issue see Nestor Gandelman's work "Female Headed Households and Homeownership in Latin America."<sup>147</sup>

From these three categories, the researcher included some families of each group within the qualitative research of the two housing projects. To sample families within two housing projects he used methods of sequential analysis. In sequential hypothesis, testing the sample size is not fixed in advance. According to Abraham Wald, this methodology for an experiment depends on not predetermined sequential analysis.<sup>148</sup> In this regard, once the researcher arrived to the necessary findings without repeating information from families, the research was complete. In this regard, research was finished sooner and with fewer participants than a predetermined number of subjects. Data from two case studies is evaluated as it is collected, and further sampling is stopped in accordance with a pre-defined stopping rule as soon as significant results are observed. In the case of Elemental Lo Espejo, in total 8 families from this housing project was enough to come to a research conclusion. In the case of Las Hegeura housing project, in total 13 families took part in the research.

---

<sup>147</sup> Nestor Gandelman, "Female Headed Households and Homeownership in Latin America," *Housing Studies*, (2009):525-549.

<sup>148</sup> Abraham Wald, "Sequential Analysis," (2013), Dover Publications.

Variables	Elemental Lo Espejo		Las Higuera	
	n.	%	n.	%
<b>Age</b>				
25 – 35 years	2	25	3	23
36 – 50 years	6	75	3	23
51 – 65 years	0	0	5	38.5
66 years or more	0	0	2	15
<b>Gender</b>				
Male	0	0	3	23
Female	8	100	10	77
<b>Marital Status</b>				
Married	1	12.5	9	69
Separated	6	75	2	15
Divorced	0	0	1	7.5
Widow/er	1	12.5	1	7.5
<b>Care Responsibilities</b>				
Children	8	100	13	100
Parents/parents-in-law	3	37.5	4	30.5
Other person	2	25	5	38.5

Tabel 8. The Demographic characteristics of low-income families

Using qualitative methods such as observation, semi-structured interviews, and surveys, the researcher collected data from eight low-income families from Elemental Lo Espejo and thirteen families from Las Higuera. All participants involved in the research previously lived in squatter areas in the Lo Espejo and Peñalolen municipalities. As men were reluctant to participate, most of our correspondences were women (table 2). All participants from Elemental Lo Espejo were women and had one or more children. From these participants, 75 percent occupied the age category of 36–50 years old. The same percentage represents those separated from their spouses. In this regard, participants from Elemental Lo Espejo had a number of social similarities. In contrast to Elemental Lo Espejo, participants from Las Higuera occupied both gender and all age categories (albeit with a higher

percentage of women). Furthermore, 69 per cent of participants were married and all participants had one or more children. In both neighborhoods, an average of 30 per cent of participants supported their parent or other person (table 2).

### 3.4. The Architect' s Plan for Customization of the Base House

In conventional construction, one third of the cost corresponds to structure and the remaining two thirds to cladding and finishing works. In contrast, “social housing is practically an inhabitable structure.”<sup>149</sup> In this regard, “hitting the mark with the structure is hitting the mark for the whole project.”<sup>150</sup> The customization of prefabricated base houses represents the platform for better quality houses. This evolution phenomenon turns the initial Elemental design into *incidental architecture* that should render the neighborhood as an adaptable organ. As families grow and multiple different generations are within a community, the housing units reflect these new living conditions with the customizations of the house. This phase gives the social and urban character of the *collage design* within neighborhoods.

Fernando García-Huidobro and coauthors argue that only with a complex and collective understanding of the urban phenomenon beyond the residential is it possible to create “optimistic strategies that enables its eventual users to continue the project's development.”<sup>151</sup> The importance of dealing with different levels of design and construction in the neighborhood is the essential aspect of Elemental's and MINVU' s housing solution. The project incorporates "the metropolitan scale (infrastructural connectivity), the neighborhood scale (communal service), the vicinity scale

---

<sup>149</sup> Alejandro Aravena, Andres Iacobelli, "Elemental: Incremental Housing and Participatory Design Manual," (2013), Hatje Cantz; Box Blg edition.

<sup>150</sup> Ibid.

<sup>151</sup> Fernando García-Huidobro, Diego Torres Torriti, Nicolás Tugas, "The Experimental Housing Project (PREVI), Lima the Making of a Neighbourhood," (2011), John Wiley & Sons Ltd.

(corridors and in-between spaces between houses), and the dwelling unit scale (the core with its extension)."<sup>152</sup>

During my interview with Carlos Araya Salazar, head of the Department for Vulnerable Groups in the Chilean Ministry of Housing and Urban Development, he remarked that "after their success in Iquique, Elemental repeated their typology in all other housing projects. In some projects, their repetitive design approach did not work. Elemental starts to produce more problems than they solve with their housing projects."<sup>153</sup> This critique of Elemental' s repetition of the same solution represents a major drawback in their ongoing work.

Additional drawbacks of Elemental' s practice is their success. Since these projects receive support from political actors and the media, recent projects are mostly spatially extended by the construction companies and not by dwellers. This resolution is possible because the government provides a second subsidy to dwellers of Elemental' s housing projects for the extension of base houses (figure 21). The outcome of this practice is a larger area to the base houses, but with unnecessary partition within the house. Furthermore, this privileged status of low-income families who live within Elemental' s housing projects does not encourage dwellers to customize their base houses. In this regard, since low-income families receive more funding from the government' s original incremental structure of Elemental Lo Espejo undergo less customization. Most houses remain similar in quality level to the base house.

---

<sup>152</sup> Ibid.

<sup>153</sup> Carlos Araya Salazar, Interview, Santiago, 03. October 2014.



Figure 21. Elemental Lo Espejo, Elemental, first floor base house – original designed floor and delivered floor plan (left), second and third floor – duplex houses – original designed floor and delivered floor plan (right)

In addition to Elemental’s structure of customization is Gubbins’ six phases of costuming the base house. Gubbins uses the modern idea of modular design for housing low-income populations. He argues for a modular structure of 3m in depth and 3m in length as the essential element for structuring the incremental house.<sup>154</sup> Gubbins use his modular design strategy for housing all independently of their income or social status. With this design approach, Gubbins argues for all-inclusive housing developments.

In relation to his design philosophy, Gubbins adopts the modular structure for creating flexible and user-friendly base houses for beneficiaries of the Chilean governmental housing programs. For the *Toma de la Peñalolen* social housing development, he divides the first floor of the house into four equal modules and copies them in the second floor. In this way the whole house is spatially divided into eight modules which represent the physical maximum of the house. For designing the base house,

<sup>154</sup> Victor Gubbins, Interview, Santiago, 04 September 2014.

Gubbins uses two modules in the first and one in the second floor. According to Gubbins' incremental phases, these three modular units should be customized by dwellers. This customization process is expected to result in the structural frame of eight modules which represent the whole house (figure 23).



Figure 22. Six phases of customizing base houses, Las Higuera, Source: Victor Gubbins Architectural Office.

This dissertation criticizes the current structure of incremental housing as a top-down approach of housing low-income families. Instead of engaging housing design as participation practice where families are actively involved in housing from the beginning of the project, current practice presents an organizational way of designing houses. The architect's proposed customization of houses that resemble this organizational approach to housing low-income families. Instead of triggering dialogue with families, the architect approaches housing as exclusively a design issue. In this regard, the architect aims to solve the current housing crisis of low-income families by depending solely on design methods. This position of the architect exemplifies Buber's theory of I-It perception of the world in which a You is perceived as an It or as the object.

## Chapter 4. The Report from Fieldwork

### 4.1. Problem–Centered Interview with Observation

The semi–structured interview addresses the involvement of dwellers in the modification of incremental houses. This interview was constructed in three phases. First, the researcher conducted the actual interview with a family member. Second, after conducting standard interviews, the researcher presented photo–elicitation interviews (PEI) to interviewees. Finally, after collecting information from interviews, the questionnaire was handed to interviewees to add additional information about their house and neighborhood. Both interviews and questionnaires are structured in the way that ensures the consistency of gathering information. Interviewees from both social housing neighborhoods, Elemental Lo Espejo and Las Higueras, address the same questions, and thus interviewee's responses can be compared. This method of collecting information is constructed in a way so that the researcher is able to test the research hypothesis. During these interviews, observations of neighborhoods and houses were recorded.

#### **Interview protocol:**

##### A) Personal information about participant

1. What is your name? / How old are you? / What is your occupation? / What is your marriage status? / In case you are married (separated), how long are you in relationship (separated)? / Where do you grow up?
2. How many members have your family?
3. Can you tell us something about your family?

##### B) Living experiences prior to the current housing

1. Where you lived before moving in the incremental house?

2. What is your experience from living in previous settlements?

3. Can you tell us something about community organization in that neighborhood (relation to neighbors, community activities...)?

C) Subsidy

1. What is for you the importance of MNIVU's housing subsidy?

2. How did you have information to applying this housing project?

3. What was the first challenge in the process of applying for housing subsidy?

4. In the scale from 1–7 please express how satisfied are you with subsidy that you received?

D) Perception of the initial housing unit

1. What is for you the importance of initial housing unit?

2. What was at beginning your perception of the basic housing unit?

3. How did you cope with existing house when you moved in?

4. Did your first perception of initial house changed during time?

5. Which aspects of the basic housing unit were positive and which negative?

6. How the other members of your family were dealing with that basic house?

7. What did you like the most about basic house unit? What did you like the least about basic house unit?

8. In the scale from 1–7 please express the level of satisfaction of initial phase of your house?

E) Expansion

1. What is for you the importance of physical expansion of your house?

2. When did you start physical expand your house?

3. Can you explain the expansion of your house by phases? Which area of the house you expended first and which followed?
4. How long lasted the process of expansion?
5. Did you have any support for expansion of the house? If yes, who helped you?
6. How much money did you invest in expansion of the house?
7. How did you organize the expansion?
8. From where did you get construction materials? How did you transport materials from market place to your location?
9. From whom and where did you learn about construction techniques?
10. How did you manage the time for expanding your house?
11. Which aspects of the expanded parts of house were well structured and which can be improved further?
12. In the scale from 1–7 please express the level of satisfaction of with the house after expended?

F) Consequences of the extension

1. After expansion, did you customize (improve) some parts of the house?
2. In case you already did some modification, what parts of the house did you customize? Why did you chose these parts and how satisfies are you with these improvements?
3. Which factors influenced the modification of incremental housing? (money, time, help from family or friends...)
4. How did you organize the supply of materials and your time for improving the house?
5. Can you tell us what was an approximately cost of all improvement works in your house?
6. In the scale from 1–7 please express the level of satisfaction of the incremental housing unit after modification?

G) About structure of the housing

1. Are you satisfied with number and scale of the rooms?

2. What is your satisfaction with acoustic and temperature insulation? Please explain.
3. What can you tell us about the level of natural light in the interior of the house?
4. What is your opinion on structural quality of doors, windows, walls, stair, floor and roof?
5. How functional is your kitchen? Can you tell us how satisfied are you with materials, installation and equipment in your kitchen?
6. How functional is your restroom? What is your level of satisfaction with equipment in restroom?
7. Did you like the original material and color of the house?
8. Did you change the materials or (and) colors of the house? If yes why?
9. Do you have any plans for future development of the house? If yes, what are your plans?

Thank you for your time and help. In the last step of the interview, I would like to ask you to take 7 photographs of the parts of house that you like the most and the least. Once the interviewee has taken 7 photos, the researcher asks questions about them and discusses them with the participant. After finishing the photo-elicitation interview the researcher kindly asks the family to accept the questionnaire as the final stage of data collecting. I invite you to fill in the questionnaire and write some additional information over the next seven days. In one week, I intend to come back to collect the questionnaire.

### 4.1.1. Sample of Interview Transcripts

#### **Transcript from interview with MINVU**

**Date:** October 04, 2014

**Time:** 10:00

**Duration:** 1:46:53

**Place:** Serrano 15, Santiago, Chile

**Interviewer:** Goran Ivo Marinovic

**Interviewee:** Matías González Castro, Architect, Chief of Protection Program for Vulnerable Groups, Ministry of Housing and Urban Development

**Modular housing which can be horizontally and vertically expended by people.**

Yes. In summary of the project he does very poetic description about the time when people took this land. He said that just in six hours an army of 1.500 people [families], in less than six hours, they build the whole city with coordination and all infrastructure. Of course it was not like that, in a week or in a month they did all this work. First 1.500 and in the end when we took them away it was almost 2.000 people [families] in there. It was very poetic way to say the story but it has kind of truth. The history, it was the land with a little informal settlement of fifty families that were relate with peoples who cares the land. The land was unoccupied and there was a keeper. So the keeper wanted to invite more families.

#### **Transcript from interview with Elemental**

**Date:** February 19, 2015

**Time:** 16:00

**Duration:** 1:21:21

**Place:** Los Conquistadores 1700, floor 25A, Providencia, Santiago

**Interviewer:** Goran Ivo Marinovic

**Interviewee:** Cristian Martinez, Architect, Chief Project Coordinator at Elemental

From 2001 until today the governmental policies change in respect to budget of social housing. It is bigger. Now we have more money pumped for projects. For example, in 2004 in Iquique there was 6.5 million pesos per family and today is 13.5 million pesos per family. Moreover, in cases like Lo Espejo now there is a second subsidy for expending and enlarge houses before the construction is finished.

Yes, when we talk about social housing and subsidies, you cannot separate the design to the budget you have and to the housing policy you have. Though we have more money now then we have in Iquique, the things they are asking as to do are more. For instance, in Iquique we asked families to choose between water heater and bathtub. Now that' s not an option. You have to put water heater and you have to put bathtub. So we have more money, but we also have to put more things in the house. The subsidy that we are working now is not for lowest group of people, but for the people who have more and they start to ask for paintings on the walls, for finishing of the walls, and several other things that in the way we see the house there are not necessary because the families do it much more better than we would do it. In Lo Espejo and other projects you saw the ceramic floors or colors they chose are the one they want. So I think, if the public policy now gives you a bit more money but also ask you for many more other things. I think that money is more useful if you put it in isolation and things that families are not able to do by them. When you are asking about other subsidies in case of Lo Espejo: when Lo Espejo was ready they immediately gave other subsidy to make extension – expansion. That was particular case because now you have to wait, I not sure, one or two years for another subsidy.

You use the unfinished – natural materials for initial part of the housing. You are taking those materials because it's most common, chipper, most affordable materials. Why do you choose specific

### **material for one project and how that decision was made?**

I think I you talk a look on other social market housing or just housing, all the houses use the same kind of materials because the way we build in Chile low income house. We are talking about wood, steal, bricks and very simple materials. I think the question is not what materials we use, but it' s about the measure of thing. As an example, if you design the house that is 6 meters wide you can use 3 meters of... Here the wood comes on 3.2 meters. So you can use for one half of the house 3.2 and for other half of the house 3.2 and you do not have spear materials. It' s more affordable and it' s cheaper and you can get into better financial situation. I think it' s a thing of measures better then material. We use almost the same material as all other people. Doing the house with no finishing at the first was not a choice. We had to do that in order to get into the budget we had, and now try to leave the materials bear as possible because at the time you add finishing it's more expensive. I don' t know is there specific choice for material we are working with. For this project we were talking for forestry company we are using wood. Mainly for two reasons, because the projects are located in the area that is very common to built with wood and from Talca to the south it's quite common more than in north. If you get to the north with wooden house it will not work at all, but in the south it works. On the other hand, because it's for forestry company. They produce very good kind of wood that is not available now in Chile, they export it to England and Australia. It' s structurally better one. It is called C16 and C25 and its very good one. I think that can be choice of material, but design of the house can be in any other material. I am sure if we change the material there will be change of design because of the exact measure we need to follow.

### **Are there any other cases except Lo Espejo in which you delivered complete house?**

Valparaiso. It was duplex with the double height and has the same subsidy that allows them to expend immediately. Barnechea

was triple high, and municipality put some money so they could make expansions easier. It is not how it's meant to be, but it happen on the field. For the family it's good thing. On the other hand, if you go to La Pintana that's with bear finishing. There each family expends their own house. It's the same typology as Renca.

**Transcript from interview with E4**

**Date:** Thursday, February 19, 2015

**Time:** 19:25

**Duration:** 0:58:20

**Location:** Jessica House, Lo Espejo

**Interviewer:** Valentina Fischer Diaz, Goran Ivo Marinovic

**Interviewee:** Jessica (Katy), woman, 36 years old.

**What good. What aspects, the most positive say that you have found in the basic house?**

What more positive?

Yes ...

The bathroom! The bathroom is very good bathroom. Is that when we arrived the bathroom was tiny, but since entering to swim quiet, nobody sees you, nobody will listen, or come into the bathroom and nobody knows you're in the bathroom.

**And something negative? As it was originally.**

That, the bathroom just because it was so tiny. The bathroom and the kitchen was the smallest, but nothing.

**And because he was a little boy or something else?**

No, because they were boys, not because carrying a little one shower, a square. I do not know if you've entered another house down, maybe have it, but no, I did it bigger, I put

**And when they began to enlarge and modify, how important is it for you?**

For me it is important to extend it, fix it, change it, because we did it by ourselves, my husband ... my husband knows nothing, he is construction worker. He has made every arrangement, you see here, you will put a level and is all well ... but everything,

everything you see there, everything he has done me the happiest  
2. Then, for no pay, Lucas does not have to tell a teacher, do not  
have much money. We made our wall, we made the gate, we did  
the roof.

**What aspects of the extensions they did, were positive and if there are any negative ones?**

Negatives ... you cannot find anything negative to my house, I find that is so well established, that what I want a big house, if not spent here apart that no one comes, spent alone, everyone has their bedroom, each one's independence, it does not affect me at all. Negative no, would be an ungrateful person if to say look this is wrong. Look I am grateful to my house and have given me, my neighbor; your house is super girl. She has all these complaints, of subsidy, its parts, expanded, and had to take things to put. The back hither also, your house is super girl, all houses are not pure brick, you know? Then I find nothing to fault my house, my house is very nice meeting. Now that is disorderly, is full of dust. Is that you know what happens? On Saturday and Sunday, which is my husband here, I'll do the paperwork, do not pay all the bills every day, because I have everything, my husband receives a salary of 400,000 pesos, then this weekend will go to pay this bill, the other weekend will pay this one. Then on Sunday I go to the fair in the morning, after we pay the bills, then we have a commitment and we have to go buy.

**Transcript from interview with H3**

**Date:** Wednesday February 13, 2015

**Time:** 16:40

**Duration:** 1:02:29

**Location:** House Berta Rosa, Los Tordos 5798, La Florida.

**Interviewer:** Pablo Flores Pineda, Goran Ivo Marinovic

**Interviewee:** Berta Rosa González woman 54 years.

**And you chose this house?**

No, at that time paid 50.000pesos, and then do not pay more. Because it was such a help they gave to the people, which needed

more. And we fly, and my children had home.

**And how was the house?**

It had two parts. We cut it in half, we had bedroom and kitchen, and then my husband really made a roughly small kitchenette and sleeping together. And we lived calm.

**Then you had a room for four, and kitchen.**

Yes, and separate kitchen. And the bathroom, because then made a bathroom, a well.

**And before it was shared?**

No, each had its own bathroom.

**And there you began to change the perception of the house?**

Yes, that is changed in any way since I started to be calmer, and suited me with my anxiety to the house.

**What things considered positive when you came home?**

No, if I said nice, but all was that the pieces were very small, and then all he wanted was that the house would be bigger. It was little.

**What things?**

Yes, I liked the bathroom because the bathroom was well on this side. There's the bathroom window. We take it out to outside back, we made it bigger. But the tub did not like it because it was too small, and nothing but the tubs are dangerous because you will fall a little shampoo and falls, my husband fell and broke his hand day. I said, even the tub I have it saved, I have it with firewood. Because in the winter, do not see the wood is scarce, then as I pan.

**You also made the decision?**

Yes, I also did all those things. Here too.

**What material used for making?**

**How was the house, what material?**

Wood, pure wood. And zinc ceiling. So it was. But it was hot there, because the heated zinc, zinc warms you and besides it's not like here that this is china. This is drier down here. But there was hot, desperate.

**And here too was hot when you arrived?**

Back, no. No, it was not hot, just like now. Because it was all

open. It was all open, then I was outside, patio back there, had no roof. Had no roof, then my husband made me a roof and then with my mother, passed a disgrace to where she lived and my husband did not want to go outside because they brought over here and was here. And I closed here along for the passage until I have a grapevine grape, which was hanging.

**I had not seen, how nice. What else liked the house?**

Yes, I liked the bathroom, the bathroom was very nice, but this, the call, this floating so, the sides remained stuck on the sides, and it was heavenly. It looked very cute.

**And you told me that the rooms you did not like.**

No, not like me because they were girls, if my husband had the other day to try to make the piece for children. So, we left two beds in one piece, and then we built another piece to the child. But yes it was slow, it was not fast.

## 4.2. Sample of Questionnaire

### Subject E2

1. What is your opinion on quality of public transportation?

**The buses do not pass so often.**

Characterize public transportation as:

Slow                      **Average**                      Fast

2. What is your opinion on public places of your neighborhood?

Good                      **Regular**                      Bad

Explain why:

**The municipality does not care, they are discouraged**\_\_\_\_\_

3. What average time do you spend in public transportation during working day?

Less than 30 minutes                      **Around 1 hour**                      1 hour  
and 30 minutes                      More than 1:30 h.

4. During working week, to which locations do you usually go?  
(Work, school, hospital...)

Direction toward Frenklin and Central station\_\_\_\_\_

5.How often do you use public spaces near your neighborhood?

**Every day thanks to kids**\_\_\_\_\_

6.Before moving to this neighborhood what was your relation to neighbors?

**Good**                      **Regular**                      **Bad**

Explain why:

**Friendly** \_\_\_\_\_

7.What is now your relation to neighbors?

**Good relation to near neighbors**\_\_\_\_\_

8.How good is your community organized?

**Very Organized**                      **Organized**                      **Not Organized**

Explain why:

**I tried but does not work with all** \_\_\_\_\_

9.In case of personal problem, can you rely on the community for support and help? If yes, to whom do you rely?

**Yes, almost all, there is support** \_\_\_\_\_

10. In case you want to sell your house, what would be the market value of your house?

**17–18 million pesos**\_\_\_\_\_

11. In the last 8 years, how much money did you investment in your house? (proximate amount) **700.000 – 1 million pesos**\_\_\_\_\_

Please, fill in additional information about your living condition which was left out of the interview and this questionnaire.

## Subject H2

1.What is your opinion on quality of public transportation?

Characterize public transportation as:

**Slow**                      **Average**                      **Fast**

2.What is your opinion on public places of your neighborhood?

Good                      **Regular**                      Bad

Explain why:

**because people do not care about public space, nor about their own spaces**

3. What average time do you spend in public transportation during working day?

Less than 30 minutes                      **Around 1 hour**                      1 hour and 30 minutes                      More than 1:30 h.

4. During working week, to which locations do you usually go? (Work, school, hospital...)

**to work and supermarket**\_\_\_\_\_

5. How often do you use public spaces near your neighborhood?

**Sometimes** \_\_\_\_\_

6. Before moving to this neighborhood what was your relation to neighbors?

**Good**                      Regular                      Bad

Explain why:

**Real neighbors were our own family so the conclusion is to have more closer relations**\_\_\_\_\_

7. What is now your relation to neighbors?

**Regular (no many interactions)**\_\_\_\_\_

8. How good is your community organized?

Very Organized                      Organized                      **Not Organized**

Explain why:

**The people do not act same as in times of struggle and unfortunately, friendships are very different**\_\_\_\_\_

9. In case of personal problem, can you rely on the community for support and help? If yes, to whom do you rely?

**No**\_\_\_\_\_

10. In case you want to sell your house, what would be the market value of your house?

**30.000.000 pesos**\_\_\_\_\_

11. In the last 8 years, how much money did you investment in your house? (proximate amount) **5.000.000 pesos**

---

Please, fill in additional information about your living condition which was left out of the interview and this questionnaire.

### 4.3. Observations on Living Experience from Las Higuera

During one month of living experience in Las Higuera, the researcher lived with the Rosario family from te Las Higueras housing project. He used unstructured ethnographic interviews for collecting information about the house of H13 family. During this period, the researcher kept a fieldwork diary. Within this fieldwork diary, he collected and organized all observations of current problems that occurred during his stay in the house. Besides these personal perceptions of the house, the researcher met other members of the community and conducted interviews with them.

According to James Spradley, “it is best to think of ethnography interview as a series of friendly conversations into which the researcher slowly introduces new elements to assist informants to respond as informants.”<sup>155</sup> Spradley continues to argue that exclusive use of these new ethnography elements, or introducing them too quickly, will make interviews become like a formal interrogation. Rapport will evaporate, and informants may discontinue their co-operation. From this principal of ethnography interview, the researcher constructed conversations with neighborhood members using non-structural methods of investigating. In other words, guided by patrician's narrative and

---

<sup>155</sup> James Spradley "The Ethnographic Interview," (1979), Harcourt, Brace, Jovanovich.

complaints about their life situation the researcher would engage in questioning about housing and valuation of them. From this non-structural conversation about social, political and physical aspects of incremental housing, the researcher was able to construct deeper understandings of issues that are relevant to the housing of low-income families.

In agreement with the hosting family of the house the researcher inhabited, he invited other families from the neighborhood for lunch and dinner during weekends. During these meetings, they discussed their personal problems and living conditions. Over time, the researcher shared beer with different family members, and met up for occasional fry-ups in his kitchen or barbecue in front of the house.

The house of H13 family is located at the end of the street Las Taguas. This is the longest street that represents the spine of the Las Higuera incremental housing project. Family H13 lives in the second last house in the row of incremental houses. In order to enter the house a visitor must walk through the whole neighborhood. This walking distance from the nearest bus station is advantageous in regards of the family's relations to their neighbors. Most of the neighbors enjoy their free time in front of their houses and are always ready for conversation. The negative aspect of this urban organization of Las Higuera is that visitors need to pass by households in the entrance of the community, which belong to local criminal organizations.

The family H13 extended their house with two bedrooms (which occupy all four modules on the second floor) and on the first floor there is one more unoccupied module. During this living experience in Las Higuera the researcher used the bedroom on the second floor facing north. Moving in with suitcases to the house was a challenge. Staircases in the house present difficulties to cope with people taller than 150 centimeters. In other words, taller people who climb up these staircases are required to bow down until the first half of stairs are managed. The same thing applies when going downstairs. On the second half of the stairs, a person

must lower their upper body and rotate 90 degrees in order to avoid injuries from the ceiling. Beside this problem of height, the depth of the steps on the staircases is 18 centimeters, which creates insecurity for going down the stairs. People with bigger feet must step diagonally on the stairs and with special attention to every step. Moreover, between every step on the staircases there is a vertical wooden plate. This vertical obstacle limits a foot to stay on the step and prevents injury of placing a foot in between steps. The same obstacles increase the uncomfortable factor of the staircases. Every step you take is followed by the collision of a foot with the vertical obstacle. This problem with managing staircases to reach the second floor opens the topic of mobility within the house for people with physical difficulties, those overweight or aged members.

A corridor on the second floor has a yellow curtain on the left side and wooden structural wall on the right side. The yellowy curtain separated the children' s bedroom from the corridor. On the structural wooded wall are visible installation cables and unprotected electrical switches and sockets. On that same wall, two doors lead toward bedrooms. The guest room is bright and has views to the backyard of the plot. In the room, there is carpet, bed, sofa, ventilator and table on which was a television. For most part, the walls of the room are not painted. Moreover, on the walls of the room the lines and numbers of measurements drawn probably by constructors are visible. The external wall has one window with sliding wings. The window wings are stacked and useless. The window cannot close. The supporting wall for that window is a wooden structure with a single layer of gypsum board on the external outside. This thin layer of gypsum board has holes in it so light comes through it into the room. In this regard, this external wall of the room is without any thermal, aquatic or water insulation. Furthermore, the floor of the second floor is a wooden structure without any insulation. In other words, every step a person takes creates a strong sound, which is heard throughout the whole house.

The house does not have hot water. A hot water system was very expensive for the family budget so they decided to cut the supply and heat the water for showers in winter. The owner was very proud of painting her room walls in green. She painted her room alone in two days after her working time. She explained her plan to reposition the restroom from the original location to the backyard where they have some place for it. Moreover, Mrs. Lucia with her daughter plan to expand the second floor with two additional rooms which they plan to rent. They explained that one neighbor had expanded their house for two families. Lucia's daughter explained that their neighbor's house has two staircases. One is a spiral staircase and it is located in the central part of the house. This communication is for the original family, which connects the first floor with three sleeping rooms. At the back of the first floor, a second staircase that is used by the second family is located. This typology of two communications within one house is a model for the Rosario family to develop their house. They want to construct one more wooden staircase in the backyard of the house for people who rent rooms. This staircase will be part of an extension to the second floor in which there will be two more rooms to rent. This plan for their housing expansion depends on the income of the family members. It is a future projection for the family.

The family feels a strong identity with this house and they do not want to lose that. In contrast to their position, they know a few friends who sold their house and moved to other places to live. They mentioned two families who after five years of living in the house sold it. In this regard, every family in this project has signed a contract with MINVU that prohibited selling the property in the first five years. Some of their friends immediately after the five year contract expired sold their house. The usual price families get for their house is around US\$ 16.000. According to family H13, many families have planned to sell their houses.

The H13 family is a single headed household. She prefers to live alone. This preference derives from a long history of violent

partners. Although she stressed the preference to live alone and that for her “there is no use of these men,” she developed a strong dependence on her partners. This statement is supported by the fact that her past and current partners settle most issues related to the household. This dependence is evident in the process of extending the house and low level of maintenance of it. Her previous partners built almost all the phases of incremental growth of the house. These phases include spatial expansion, division of the second floor, dislocation of staircases, and improving interior materials of the house. After this extending, the house did not go through any changes and suffers from low maintenance.

Family H13 complained about living expenses in Santiago. She claims that politicians do not understand the position of low-income populations in Chilean society. With different social housing programs, they just aim to collect political points for their next election. In this regard, she said that Chilean politicians and professionals respond to low income needs with colorful houses. Those colorful houses, referring to the Las Higuera housing project, she understands as a governmental joke on the account of families below the poverty line.

Family H13 pointed that her house is very quiet and peaceful. This quite part of living in Las Higuera is something she never had before. During her life in the slum neighborhood of *la Toma Peñalolen* there were rare if any moments of peace and tranquility. Especially during the first years of living in the slum, she felt insecurity all the time. According to her story, police would interrogate people in the slum in middle of the night, sometimes at 2am, 3am or 4am. They would storm into the wooden houses and kick out all the members of the family in the street until they searched the houses. It was a very dramatic experience for her young daughters, which at that time were 7 and 10 years old. Besides police activities in the slum, many criminal organizations would also intrude in their lives. In conclusion, her life in the slum was day to survival and fighting for her rights. Beside these

constant treats from outside, Mrs. Rosario explained that as a member of the slum she needed to participate in community meeting all the time. In this regard, she was almost never left alone and most of time with her neighbors. In contrast to this life experience, living in Las Higuera is privatized and a quiet life without outside impact or any community obligations. Every family enjoys their private space and deals with their own problems alone. Since they achieved their aim of having, "a proper house" families prefer not to participate in community activities any more. This phenomenon of privatization and isolation of families are commonplace in contemporary housing projects for low-income families.

#### 4.4. Sample of Photo-Elicitation Interview (PEI)

Photo-Elicitation Interviewing (PEI) in this research analyzes resident's subjective responses to the images which they took documenting their house. This method examines dwellers' personal meanings and values of the house. Roland Barthes argues about the relation between researchers and researched.<sup>156</sup> He defines four different situations where photography plays an important role in gathering additional information about a research topic. One of these categories describes the researcher's position of observing participants taking photos of their living environment. This idea of participant taking photographs to construct their argument about housing is present in this research.

Ulf Wuggenig uses photography taken by participants as subject analysis of the matter being photographed.<sup>157</sup> He introduces methods in which the tenant uses a camera to document 12 pictures of their living environment. In order to achieve precise

---

<sup>156</sup> Roland Barthes, "Camera Lucida: Reflections on Photography," (1982), Hill and Wang.

<sup>157</sup> Ulf Wuggenig, "Die Photobefragung als projektives Verfahren," *Angewandte Sozialforschung* 16, (1990): 109-129.

results with photography Wuggenig gives the interviewee instructions such as, "what do you like most about your own room and in the flat (or house)? What do you like least about your room and in the flat (or house)? Please photograph first the three motifs you like the most in your room and then the three you like the least. Then please repeat this for the rest of the apartment. It does not matter which room you choose. All in all, you can use 12 pictures."<sup>158</sup> This research uses modification of Wuggenig's guideline questions. In respect to his method, during actual interviews of family members from incremental neighborhoods the researcher asked the participant to take seven pictures of their house. These photographs are used to stimulate the discussion between researcher and participant about their experience of living in incremental housing. From this photographic material, the researcher got access to additional information of the participants' perceptions of their living environment.

To collect the seven photographs of incremental houses, the researcher gave the interviewee directions: What do you like about your house? What do you like least about your house? Please photograph first the three motifs you like about house and then the three you like the least. Then please take one photo of a part of the house you feel proud about. It does not matter which room or part of the house you choose. Overall, you can use seven pictures.

After taking seven pictures, the researcher asked the interviewee to explain every picture and to discuss the topic of the picture. With this discussion, the researcher engaged in conversation with the family and focused on functional and constructional problems of the house. This represents the first stage of analyzing these photographs. Family members created their own narrative of taken pictures and delivered to the researcher more personal insights of their house. The second phase of analyzing these photos represents the researcher's interpretation of them. After the fieldwork, the researcher

---

<sup>158</sup> Ibid.

annualized these photos in order to constrict his personal judgment of incremental houses. From these two stages, the researcher brought together information about the dweller's oral and photographic perceptions of their house.

### Subject H3



**Proud:** This part makes me proud, this part, dining–living room. I do not know why. I have not thought about it. Because one can receive people, because when we have party we would receive friends in this pieces.



**Good 1:** I like everything about the house. This part I like, because it's great, because when company comes we have a place for visitors. I like that.



**Good 2:** What I like? The kitchen that is great. I wish I had six dishes to make empanadas, because I do that everything.



**Good 3:** I like the bathroom because it is big, because we have hot water.



**Bad 1:** What I dislike is sleeping room of my son. Everything is closed here, so no way out. I would like to change it, because it has no entry, only the bathroom.



**Bad 2:** The stairs do not like, because it is poorly made. The steps are all different high. It needs to be fixed.



**Bad 3:** Here I would like to make second bathroom. I do not like the fact that we have only one bathroom. When you get sick you must go downstairs for restroom

## Subject H7



**Proud:** Diner. I arrived in here in the afternoon and the table is set. The whole family: girls, my son, and that is a blessing. Having a home and have a family, is a blessing. Be happy with little things you have. We made soup, but we make it all together. So it's a pride.

**Good1:** Look, I always dreamed of a playground for my daughter who was the first child we got. When we expand, we expanded the front yard. What pleases us is where to stay, primarily because it was not where we were staying. Maria's house was at the bottom here, Las Taguas, but the neighbor who was here did not like because I was in the corner. They did a lot, on Maria Avenue, and eventually repented. We were lucky enough to push us further out, because there you see the passages, there you cannot to laze very outside. They threw a little to the outside, but little. Before we made a garden, we had here. That was the first gate, and made a garden outside, a fence and looked cute.



**Bad1:** The original bedrooms. The floor was delivered uneven. The original floor bedroom was ugly. That has always hurt us when we discover that came so uneven. Not to put a nightstand, a TV. We had to put a piece of cardboard under the pedestal to level off. That is what most disappointed we were. The floor plate, ugly. Think you're poor, but we do not deserve such a bad question. Because if you look at the buildings concerned that, those things have never been to floor. These are flats, these plates, sound less, resist more. The floor I did and saw when you walked upstairs heaven, and came with mesh and insulating thing.



**Bad3:** This is the floor, did you see? [Moving the floor] That was the original. This is the famous OSB. You see the difference. This plate does not ring. People have done more things yes, I am one of those people that I do something, and you, do you like this? One is formed to do something. I say you have to have a space to do things. I worked for other things. I had to put down a bed to sleep with Mary, because the girls could not sleep with the heat.

## 4.5. Analytical Drawings of Customized Houses

From analysis of base houses from both projects, the researcher presents achieved customizations by dwellers in the form of architectural drawings. Inevitably, every house is customized, but the base house underwent additional adjustments in comparison to conventional housing solutions. To analyze customized layouts of incremental houses, this researcher presents four categories. These categories are spatial, formal, functional and finishing of surfaces. To examine these categories, the researcher introduces subcategories which specify particular customization methods (table 23). In this regard, customizations by dwellers are captured with a system that classifies their construction acts.

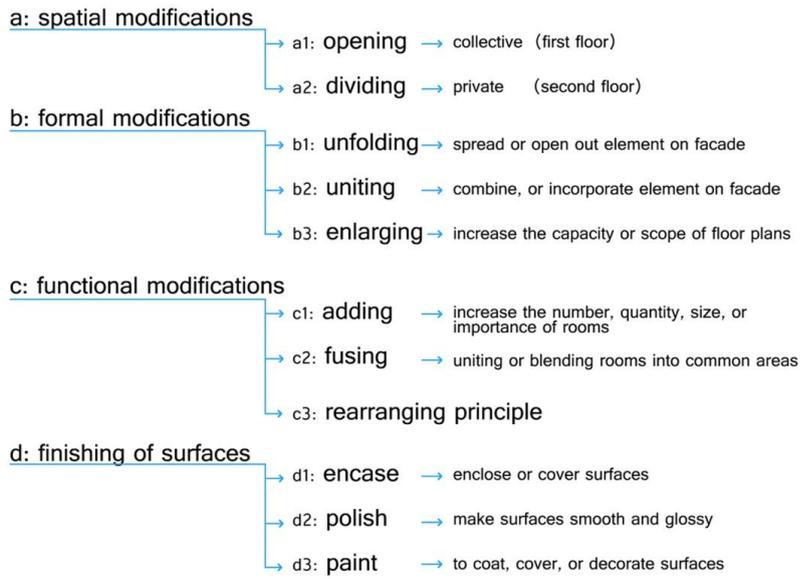


Figure 23. Structure of four categories of customizations and their subcategories

## 4.5.1. Elemental Lo Espejo

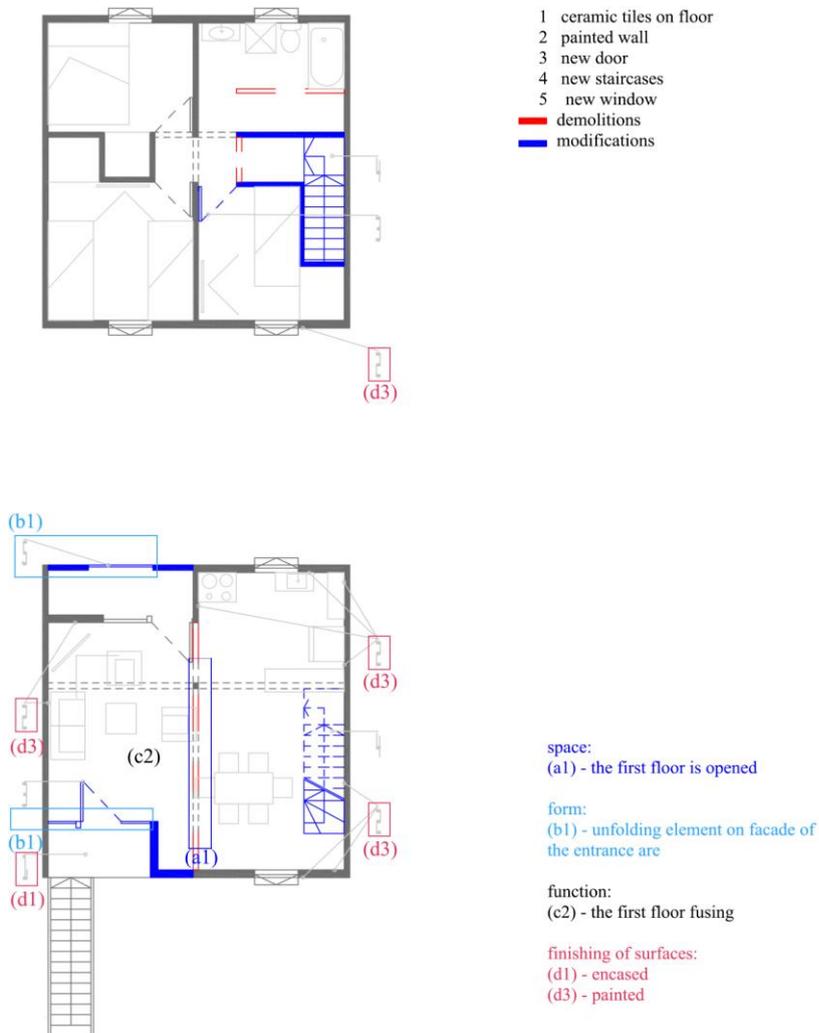
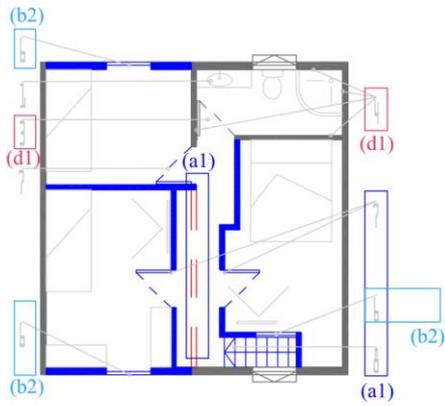
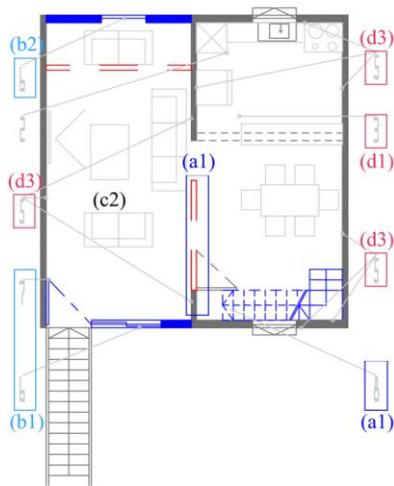


Figure 24. Drawings of modified E1 house, Elemental Lo Espejo



- 1 new bathroom equipment
- 2 new kitchen equipment
- 3 ceramic tiles on floor
- 4 ceramic tiles on wall
- 5 painted wall
- 6 new window
- 7 new door
- 8 new staircases
- demolitions
- modifications



- space:  
 (a1) - the first and the second floors are opened
- form:  
 (b1) - unfolding element on facade of the entrance are  
 (b2) - uniting element on facade
- function:  
 (c2) - the first floor fusing
- finishing of surfaces:  
 (d1) - encased  
 (d3) - painted

Figure 25. Drawings of modified E2 house, Elemental Lo Espejo

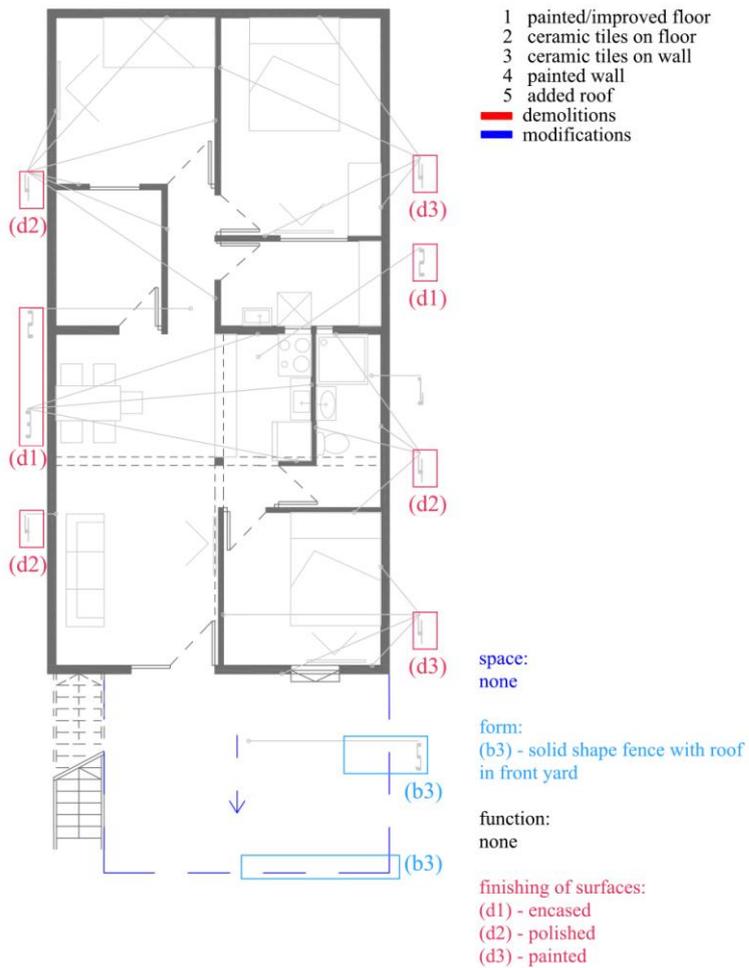


Figure 26. Drawings of modified E3 house, Elemental Lo Espejo

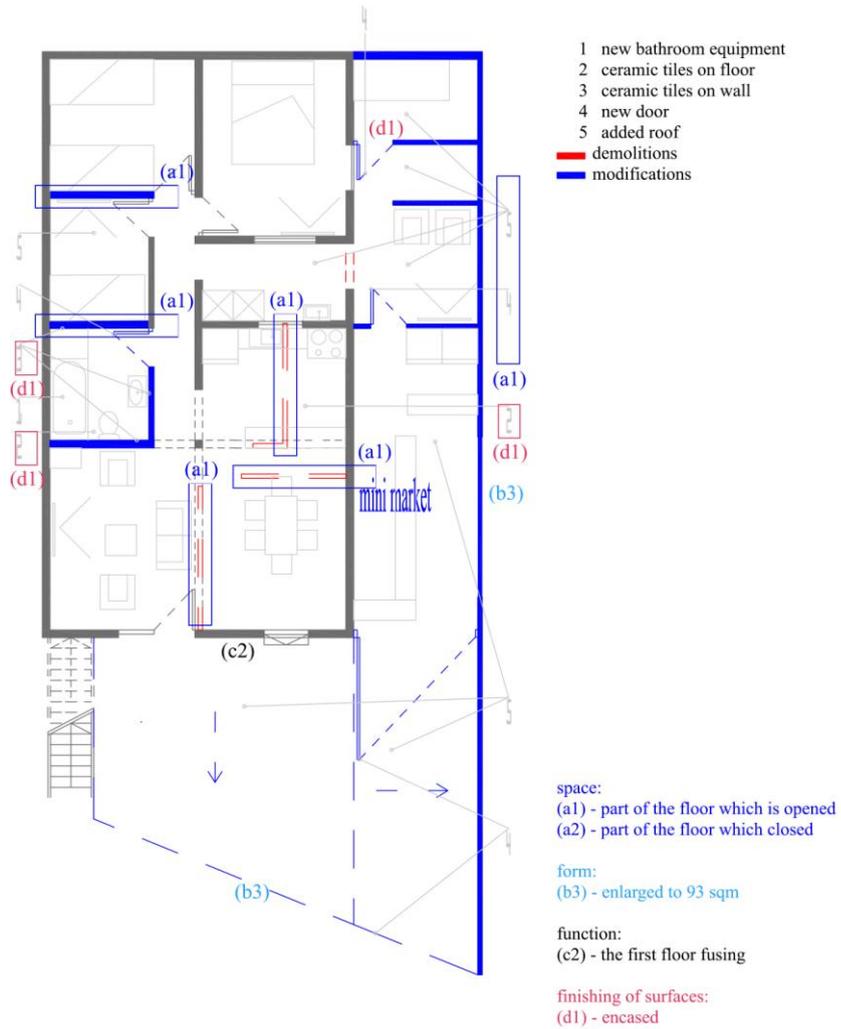


Figure 27. Drawings of modified E4 house, Elemental Lo Espejo

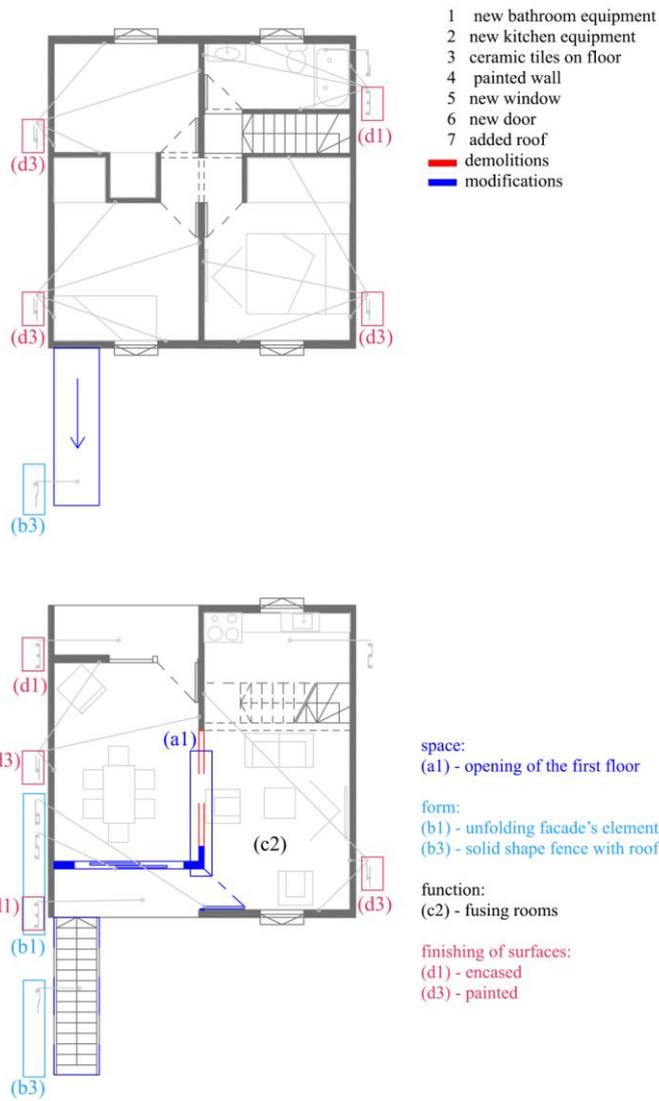


Figure 28. Drawings of modified E5 house, Elemental Lo Espejo

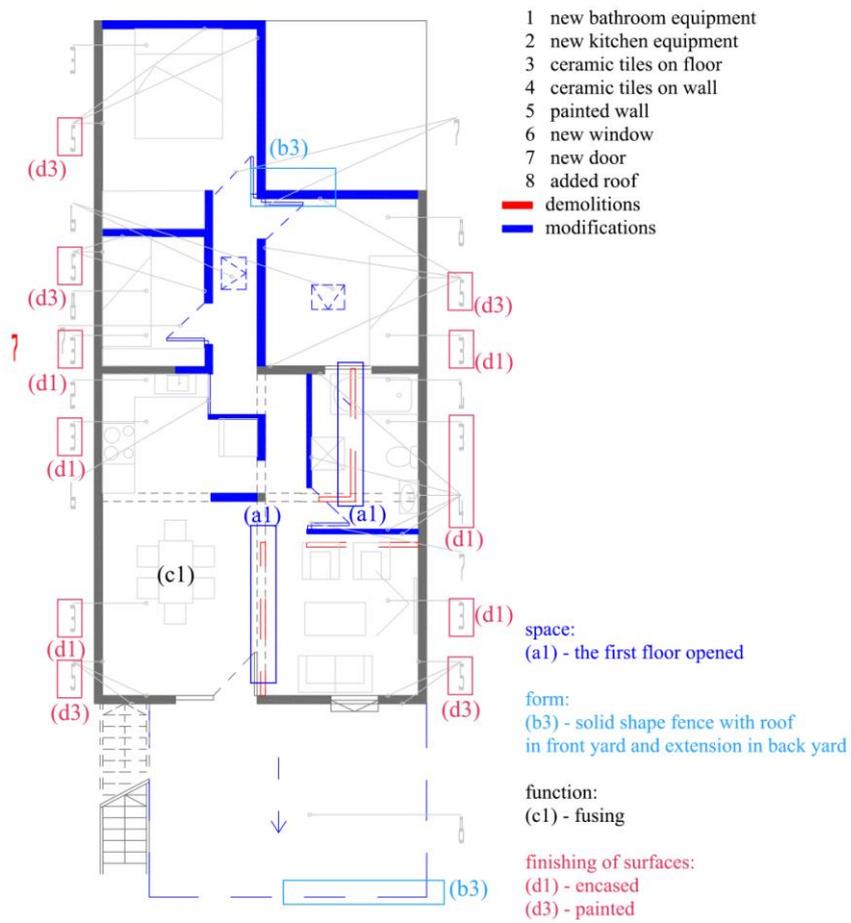
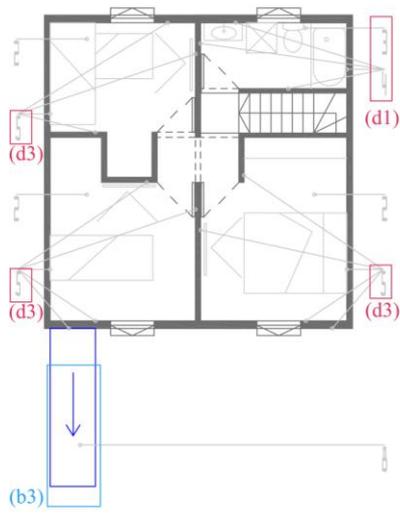
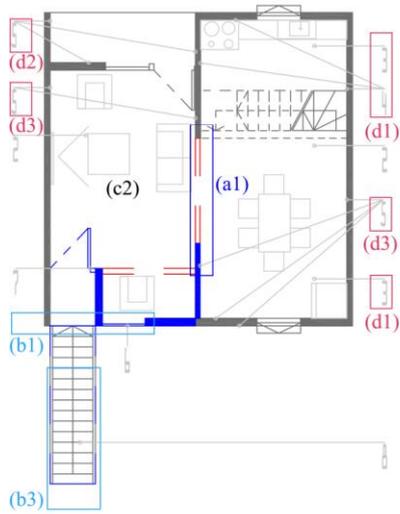


Figure 29. Drawings of modified E6 house, Elemental Lo Espejo

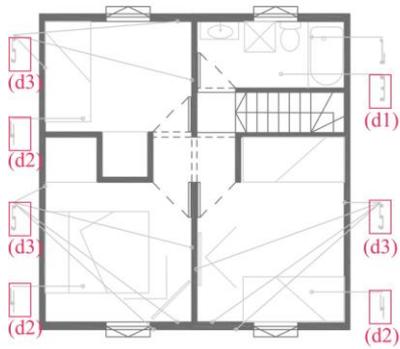


- 1 new bathroom equipment
- 2 painted/improved floor
- 3 ceramic tiles on floor
- 4 ceramic tiles on wall
- 5 painted wall
- 6 new window
- 7 new door
- 8 added roof
- █ demolitions
- █ modifications

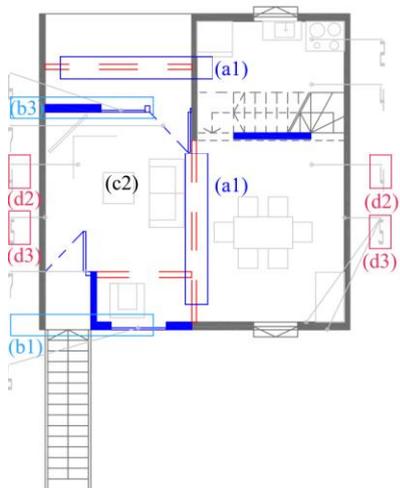


- space:
  - (a1) - the first floor is opened
- form:
  - (b1) - unfolding element on facade of the entrance area
  - (b3) - enlarging house with veranda
- function:
  - (c2) - the first floor fusing
- finishing of surfaces:
  - (d1) - encased
  - (d2) - polished
  - (d3) - painted

Figure 30. Drawings of modified E7 house, Elemental Lo Espejo



- 1 new bathroom equipment
- 2 new kitchen equipment
- 3 ceramic tiles on floor
- 4 painted/improved floor
- 5 painted wall
- 6 new window
- 7 new door
- █ demolitions
- █ modifications



- space:
  - (a1) - the first floor is opened
- form:
  - (b1) - unfolding element on facade of the entrance area
  - (b2) - enlarging balcony
- function:
  - (c1) - the first floor fusing
- finishing of surfaces:
  - (d1) - encased
  - (d2) - polished
  - (d3) - painted

Figure 31. Drawings of modified E8 house, Elemental Lo Espejo

## 4.5.2. Las Higuera

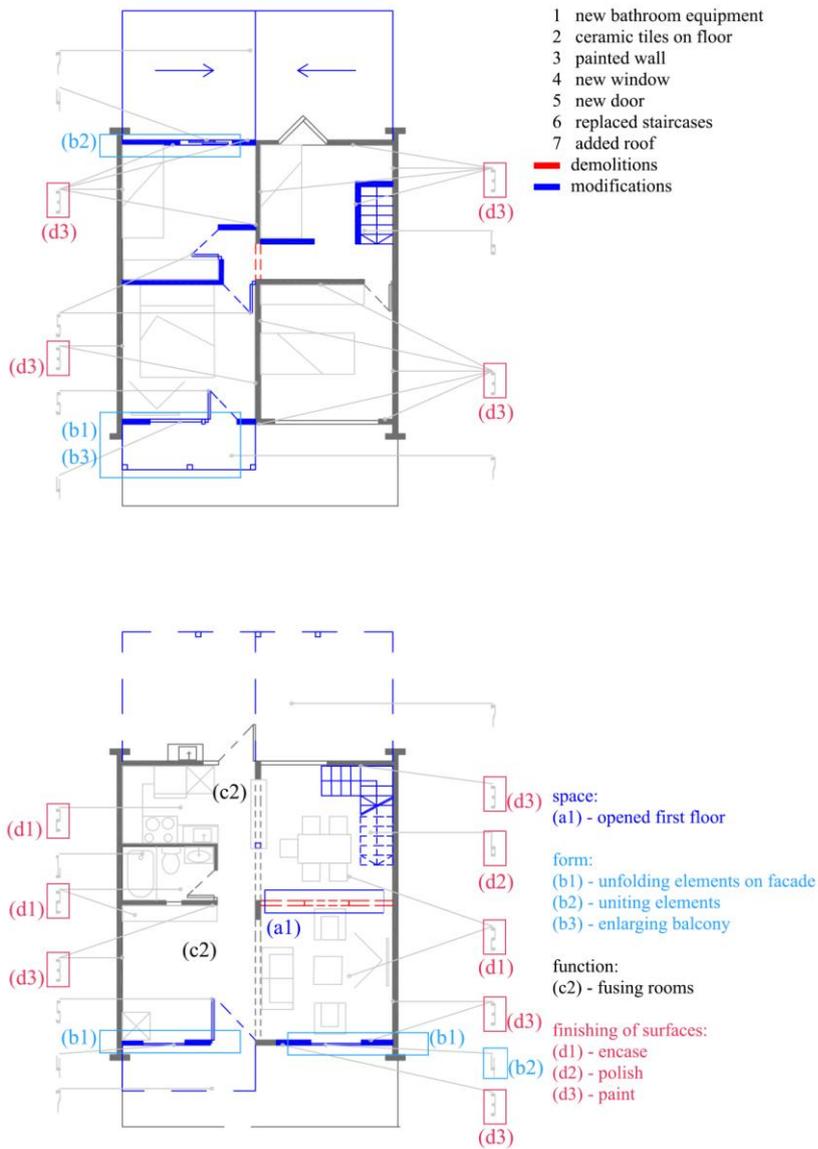


Figure 32. Drawings of modified H1 house, Las Higuera

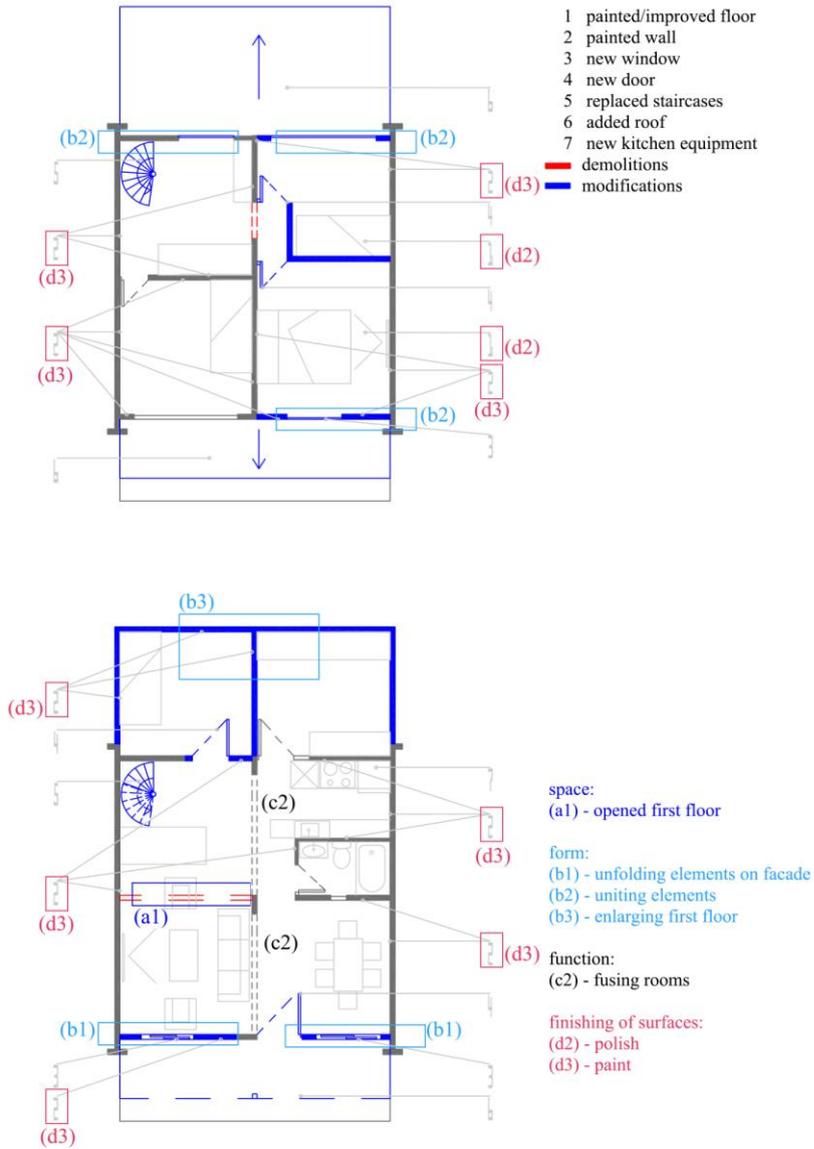


Figure 33. Drawings of modified H2 house, Las Higuera

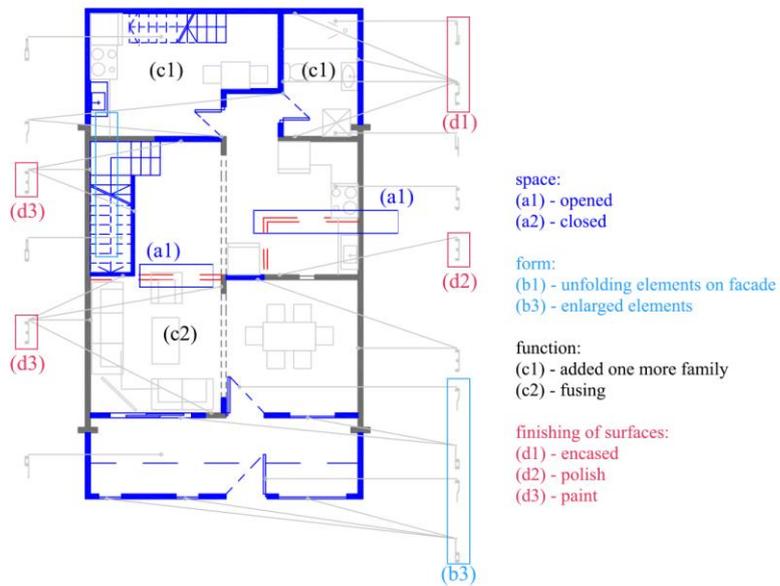
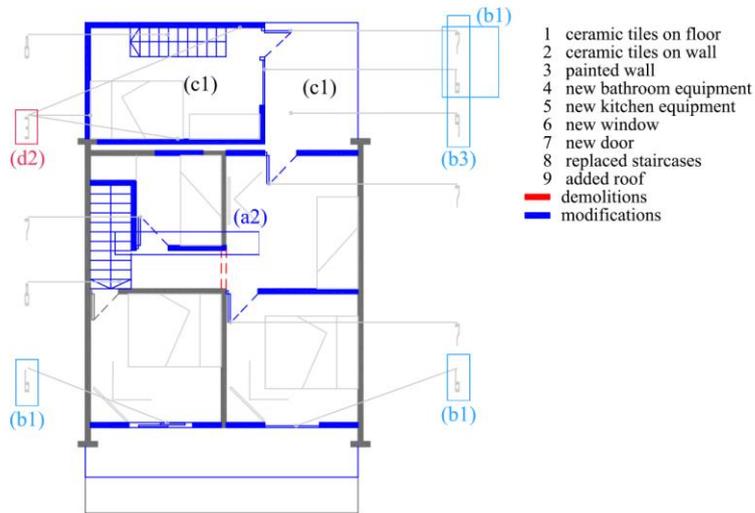


Figure 34. Drawings of modified H3 house, Las Higuera

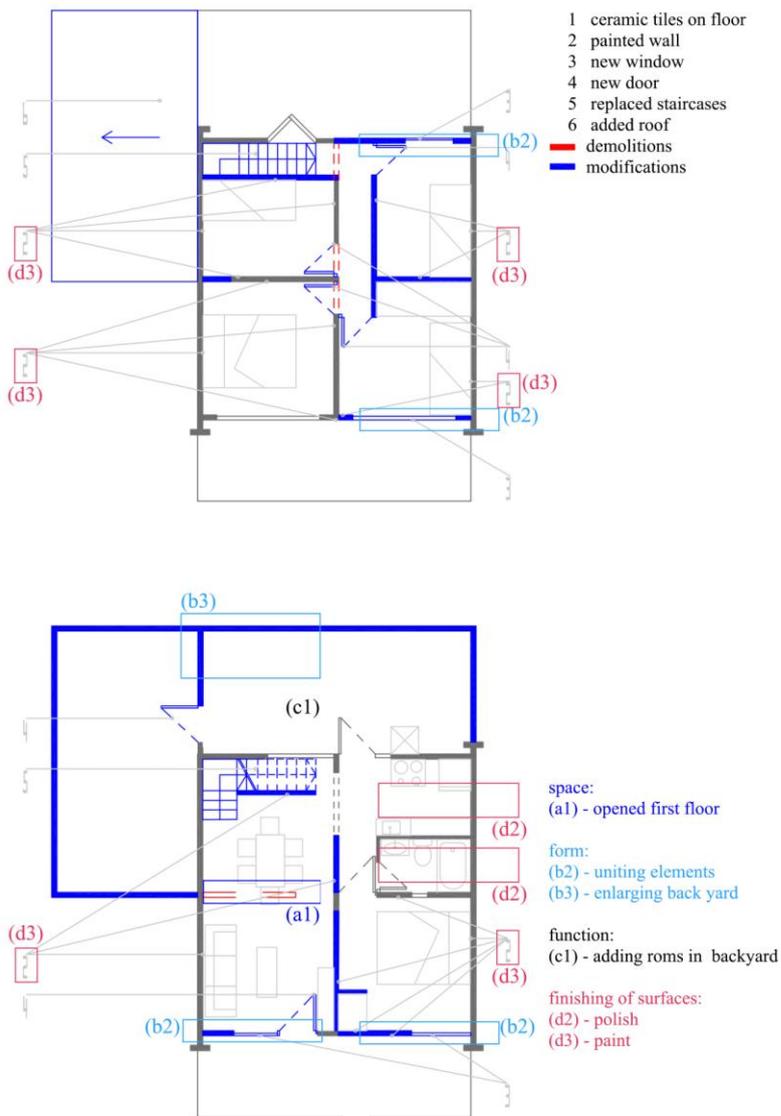


Figure 35. Drawings of modified H4 house, Las Higuera

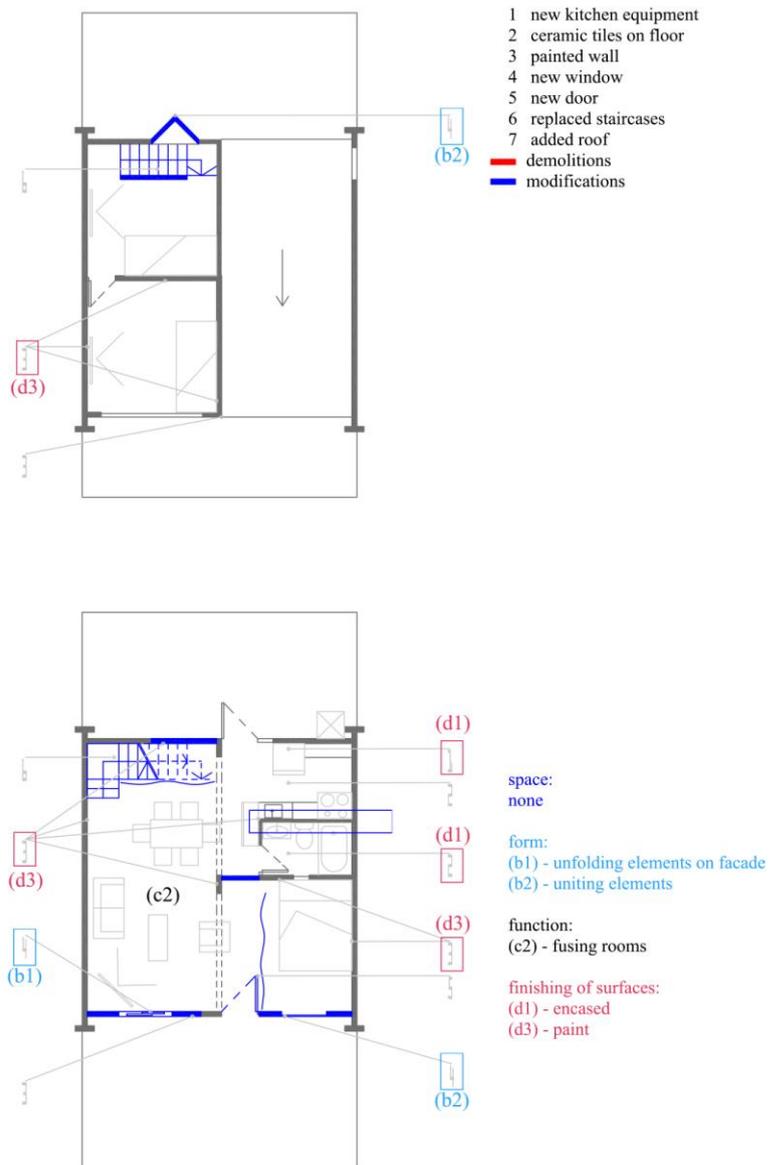


Figure 36. Drawings of modified H5 house, Las Higuera

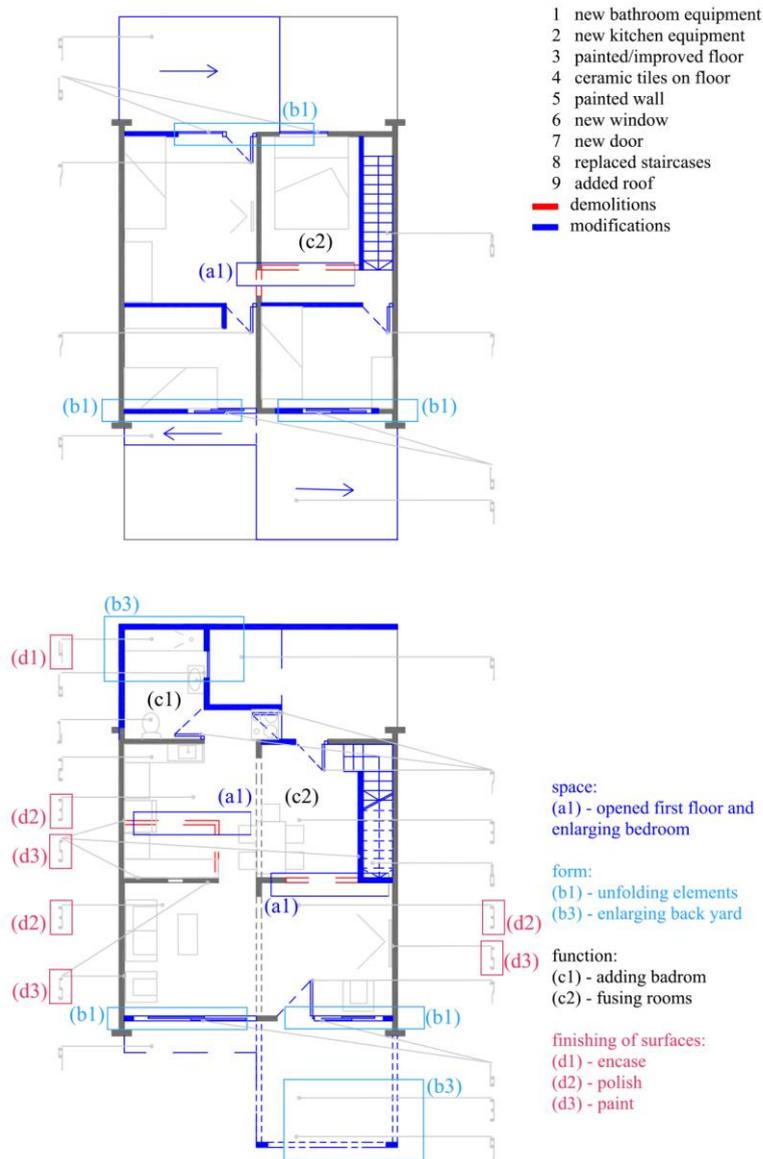


Figure 37. Drawings of modified H6 house, Las Higuera

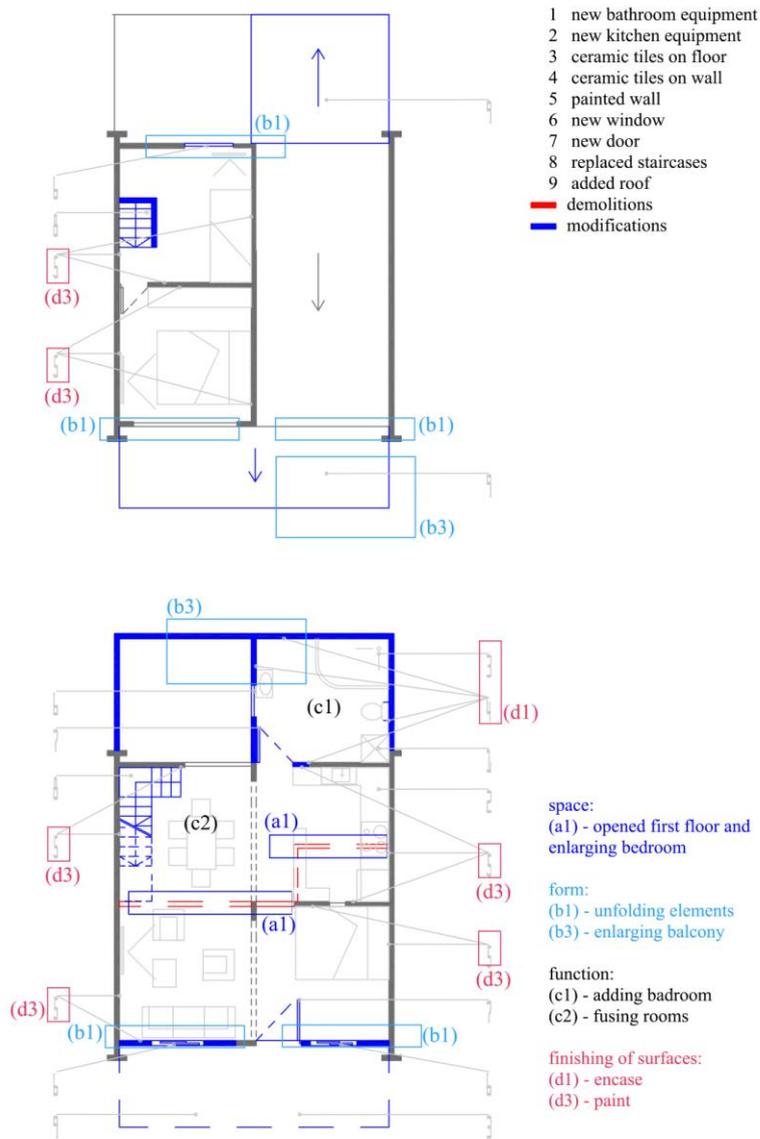


Figure 38. Drawings of modified H7 house, Las Higuera

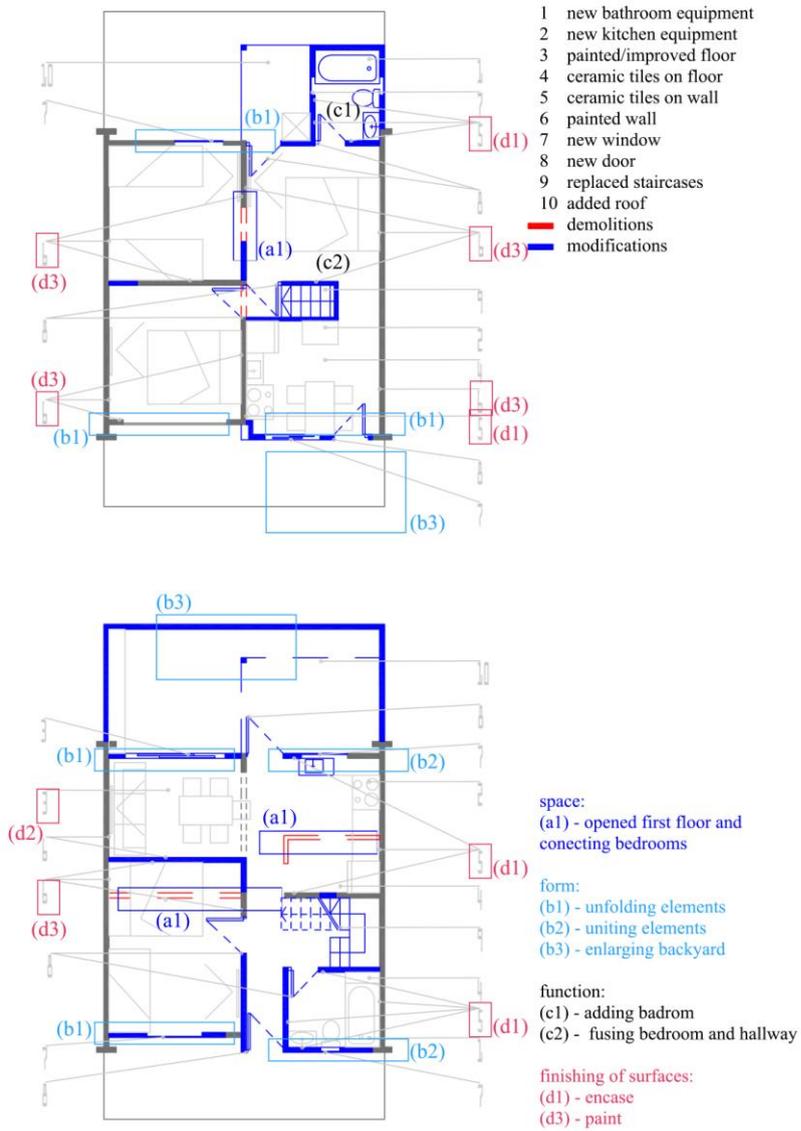


Figure 39. Drawings of modified H8 house, Las Higuera

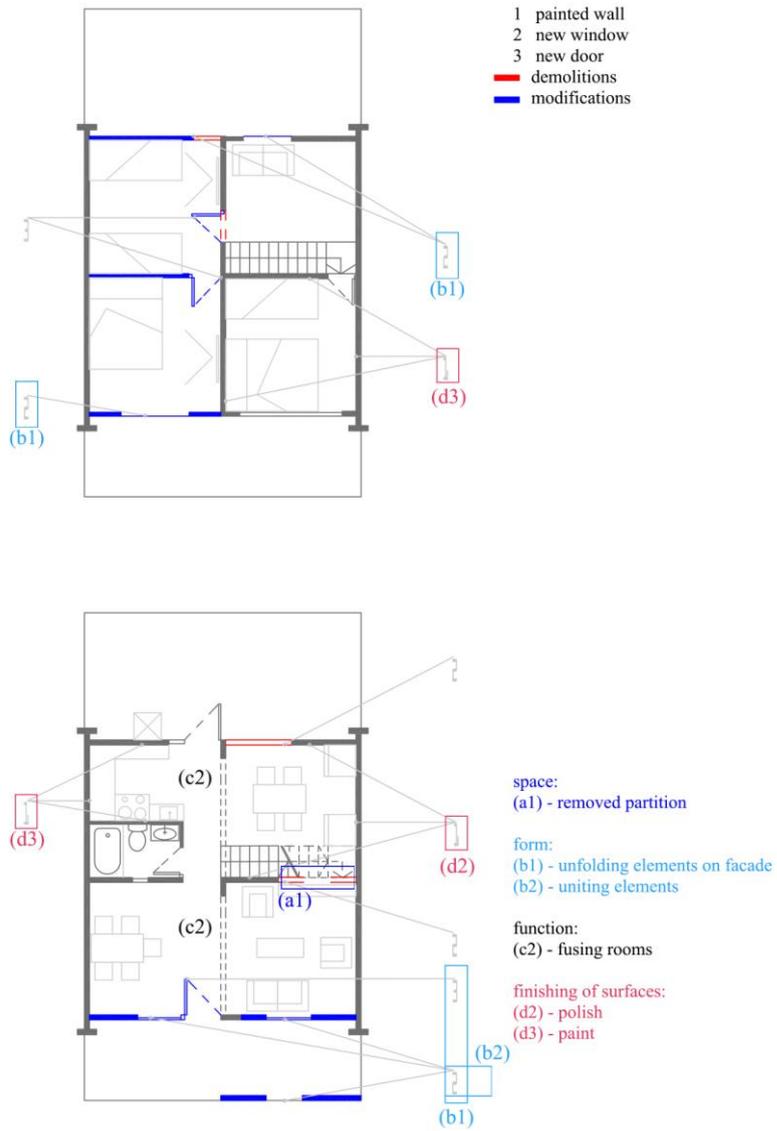


Figure 40. Drawings of modified H9 house, Las Higuera

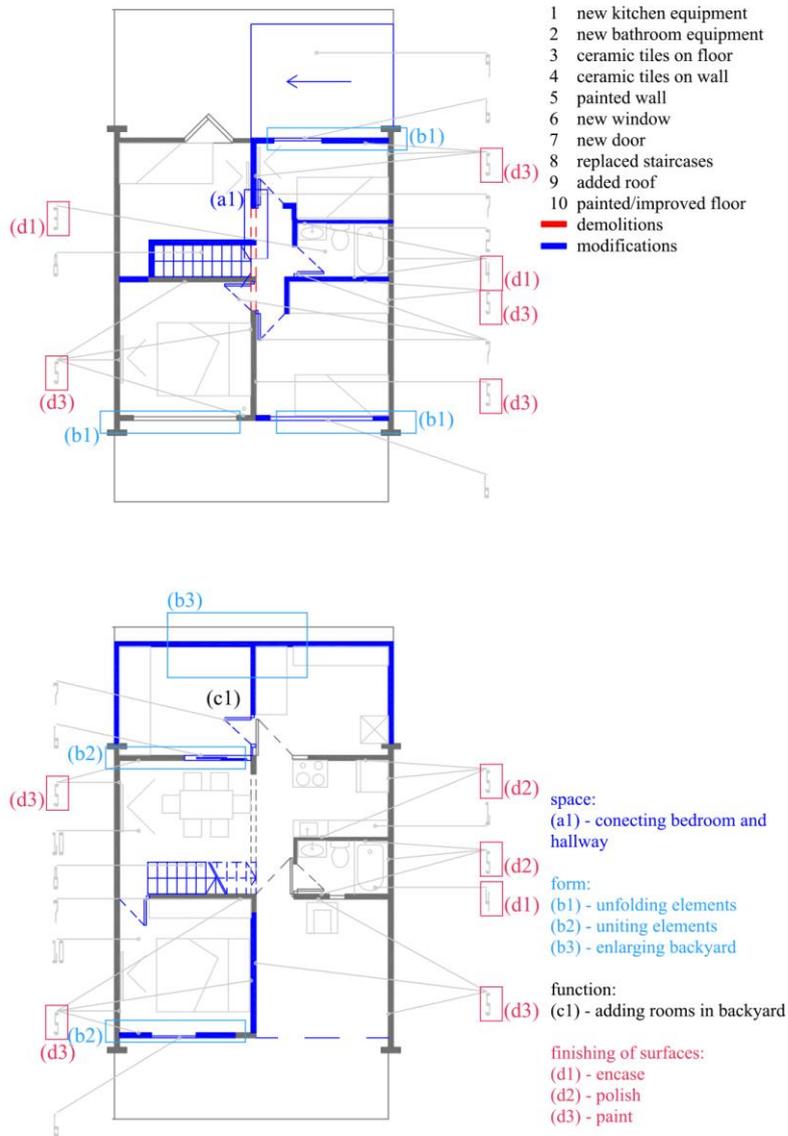


Figure 41. Drawings of modified H10 house, Las Higuera

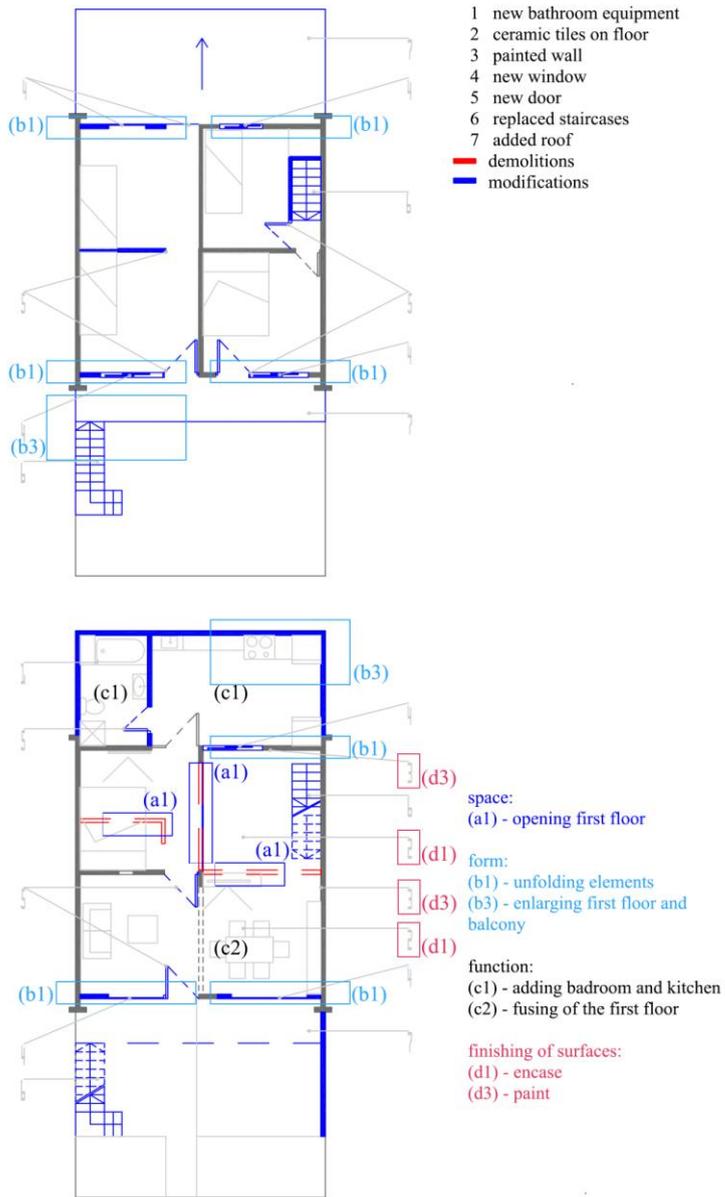


Figure 42. Drawings of modified H11 house, Las Higuera

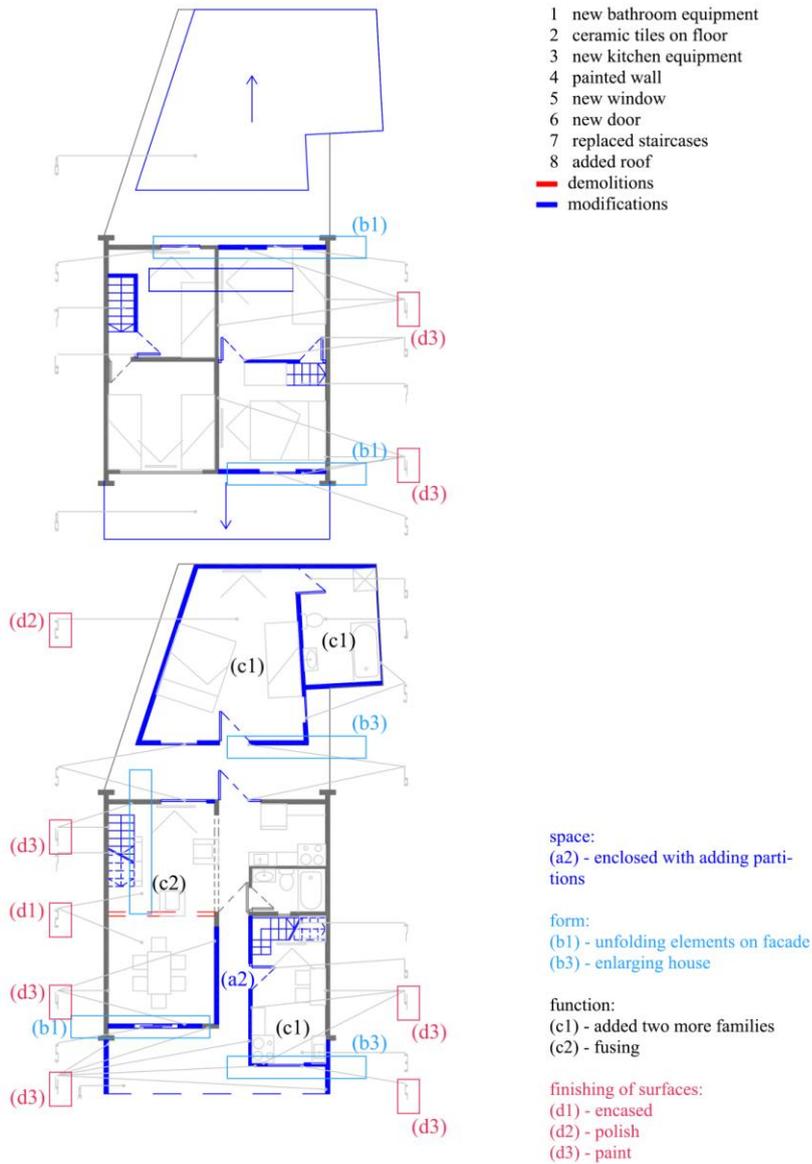


Figure 43. Drawings of modified H12 house, Las Higuera

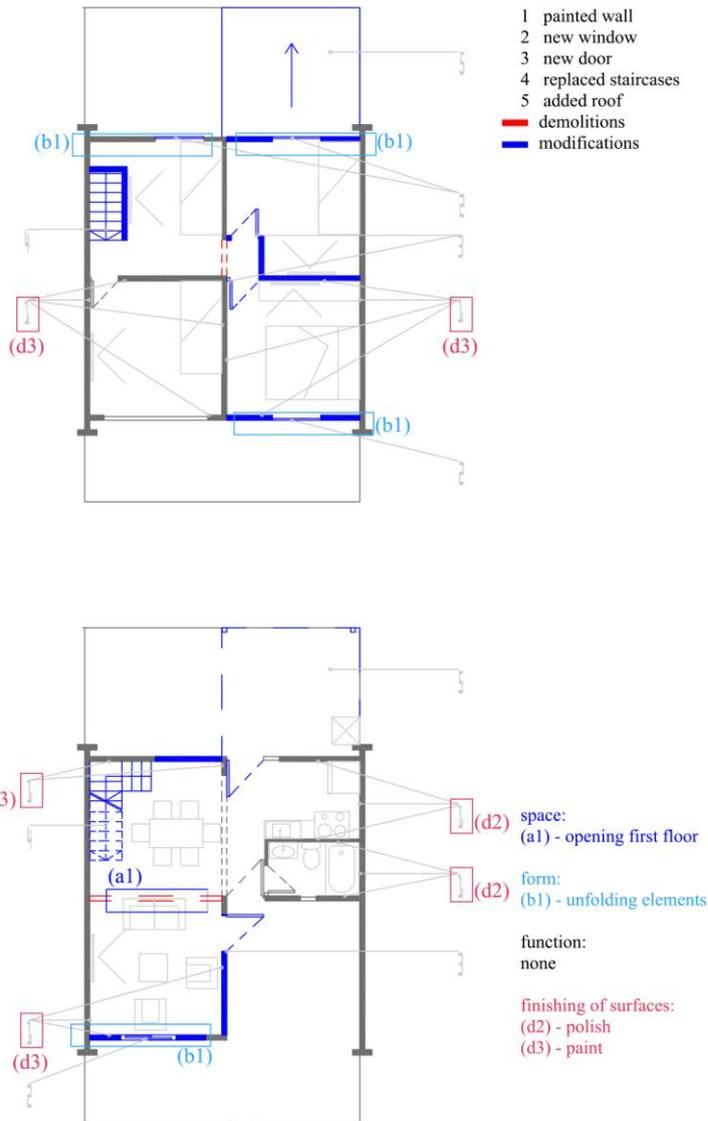


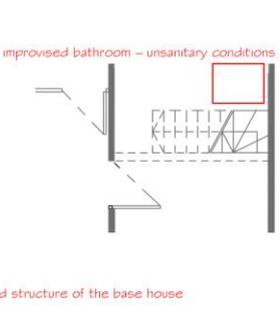
Figure 44. Drawings of modified H13 house, Las Higuera

# Chapter 5. Designing and Inhabiting the Base House

## 5.1. Analyzing the Design of the Base House

In order to analyze the construction quality of the base house, I present the dwellers' evaluations of their houses. This evaluation originates from different research methods such as interviews, photographs, and drawings. Every element about the base house is represented with dwellers' notes, critically examined by the researcher. In the first part of this subchapter, I present the base house of Elemental Lo Espejo. In the second part, I present analysis of the Las Higuera houses.

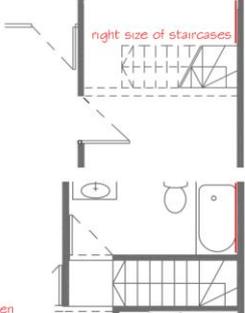
E1 Base House

interviews	photo-elicitation	drawings
<p><i>previous owner did not use staircase to third floor</i></p> <ul style="list-style-type: none"><li>• "She lived with her partner, <u>the husband was too fat</u>. She also had difficulties to climb stairs. That's the reason why they lived on the second floor and their child with the girlfriends on the second floor. They had a bed in the living room. The third floor was occupied by four people.</li></ul> <p>And when you came here and saw this house, what did you feel? Just, I like it. Because <u>couple could not climb the stairs, they put a bucket to pee</u>, then as [showing facial expression of disgust] <u>improvised a bathroom behind the staircase</u>, like a jar behind the stairs. Apart from that I liked a house [laughs]."</p> <ul style="list-style-type: none"><li>• Now, if you had to put a note when you came here without the customizations, what mark you would give? A two - was all ugly [laughs].</li><li>• The kitchen functions good? Yes, also because the kitchen is also bright, is not dark. But just a little problem with the staircases? Yes, because <u>I have to bend to go under it</u> [laughs]. <i>problem with height of delivered staircases</i></li></ul>		

Family E1 reported that the previous owner could not use the interior staircases of the base house. This situation created functional issues imposed on the family. To respond to this onerous situation they constructed an improvised bathroom under the existing staircases and used their living room for sleeping. This situation resulted in an unsanitary environment where the kitchen, improvised bathroom, dining, and living room were in one room on the second floor of the duplex house. The third floor was used for kids to sleep in. They preserved the original floor plan of

the third floor. The current owner complained that passage under the staircases toward their kitchen was low and uncomfortable.

**E2 Base House**

interviews	photo-elicitation	drawings
<ul style="list-style-type: none"> <li>• "How were the staircases? Was wide, started from there to here. But it was as well, ended in a break here and there as it was <u>too big, very big, it covered the kitchen. It was very wide staircase, too wide.</u> I changed the stairs, replaced there." <i>big size staircases – not correct statement</i></li> <li>• "And the second floor how was it before? The entire second floor was only bedroom, and my bedroom door was there. Everything, everything around clogged. And there's the other bedroom of Max and my other son here. It was like a <u>tiny corridor</u> no more, was the staircase, finished the stairs and was arriving and there was the bathroom door and walk to the bathroom." <i>small corridor on the third floor</i></li> <li>• "The bedroom and bathroom were completely remodeled. In the bathroom changed the toilet, I put ceramic, I put a shower, so that the tub is now good. I put a shower, a walk-iron, gets one inside. Because <u>the bathroom leaked, it started dripping water from the tub and it began to leak down.</u>" <i>leaking bathroom - leakage in the kitchen</i></li> </ul>	 <p style="text-align: center;"><i>unsanitary condition of the bathroom and kitchen</i></p>	

Family E2 reported that the interior staircases of the base house were too big and occupied a large area of the floor leaving a small space for the kitchen. Considering that the staircases were delivered with 80 centimeters width, I do not agree with their statement. According to family E2, the corridor at the third floor was small and narrow. Bearing in mind the size of the house, the small corridor is an inevitable property. In addition, the original windows of the base houses were small which resulted in the house having issues with moisture. Family E3 complained that the rooms were small and the house lacked bigger windows which resulted in dark areas without natural ventilation and illumination.

**E3 Base House**

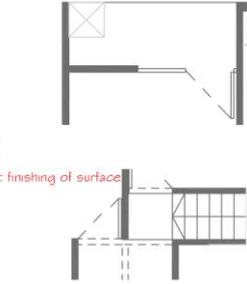
interviews	photo-elicitation	drawings
<ul style="list-style-type: none"> <li>• "And you like enlargement? As it is, well, it's all right. If you put a note? <u>I give a ten, I love my home.</u>" <i>satisfied with the ownership of the house</i></li> <li>• "And the light, like the light coming? <i>low level of illumination</i> No, it's very dark. I'd love to be brighter, but here you cannot do anything, because as is the house up there, you can not to make windows, to give firmness to the house above. <u>I intended to break a piece of wall and wanted to put a window, and cannot because the house is no stable enough for that.</u>" <i>misconception of the house</i></li> </ul>	 <p style="text-align: center;"><i>dark interior of the house – high level of electricity consumption</i></p>	

## E4 Base House

interviews	photo-elicitation	drawings
<ul style="list-style-type: none"> <li>• "Full brick house All, all, around the contour is closed with brick. I do not have on the side neighbor, but I have on the other side. You always hear when if they have entered their houses and this ..."</li> <li>• "You do not have a lot of light, natural, sun? Of course. <u>So it is very dark, when you go get here and the first thing you do is turn on the lights. That's my pet.</u>" <i>dark interior of the house</i></li> <li>• "And on the quality, for example the doors, is it good or bad? <u>All my doors are good.</u>" <i>satisfied with the original doors</i></li> </ul>	 <p><i>the interior courtyards do not provide ventilation and illumination</i></p>	

Family E4 pointed out that the roof of their base house was not functioning well. The orientation of the roof was misplaced, so that the roof leaked in the master bedroom. According to family E4, the house is without natural ventilation and illumination. In contrary, Family E5 was satisfied with the brightness of the base house. However, they were concerned with their age, not being able to use the staircases which will enable them to use the floors of their house. They complained about the original material of the walls in the base house. This complaint is a manifestation of their misconception of the structure of the house.

## E5 Base House

interviews	photo-elicitation	drawings
<ul style="list-style-type: none"> <li>• "I said when you are older, how am I going up the stairs, because I have ladder here and I have ladder here. Then that will be the topic." <i>concern about the staircases</i></li> <li>• "And original materials? Are the materials, how was it initially? Well, most see here I would place a middle note, because well they told us we could not place concrete or cement on all walls supposedly because it was much weight to the house below, but for example, the issue is that if you want to drive a nail cement is very hard, the nail folds, and if you stick a nail for example those walls that are not concrete is broken because it is chalk." <i>misconception about the structure of the house</i></li> </ul>	 <p><i>good quality walls – without finishing of surface</i></p>	

## E6 Base House

**interviews**  
*small size houses from the outside, large space within*

- "It's great! The size is great, because from outsiders house are small. Everyone said no, it is matchboxes, but not, as you see here is super large space is extremely large. They delivered to us living room, kitchen, bathroom and a bedroom, but what we did after within the course of the committee, we postulate for the expansion of housing and made two further bedrooms."
- *not satisfied with space between living-dining room*
- "Well, for example, found that the spaces between the living room was not so great, so spacious but good, that was not an obstacle, then you have the options to go changing, to be able to modify, there is not to many structural damage as you can modify."
- "And with the entry of light? Natural light, is very dark? Yes, that, the roof on the patio prevents of entering more light. Back also in bedrooms, as matter a fact not too much light does enter there."
- "And how is the quality of the doors, the windows? I would put a note-five. They are original, the windows are original"

*low level of illumination*

**photo-elicitation**



*low quality of materials for dividing partitions*

**drawings**



*dark areas of the house*

Family E6 perceives the base house as a spacious house. They did not like the gypsum board of the interior partitions. The base house did not have enough light and the kitchen window was not enough for good ventilation. According to E6, apart from master bedroom, the other rooms were in a bad condition. They were satisfied with the living and dining areas of the house. Family E7 pointed out that the duplex houses do not have a courtyard. Furthermore, they reported that the floor between the first floor house and the duplex house is without insulation, which decreases privacy between families. In addition, they admitted that their base house had a low level of natural illumination. From my analysis, I conclude that this statement is not correct.

## E7 Base House

**interviews**  
*complain about absence of the courtyard*

- "the only bad thing that we have no courtyard, us on the second floor. That's bad, the difference down there has patio the first and second floor do not have."
- "Regarding the natural light? Not good, I here am spending 11 lucas (11,000 pesos) light"

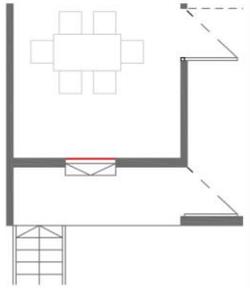
*dark interior of the house – high level of electricity consumption*

↓  
*not accurate statement – 2nd and 3th floor house have good natural illumination*

**photo-elicitation**



**drawings**



*small size windows – only reason to believe that the house is dark*

## E8 Base House

interviews

- "What things when you arrived didn't like?  
The type of windows I do not like this type of windows"  
*dislike the original type of windows*
- "What size?  
Yes, yes so great, because it was bright That is also why I chose the second floor."  
*good size of original windows - brightness of the houses on the second floor*

photo-elicitation



drawings



unfinished surfaces

plan to change the staircase and layout of the second floor

Family E8 rejected the type of windows of their house. They complained about the conceptual design of the houses. They rejected Elemental's project at first. The reason why they rejected the project was the density and poor public spaces of the neighborhood. They are in favor of exposed material delivered with the base house. They appreciated the texture and color of the brick in the interior. However, they reported that the base house was adapted and readjusted by them, and in near future they will continue rearranging it.

Family H1 reported that their base house had good natural light. This situation is the result of good sized and types of original windows. In contrast to the good quality of windows, they complained that the delivered doors were of poor quality. I reported accelerated deterioration of the house. One reason for the deterioration is dampness of the interior. This dampness is the result of bad insulation in the house. In addition, they complained about the breakdown of the bathroom. The original bathroom was delivered with broken elements.

## H1 Base House

### interviews

• "What was the original home?  
From here there was room. There were bathroom, kitchen and this space. That was like a courtyard where the chairs are. But from there to there, it was single room. Beams were placed here."

*good illumination of the house*

• "What about the natural light coming in the house?  
I like it, yes. Not very dark. I like it because here for winter sun comes early in the morning. And the sun shines all day here, I like it. And for the winter it gets very cold, because the sun does not come, but that no more."

*bad quality of the door and good quality of the windows*

• "And what about the quality of the doors?  
Are they placed? No, they were wrong doors.

And the windows?

No windows are all right. Good windows up, but the doors are bad, because several times damaged."

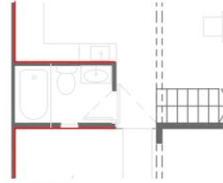
• "A big issue is moisture coming out there."

*rapid deterioration of the house as consequence of dampness*

### photo-elicitation



### drawings



*deterioration of original material*

## H2 Base House

### interviews

*grateful for owning the house*

• "R: No, it's still good, just be grateful, because from nothing today we have something that costs thirty million pesos, home for me is spectacular. As delivered, is horrible, as delivered was horrible."

*delivered base house was not acceptable*

• "we sat down and we were sad. And it's true, because it was so, or you see the cozy, good see, why not, why not have it, everything about it here, does not exist. Back then, there was nothing."

• "What about the natural light that comes in house?"

T: Yes.

*good level of natural illumination*

• "And regarding the kitchen?"

T: Very small.

R: We are squeezed when we there."

*small size kitchen*

### photo-elicitation



*swarming kitchen*



### drawings



Family H2 noticed that they were grateful for owning the house, but it was in horrible condition. They did not live in the base house until the spatial customization was finished. The house was a single bedroom house with bad thermal and acoustic insulation. Nevertheless, the base house had good natural illumination and too small a kitchen. Family H3 pointed out that the base house was small and without a back yard. It had good structure and natural illumination. In contrast, the bedroom of the base house was a good size, but the delivered kitchen was in bad condition.

### H3 Base House

#### interviews

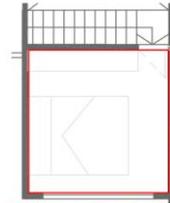
- "my mother was with me, they gave me the house I came here To me this was no joy It gave me no joy, made me want to mourn, pure mourn, and gave me depression. I spent two months in Rengo, to the house of my mother. I had to go there, not wanting to be here."  
*joy and depression from the base house*
- "Yes, I was sad to see the house. That is, was very small, not like know. We had no patio. Because you want to have a back yard for children, add a pool, here do not fit for a pool, and that is bad."  
*small size of house without courtyard*
- "Regarding the structure of the house, are you satisfied with the number of bedrooms?"  
*Yes, because we are no more.*  
*And size?*  
*Yes, okay "*  
*good size of the bedrooms*

#### photo-elicitation



low quality of kitchen – danger from unprotected installation

#### drawings



satisfied with original bedroom

### H4 Base House

#### interviews

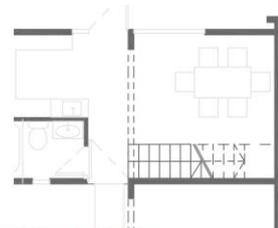
- "The kitchen you do not like, too. I mean, well might later Lord give me something and replace the kitchen, everything in kitchen and bathroom."  
*not satisfied with the kitchen and bathroom*
- "Sure, and you're trapped down, I have my room there really here right next door I have my room. I have not got up staircases, because my legs bother me to climb up a lot, and my wife also, since we are not young anymore."  
*concern about the staircases – older couple*

#### photo-elicitation



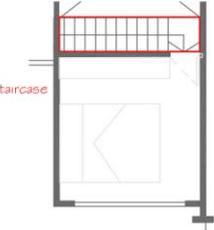
unpleased with the kitchen and bathroom

#### drawings



Family H4 complained about the original kitchen. Considering that they are an elderly couple, they are not able to use the staircases. They did not approve of the dividing partition between the living and dining room. In continuation, they pointed out the bad quality materials of the structural walls and the poor quality of the original doors and windows. Family H5 recalled that the base house was too small with a narrow bathroom. Moreover, the bathroom was too close to the living room and the base house did not have enough rooms for all members. As an additional issue to the base house, the leaking roof was reported to authorities.

## H5 Base House

interviews	photo-elicitation	drawings
<ul style="list-style-type: none"><li>• "And one of these days and I said where my kids go to sleep, I have no space, and there was no space, the little one. I do something I have to do, <u>my kids cannot sleep down under the stairs.</u>" <i>deficiency of space – children slept under the staircases</i></li><li>• "I said, what I do, this is very small compared to the middle size house I was there, and a huge bathroom and when I entered the bathroom look at it and I was said, uhhhh. it was tiny, it was two or three times smaller that of there [ laughs] I had a huge bathroom I said, well, I have my home, I began to mourn of emotions ." <i>delivered house small in comparison to illegal segment</i></li><li>• "original house leaked a little water, so they sent a team to fix it." <i>leaking roof of the original house</i></li></ul>		 <p><i>deficiency of space bedroom under the staircase</i></p>

## H6 Base House

interviews	photo-elicitation	drawings
<ul style="list-style-type: none"><li>• "And the quality of the doors? <u>They are really bad, because they are like cardboard</u> And the walls? <u>The walls are fine, they are concrete.</u>" <i>good walls and bad quality of doors</i></li><li>• "To me what I did not like very much is that the bathroom left at the <u>entrance door,</u> because suddenly you are eating and see the toilet" <i>bad location of the bathroom – on the entrance</i></li><li>• "And regarding the light coming in? <u>Yes, the light is natural because I like to have open view.</u>" <i>good natural lights</i></li><li>• "And he liked the <u>original material of the house?</u> <u>No, because the material was like chalk, then one hit it and (laughs) cracked."</u> <i>bad quality of original material</i></li></ul>		 <p><i>bad quality of doors</i> <i>bad location of bathroom</i></p>

Family H6 confirmed the bad position and size of the bathroom of their base house. The first floor did not have any finishing of the floor which created sanitary issues, dust during summer and mud during winter days. The family complained about the bad quality of doors and the poor condition of original materials of the base houses. Family H7 praised the quality of their bathroom and kitchen. In addition, they noticed the small size of their bathroom. The family negatively perceived the original materials of the house and the location of the bathroom doors. The family also rejected the original staircases. They liked the structure of the house.

## H7 Base House

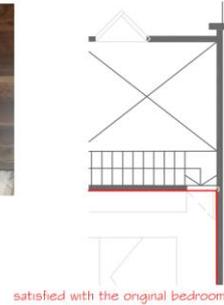
### interviews

- "When I arrived first time here I liked the bathroom and the kitchen."
- *praising the kitchen and bathroom*
- "Have not had problems with the roof?"
- "Nothing. For the earthquake did not move anything. Not even a crack?"
- "Nothing like that, it is concrete"
- *good structure of the house*

### photo-elicitation



### drawings



## H8 Base House

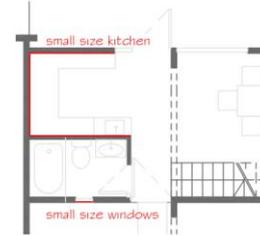
### interviews

- "And left the dining room and the kitchen and the bathroom was just because the kitchen was small don't know if you have seen how small they were."
- *small size kitchen*
- "Yes, well, I've always liked the windows, the windows, the first thing I saw was the window, when we first arrived, which I liked because I love the windows, which is light, all that. That's what I liked about the house when we arrived (laughs), which had patio too."
- *importance of windows in the house*
- "And regarding the structure of the house, are you satisfied with the number of rooms?"
- *Yes, so far*
- *What size?*
- *Yes, I'm fine*
- *Like the original type of the windows?*
- *No, very small"*
- *good structure, good size, small size windows*

### photo-elicitation



### drawings



single big window of the house

Family H8 endorsed the fact that the base house had a patio and good natural illumination. They did not like the original windows, acoustic and thermal insulation. In addition, they complained about the size of the kitchen. However, they noticed that the house was of solid structure and of good size. Family H9 reported that the bathroom, the kitchen, and staircases were unsuitably located. The house had not enough windows and had bad acoustic insulation. They did not like original material on the second floor of the house. Moreover, they noticed the needless dividing portions of the house.

## H9 Base House

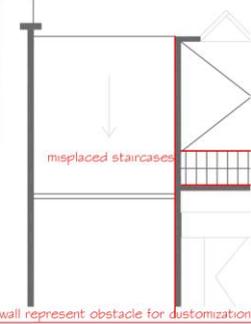
### interviews

- "What do you think was a bit negative of original house?  
A bedroom, only that. The same bathroom, because I consider the bathroom where it is now, is misplaced, for me. Because it is central here in the kitchen, dining, and all that. For me the bathroom could be, I do not know, on another set aside. I would make it back out, mine are my intentions [laughs] because I really feel that is misplaced."  
misplaced bathroom – near the kitchen and the dining room
- "And the quality of the walls when you arrived?  
Just like that, yeah, I feel satisfied, because at least I had no problems with that.  
And the staircases?  
The stairway no, because I want to change there, because it's like in the middle then I do not like the stairs where it is now."  
misplaced staircases – not in the central area of the house

### photo-elicitation



### drawings

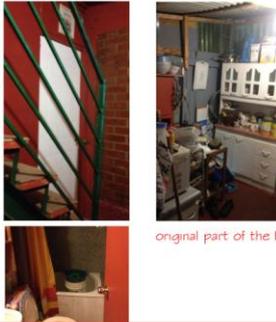


## H10 Base House

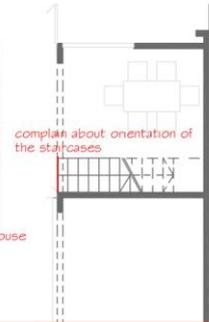
### interviews

- "On the home when it was, the original house, exactly as they were delivered, which was as your initial impression?  
Well, not much, was up just empty roof and everything here, that side too, was the ceiling here, there it was, those two rooms were not above, then the roof is up there and the only room was there, and kitchen and this, and it was good to us, then I told "no matter no matter. "

### photo-elicitation



### drawings



Family H10 liked the original kitchen which they have maintained until present time. They stated that the insulation of the house was bad as well as natural illumination. According to H10, the first floor of their base house was delivered sound. An exception to this rule is the direction of the staircases. Family H11 complained about the hygiene of their house. Their base house was attacked by pests which followed with additional sanitary issues. However, the base house provided relatively good shelter for their family.

## H11 Base House

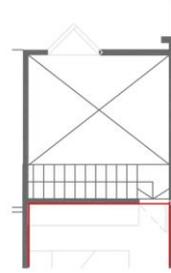
### interviews

- "The delivered otherwise Sure, dirty, not finished, see this was here no more, how it was it was not no that was, that was the house. This was the house and here, from here to this room"  
*hygiene issue of the house*
- "Yes, maybe that makes me something, but sometimes I do not want by mice, mouse goes both here, here I had a time full of mice.  
Rats?  
Yes. Rats. So I have a cat now."  
*pests present in the house*

### photo-elicitation



### drawings



*a single room was enough for inhabiting initial house*

## H12 Base House

### interviews

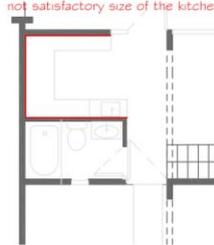
- "the first impression you had when they gave their original home?  
Well joy, and also as punishment gave me because it was like as well, as I said, the mere skeleton. It was this closed, and the floor so pure concrete, I did not."  
*satisfied with ownership, but not with condition of the house*
- "Too small kitchen. Very small."  
*not satisfactory size of the kitchen*
- "In terms of quality, as it was?  
The room, if it was good."  
*pleased with the bedroom*

### photo-elicitation



*low quality of original material*

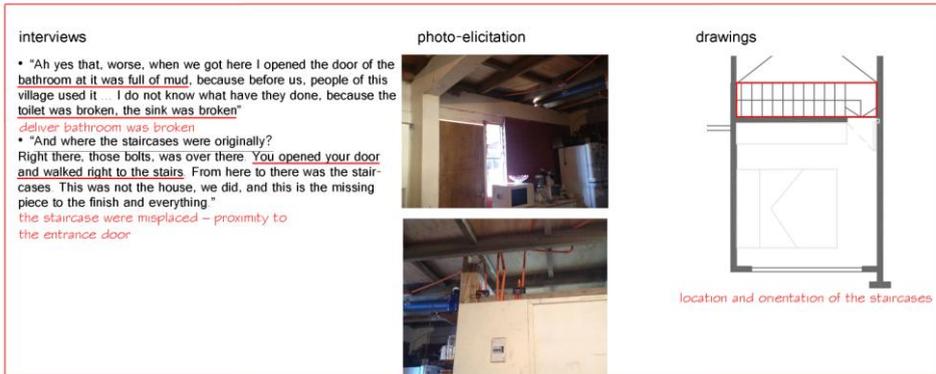
### drawings



*not satisfactory size of the kitchen*

Family H12 confirms the poor quality of doors, windows and original material of their base house. They stated that the kitchen was small and the house did not have good insulation. However, they liked the delivered bedroom, the quality of the constructed floors and the roof of the base house. Family H13 stated that the bathroom of their base house was delivered broken. In addition, the staircases were misplaced. The location of the staircases in the entrance area was not acceptable for them. However, the base house had good natural illumination and provided a good shelter for their family.

## H13 Base House



## 5.2. Designing the Base House Founded on Families' Needs

The design process of the base house is influenced by the housing policy, limited financial structure, construction costs of the base house and its customization, and families' needs and wishes. The limit of my research does not address influences such as policies, finance parameters, and construction costs of the base house and its customization. Instead, this dissertation evaluates the quality of the base house based on dwellers' needs and wishes. The current role of the architect does not acknowledge the importance of understanding family's needs and expectations of their first housing ownership. In this regard, I argue that the design of the base house should depend on the family's needs. This dependence would not influence the size and orientation of the base house. However, it would enable the architect to acknowledge family's needs in order to provide a better platform for future customizations.

The families' needs are defined based on experience from fieldwork. During surveillance of low-income families from two housing projects, I collected data about families' previous living experiences. I conclude that families' previous living experiences largely influence their expectations of the base house. The absent functions and comfort that families did not have while inhabiting

temporal shelters of illegal settlements shaped their desires of the incremental house. This statement is confirmed by family E4 which stated that it is blessing to live in a solid house out of the slum environment.

To understand families' needs, I introduce the living conditions of two illegal settlements which families inhabited before moving to the base house. From interviews with families, I conclude that the living conditions prior to inhabiting the base house directly inference families' expectations of their house. Families from Elemental Lo Espejo inhabited the Vista Hermosa slum. Their provisional slum dwelling unit was in most cases a 3/6 meter wooden shack. Only families E5 and E8 had a bathroom inside their shelter. Other families were forced to use the community bathroom or an unsanitary unit with a *hole* located in their front yard. These absences of the bathroom in their shack created a natural need of families to have the spatial and sanitary bathroom of the base house.

In addition to the need for the bathroom, I recorded that while living in the Vista Hermosa slum, families inhabited a small-scale unit. In most cases, five or more family members inhabited a 3/6 meter wooden shack. This shack was equipped with a common area which contained the small kitchen, the dining and living area and one 3/3 meter bedroom. Families E1, 5, 7, and E8 had two bedrooms. However, most families were forced to sleep in one bedroom and living room. According to E1, the lady of the house slept on the sofa during her pregnancy and was exposed to unsanitary conditions. The lady of the house from family E5 was constantly sick in the slum and was infected by the HIV virus during her pregnancy. Moreover, family E8 stated that during the, the winter shacks were cold, full of mud and the roof leaked. During the summer time, families faced dangers of infections because the slum was covered with puddles. Furthermore, flies and mice collected around cumulated garbage creating real hygiene issues for inhabitants of the slum.

Besides the small size of shacks and unsanitary conditions of the slum, families E3, 5, 7, and E8 had problems with the leaking roofs of their shack. They used nylon to cover their roof. According to family E7, during the rainy season water was constantly leaking into their house. This is confirmed by family E8 which traced the moisture in the interior to a leaking problem in their zinc roof.

Families from Las Higeura faced similar issues during their life in the slum at La Toma de Peñalolen. Similar to squatters from Vista Hermosa, families from Toma de Peñalolen inhabited wooden shacks. Most families inhabited a 3/6 meters shack covered with a zinc roof. Families H1, 3, and H11 recollected that their zinc roof was leaking which created moisture in the interior and health issues for family members. In addition to a leaking roof, family H1 reported fire accidents in the slum which destroyed eight shacks and one baby lost his/her life. Family H8 and H9 reported that the slum in winter days was covered with mud which made life hard for family members. Moreover, family H8 reported that shack roofs were not made for snow and wind. During wintertime, snow or wind destroyed their zinc roof exposing family members to coldness. Furthermore, the slum was covered with filth and garbage. During summer time, dust entered their shacks infecting their food and their living area.

All families inhabited a wooden shack which was a two room unit. One room was the kitchen, the living and dining room. The other room was the bedroom. The bathroom was an outside unit with an unsanitary *hole*. Some families such as H1, and H7 had their kitchen outside. Families H10 and H13 had larger shelters with more than two bedrooms. Family H13 had a two story wooden dwelling with a living area on the first floor and four bedrooms on the second floor.

From experience of living in the slum settlement, families developed their needs for what they refer to as *the properly owned house*. Current practice is to organize families and connect them to the architect for postulating for government subsidy. In

case of Elemental, the nongovernmental organization *Tecno* organized families from Vista Hermosa and after a few unsuccessful attempts they introduced Elementals' housing solution. During one workshop with Techo and Elemental the housing solution was presented to families. After that meeting, families did not have any part in designing houses. Moreover, the design of the based house was imposed on them. This practice of predisposition of housing design presents a crucial aspect of incremental housing. In contrast to this practice, I propose that the architect should pay more attention to families' needs and try to respond to some of their wishes.

From the base house, families expect to have a solid structure and roof, a sanitary bathroom, enough bedrooms for all family members, big windows, and large areas for their future extension (table 09). Current design of the base house provides space for customization, but fails to deliver a sanitary bathroom and enough bedrooms for all family members. An additional failure of the base house is thermal insulation. Regarding thermal insulation, the base house resembles the shacks of the illegal settlement. Designing the base house should mean the acknowledgment of different families' needs. In this regard, I propose that the base house should have a sanitary bathroom which would introduce a new lifestyle to previous slum dwellers. Families complained of being exposed to weather conditions while inhabiting slum dwellings, I propose that the base house should be enclosed with a standard five centimeter thick thermal insulation. This insulation would lower the cost of heating during winter days and provide a better living environment to families. From families' statements, I can conclude that the structure and the roof of the current base houses represent a safe and secure place for their family.

<b>Families' previous living experiences largely influence their expectations from the base house</b>		
<b>Living condition of two illegal settlements</b>	<b>Vista Hermosa</b>	<b>La Toma de Peñalolen</b>
<b>3/6 meter wooden shack:</b> the small kitchen, the dining and living area and one 3/3 meter bedroom	Confirmed by: families E2, 3, 4, and E6. Families E1, 5, 7, and E8 had two bedrooms.	Confirmed by: all families except H10 and H13. Families H10 and H13 had two bedrooms.
<b>Summer time:</b> families faced danger of infections because the slum was covered with puddles. Furthermore, flies and mice collected around cumulated garbage created real hygiene issues for inhabitants of the slum. During summer time, dust entered their shacks infecting their food and their living area.	The lady of the house from family E5 was constantly sick in slum and was infected by HIV virus during her pregnancy.	Family H1 reported fire accidents in the slum which destroyed eight shacks and one baby lost life.
<b>Winter time:</b> slum covered with mud which made live hard for family members. The zinc roof of the shack was not made for snow and wind. Snow and wind destroyed families' roof exposing family members to coldness. Furthermore, the slum was covered with filth and garbage.	Families E3, 5, 7, and E8 had problem with leaking roof of their shack. They used nylon to cover their roof.	Families H1, 3, and H11 recollected that their zinc roof was leaking which created moisture interior and health issues for family members.
<b>Families' expectation from design of the base house</b>	<b>Lo Espejo</b>	<b>Las Higuera</b>
solid structure and roof	✓	✓
sanitary bathroom	O	O
enough bedrooms for all family members	✓	O
big windows	O	O
areas for their future extension	O	✓
Legend: [✓]: category applicable to the case study; [O]: category not applicable to the case study		

Table 9. The structure of families' previous living experiences and its impact of their expectation from the design of the base house

### 5.3. Inhabiting and Adjusting the Base House

<b>Families' transition from the slum to the base house</b>		
<b>Recorder challenges of inhabiting the base house</b>	<b>Lo Espejo</b>	<b>Las Higuera</b>
Changes in <b>social setting</b> of their new housing neighborhood.	Families moved one urban block from their previous slum settlement. In this regard, they did not face any discontinuity in social network which is important for incremental process of building.	Families H1, 3, and H5 had hard time to adapt to their new environment since they did not have any social network or knowledge about neighborhood. According to family H5, the base house created depressive mind set since she "gad no gas, friends or family" in a new neighborhood.
<b>Safety issues</b> for family members in their new housing neighborhood.	Proximity distance from their previous illegal settlement crated many safety issues for families live in Lo Espejo. E2 reported that their house was robbed after <b>completing customization process</b> .	According to H13,a new neighborhood was controlled by one criminal organizations which force families to follow their rules.
After inhabiting the house families invested their time and limited amount of money for <b>coloring the facade</b> of their houses.	After inhabiting the base house, families E1, 3, 4, 6, 7 and E8 painted their facades. All families tried to make community decision for covering their facades with one color, but this project failed to be implemented.	Families H5 and H13 felt that colors of facade were implemented to discriminate low-income families. Family H5 rejected the orange color of their facade. "I said to government official, please not the orange color because I hate the orange and they assigned to me the orange colored house."
<b>Adjusting the interior</b> of their base house.	Confirmed by: families E2, 3, 4, and E7 who worked alone to create fine adjustment of the base house. These adjustments are embodied with plashing, painting and covering surfaces of the bathroom and kitchen with ceramic tiles.	The base house of Las Higeura was less adjusted. The main reason for this notion is that families inhabited base house with single bedroom with multipurpose area. This situation forced families to take part earlier in customization process.
<b>Deprivation of space</b> for all members of family.	According to families E3 and E4, the initial planed base house was not acceptable for families. In this regard, Lo Espejo project was delivered with three bedrooms and enclosed facade.	According to families H7, 8, 10, 12, and H13, the base house was small in size. For family H11, the base house "was like being in another slum."

Table 10. Families' transition from the slum to the base house

From design issues of the base house, in table 10 I present a lasting process to inhabiting the base house. In most cases, inhabiting the base house represents a disappointment on the part of the families. The main reason is that families waited for years for their ownership of the house. During this period they constructed unreasoning expectations of their base house. This expectation was shattered after inhabiting the house. The base house contains multipurpose areas with the kitchen, the living, and dining room, and one bedroom. This small initial house is delivered unfinished, which resembles previous slum dwellings.

All houses of Lo Espejo were inhabited on the same day. This project was observed by politicians, which created an opportunity for instant extension of the houses. According to families E3 and E4, the initial planned base house was not acceptable for families. In this regard, Lo Espejo project was delivered with three

bedrooms and an enclosed facade. This base house provided a good start for families' customization.

However, the main complaint from families is the nonexistence of a backyard to duplex houses (E1, 2, 5, 7, and E8). Duplex houses were constructed as second and third floor houses which deprives families from contact with the ground. An additional issue of the base house was the bad quality of the gypsum board partitions. Family E1, 6, and H8 complained that the delivered interior partitions were untied and of bad quality and were poorly constructed. In addition, families of Lo Espejo complained about the long adjustment period to personalize their house.

During the first few months of inhabiting the house families invested their time and money for adjusting it. Families E2, 3, 4, and E7 worked alone to create fine adjustments to the base house. These adjustments are embodied with painting and covering surfaces of the bathroom and kitchen with ceramic tiles. In addition, families E1, 3, 4, 6, 7 and E8 painted their facades. These fine adjustments to the base houses are of importance in motivation for families' future customization of the houses.

Compared to Lo Espejo, the base houses of Las Higeura were less modified by families. The main reason for this notion is that families inhabited the base house with a single bedroom with a multipurpose area. The outcome of this situation is a higher level of a customized house. This statement is supported by family H2 and H8 who soon after inhabiting their house started the spatially customization process. According to families H7, 8, 10, 12, and H13, the base house was small in size which created organization issues for families. This small initial unit forced families to start customization soon after inhabiting the house. Without customization, the base house resembled a slum dwelling. According to family H11, the base house "was like being in another slum." In this regard, the base house was perceived as another slum.

Apart from problems with absence of space and unfinished aspects of the house, Las Higuera houses presented additional challenge to families since they were relocated to a new neighborhood. Families H1, 3, and H5 had a hard time to adapt to their new environment since they did not have any social networks or knowledge about the neighborhood. According to family H5, the base house created a depressive mind set since she “had no gas, friends or family” in a new neighborhood. This notion of hard adjustment represents a good lesson for not relocating low-income families far away from their original squatter’s location.

The final issue for families while inhabiting the base house of Las Higuera was the color of the houses. All families rejected the color of their facade. During the first months of inhabiting the house, most families repainted their facade. Family H5 rejected the orange color of their facade. “I said to government official, please not the orange color because I hate the orange and they assigned to me the orange colored house.” Moreover, family H13 felt that the colors of the facade were implemented to discriminate low-income families. This notion of the colored facades created additional issues of families bonding with their moderate-income neighbors.

<b>Families’ maintenance of the originally delivered base house</b>	<b>Lo Espejo</b>	<b>Las Higuera</b>
<b>Interior of the house</b>		
signs of water damage on walls and ceiling	✓	✓
defective doors and windows	✓	✓
damaged electricity cords	0	✓
issues with plumbing in the kitchen	0	0
issues with plumbing in the bathroom	✓	✓
<b>Exterior of the house</b>		
good condition of roof covering	✓	0
gutter discharges water away from the house	✓	✓
water draining away	✓	0
leaks of windows and doors sills	✓	✓
the main/meter of water and electricity within housing property	0	✓
Good condition of the fence around the house	✓	✓

Legend: [✓]: category applicable to the case study; [0]: category not applicable to the case study

Table 11. Families’ maintaining of the originally delivered base house

In addition, during the families’ first months/years of inhabiting the base house they invested a limited amount of money in maintenance. This practice continued during and after customization of houses. In table 11, I introduce two categories of

maintenance of houses, the interior and the exterior of the house. From the analysis of subcategories from the table, we can conclude that both housing projects face issues with water leaking and plumbing issues in the kitchen. Regarding the exterior of the house, both projects have good gutter and draining systems. However, families from both projects complained about leaking of their windows and doors sills.

## 5.4. Lessons of Designed Houses

Although all families that participated in my research felt grateful they owned the house, inhabiting the base houses for most families was a challenge. I intend in this subchapter to elaborate their challenges and draw on lessons from their experience. Even though my research depends on dwellers' perspectives of base houses, here I present my position regarding their stories. In some cases, I agree and support dweller's critique of base houses. In others, I argue against their statements and present my observation of that particular situation.

In this regard, I present families' challenges with their delivered base house and their preparation for customizing houses. Families E4, 8, H2, 3, 7, 8, 9, 10, and 12 stated that their base house was of a good structure and expressed joy to have a home. In this regard, family H2 stated that they are grateful, "because from nothing today we have something that costs thirty million pesos, home for me is spectacular." In contrast to this positive perception of the base house, family H3 stated that their house gave them "no joy, made me mourn." In continuation, family E5 who inhabit a duplex base house on the second and third floor complained about the limits of the constructed structure. They stated that "we could not place plaster on all walls supposedly because it is much weight to the house below." Family E5 specified that the structural regulation imposed on dwellers created additional restrictions to their customization and

adaptability of the base house. I do not agree with this statement. This lack of awareness of the existing structure of the house indicates that dwellers are not well informed about their options to adjust the base house.

In addition to the structure of the base houses, I examined the position, size and type of staircases delivered to dwellers. According to statements by E1 family, the interior staircases in the duplex houses represent an issue for elderly and oversized people. In interviews, this family explained the story of the previous owner of the house. “The husband was too fat. She also had difficulties to climb stairs, [...] because couple could not climb the stairs, they put a backed [...] an improvised bathroom behind the staircases, like a jar.” Similar stories of dwellers having problems with staircases are present in families E2, 5, H4, 8, 9, and 13. Furthermore, family H4 faced the same issue of the older couple and were not able to go upstairs to bedrooms. This old couple inhabits the first floor of the house. “I have not go up the staircases because my legs bother me, my wife also with same problem.” In addition, family E2 stated that the staircases were “too big, very big. It covered the kitchen. It was very wide staircases, too wide.”

In regards to these statements about staircases, I partially agree with dwellers’ critique. According to FSV1 regulations, all staircases of base houses must be 90 centimeters wide. From this regulation, the statement that staircases are too wide does not represent the issue of the base house. However, I sympathize with challenges of dwellers with limited mobility to use staircases of duplex houses (18 out of 21 case studies). In management lessons of base houses, I argue that it is important to deliver base houses on the first floor for dwellers with limited mobility and to avoid, when possible, the design of staircases in the base house. This argument goes against Elemental’s signature design of base houses which is in all cases based on staircases for entering and interior communication.

The third lesson of the base house is the level of illumination. Family E3 stated that “you cannot make window opening [...] I intended to break a part of wall and wanted to put a window, and cannot to that because house is not table enough for that.” Similar statements about low levels of illumination I recollected from families E4 and E6. These houses are on the first floor of the Lo Espejo condominium and do not receive enough natural light. In contrast to these houses, families H1 and H6 expressed satisfaction with levels of illumination of their house. From these statements, I conclude that all duplex base houses were designed with a good orientation providing enough natural light within houses. The only exception to this rule are the first floor houses of Lo Espejo, E3, 4, 6, which criticized their house for the absence of natural light.

The topic of illumination inevitably leads towards a discussion about opening the facade of the base houses. As stated by family E3, the first floor houses of Lo Espejo do not have the possibility to change their facade for more illumination of their houses. However true this statement is, it is a misconception by dwellers that they cannot rearrange walls to create more windows. In this regard, based on the practice of family E6 I propose that the same base houses that are designed as long tracts could be delivered with sky roofs (small size and affordable roof windows). These sky roofs would enable enough ventilation and illumination and are within the price limit of affordable houses.

In addition to the argument for a sky roof, family H1, 2, 6, and H8 argue for the right position of windows. On the other hand, family H8 stated that the original windows of base houses were too small and not the right type. This statement is supported by families E3, 4, E6, and E8. In conclusion, I acknowledge families divided options on the topic of windows of the base house. Although I do not support their negative perception of the original windows, I propose that base houses should be designed with two or three types of windows which families could choose from for themselves. This option of different facade openings would

enable families to take part in the customization of houses right from the beginning of the construction of base houses.

Based on my experience from fieldwork, I recorded a few technical issues of base houses. One such issue was the leaking roof or bed installations in kitchens and bathrooms in the base house. Family E2 stated, “the bathroom leaked. It started dripping water from the tub and it began to leak down the wall.” A similar situation was recorded by family H5, confronting the issue of their roof in the base house. “The original house leaked a little, so they sent a team to fix it.” In addition, family H13 after inhabiting the base house noted the broken bathroom that created additional expenses on the already limited family budget.

In addition, family H1 complained about the dampness in the house. “A big problem is moisture out there (pointing the walls of the first floor).” This issue of dampness caused by condensation, rain penetration or rising damp accelerates the deterioration of walls and the structure of the base house. This accelerate deterioration of base houses is supported by statements of families E5, H1, 6, and H12 about the bad quality of original materials of base houses. I identify with dwellers concerns about leaking and dampness within their houses. From this notion of concern about the construction quality of the base house, I propose a brief evaluation of base houses by experts before delivering it to low-income families.

My concluding remarks on the base house concern the position and size of the bathroom. According to a statement by family H9, “the bathroom, where is it now, is misplaced, for me, because it is central, [...] I really feel that is misplaced.” This statement is supported by similar statements from families E1, H5, 6, and H13. These families argue that the position of the bathroom is located near the entrance of the base house and in proximity to the dining and living room. According to family H6, “I do not like much that the bathroom is left at the entrance, because you are eating and you see the toilet.” Family E1 criticized the position of the bathroom on the third floor which can create problems for dwellers

with limited mobility. I strongly agree with these critiques of the location of the bathroom. In this regard, I note that the position of the bathroom depends on the customization process. In this remark, it is of crucial importance that the bathroom is located in a neutral zone not to prevent future customization of houses. In addition, I suggest that the bathroom should never be designed on the third floor or any floor above since that can create issues for people with limited mobility (table 12).

<b>Families' encounter with delivered houses and their preparation for customization</b>			
		<b>Lo Espejo</b>	<b>Las Higuera</b>
<b>(1) Recorded aspects of the base house which directly influenced preparation of customization process</b>	limited information about design of the base house	✓	✓
	people with limited mobility complain about staircases	✓	✓
	low level of illumination of houses	✓	0
	good position and size of windows	0	0
	correct type of windows	0	✓
	not right position and size of the bathroom	✓	✓
	not right position and size of the kitchen	✓	✓
<b>(2) Preparation for customization the base house</b>	polishing interior surfaces	✓	✓
	covering interior surfaces	✓	✓
	replacing bathroom	0	✓
	replacing kitchen	0	✓
	clearing interior courtyard	✓	0
	clearing front yard/backyard	✓	✓

Table 12. Families' encounter with delivered houses and their preparation for customization

Recorded aspects of the base house presented in table 12 directly influence families' customization process. I use these aspects of the house for the construction of the argument about the additional responsibility of the architect. The lessons of designing the base house are used for arguing about the architects' additional responsibilities. Furthermore, within additional responsibilities of the architect I present the families' preparation for customization of their base house.

## 5.5. The Architect's Responsibility through Delivering the Base House

Although the architect cannot fulfill all wishes by designing the base house, I propose that they should partially acknowledge families' expectations of their house. This acknowledgment would take shape in the form of suggestions for different strategies of inhabiting the base house. I argue that the architect's responsibility while designing the base house is to provide supporting structure to low-income families. This supportive structure would take shape in the form of suggestions for inhabiting and adopting their house.

The overall aim of this dissertation is the argument of the need for the architect to move beyond the position of a designer toward planning a base house that depends on alternative solutions of customizations. This prolonged responsibility of the architect as planner of the incremental construction is performed in two aspects. The first aspect is embodied with the working template for preparing the design of the base house and the second with the working template for designing the house (table 13 and 14).

<b>The working template for preparing design of the base house</b>		
	<b>Phase 1</b>	<b>Phase 2</b>
<b>(1) Introduce the idea of the base house</b>	Definition of the base house and what that idea signifies for low-income families.	Having families' expectation in mind, presenting the idea of the base house to families.
<b>(2) Acknowledging families' expectation of the base house</b>	Recording families' expectation of the base house.	Evaluating families' expectation and finding implementation in the design of houses.
<b>(3) Introduce the design of the base house</b>	Present to families the first draft of the designed solution.	Present the possibility to adjust the design based on families' needs.
<b>(4) Inform dwellers about limits of the proposed design</b>	Acknowledge functional limits of the base house.	Introduce spatial limits of the house.
<b>(5) Prepare families to inhabit the base house</b>	Introduce possible challenges during first months of living in the base house.	Introduce long term challenges of the house.

Table 13. The structure of the working template for preparing design of the base house

First, having in mind the dwellers expectation of the base house, the architect should deliver the working template for preparing the design of the base house (table 13). This working template would present the structure of an empty pamphlet that is to be filled by the architect with information about families' needs and wishes. In this regard, the working template would not be universal, but would represent particular families' expectations of inhabiting incremental houses.

Within the working template for preparing the design process, the architect should use five points for presenting the incremental house to families. Each of these points has two stages which the architect should use for delivering a good layout of the base house. First, the architect should introduce the idea of the base house to low-income families. This should be done with the definition of the base house and what that idea signifies for low-income families. After the definition, having families' expectations in mind, the architect should present the idea of the base house to families.

Second, the architect should respect families' expectation from the design of the base house. This practice is of importance because if implanted in the right way it can present good assets for future customization of houses and high quality of the complete house. This action should be taken by the architect's recording of families' expectations of the base house. After the recording of their expectations, the architect should evaluate families' expectations and find implementations in the design of houses.

The third point of the working template for preparing the design process is the introduction of the base house to families. In meetings with the community, the architect should present to families the first draft of the outline of the base house. This outline is the pilot project and would be adjusted according to families' requests. To adjust the outline of the base house we must keep in mind the limited financial structure of incremental housing. This aspect represents the fourth point of the working template for preparing the design of houses.

The final point for preparing the design process is preparing families for inhabiting the base house. This preparation should be presented with challenges in the short and long term. In the short term, the architect should introduce the first challenges of inhabiting the house such as the heating system, cold shower water, lack of furniture and kitchen equipment. In the long run, the architect should inform families about unfinished surfaces, dust in the neighborhoods, and the unfinished landscape design of the front and back yard.

<b>The working template for designing base house*</b>		
	<b>Phase 1</b>	<b>Phase 2</b>
<b>(1) Present to families the final design solution of the base house</b>	Present the final draft of the house.	After families evaluate the design solution, the architect should present the final design solution.
<b>(2) Discuss with families the final design solution</b>	Ask families how they plan to inhabit the base house. Record their strategies for inhabiting the house.	Discuss families' priorities for keeping their house clean and organized.
<b>(3) Support families' occupation of the base house</b>	Outcome of discussion implementing in suggestion for occupation of the houses.	Create consensus with families about their strategy to occupy the house.
<b>(4) Support families' maintenance of the base house</b>	Suggest regular examination of their houses for detecting structural issues.	Provide to families set of suggestion for preventing deterioration of the house.
<b>(5) Support families' customization of their houses</b>	Suggest set of construction materials which are in price range of families and present good solution for completing their house.	Suggest set of tools and construction methods for customization.

\* In inspected case studies, for customize their house dwellers must first readjust their base house in order to make room for completing the house. The current base house does not supporting the incremental idea of constructing affordable house.

Table 14. The structure of the working template for designing the base house

In continuation, the architect should present the working template for design of the base house (table 14). This working template is presented with five points. These points should support the design process and ensure the success of the housing solution. The first point is the architect' s presentation to families of the final design outline of the base house. The architect presents the final draft and after families' evaluation of it they can close the design process. This is followed with discussion between the architect and families, the second point of the working template. The architect should ask families how they plan to occupy the base house. What is important for them to have a good living condition?

From this questioning of families, they can record families' priorities for keeping their house clean and organized.

Third is the support of families' occupation of the base house. Instead of investing in paint to cover the facades, families should protect surfaces of the house first, which can present hygiene menace to their members. Based on experience from my fieldwork, I introduce that surfaces of the bathroom and the kitchen should be a priority during the family inhabitation period. The architect should provide simple explanations and suggestions for types of emulsions families should use for covering their interior surfaces. According to family E1, exposed surfaces of the bathroom can harm the safety of the house and accelerate deterioration of the house. In this regard, the architect should instruct families to concentrate on covering the urgent parts of the house. In that way, families would improve hygienic aspects of the base house. After they protect surfaces, families should insist on covering surfaces of their living area, bedroom, and on the end of the facade.

In contrast to slum settlements, the base house should provide different living environments which would motivate families to improve their life situation. The architect can achieve this by providing to families sets of suggestions for affordable ways of maintenance of the base house. This represents the fourth point of the working template for the design of the base house. The first part of this process is the architect's suggestion for regular examination of their houses for detecting in time, potential issues. The second is a set of suggestions for preventing the deterioration of houses. In this regard, the architect could advise families to invest in polishing of particular interior surfaces that would improve their settlement process. Based on my fieldwork, I notice that the floors of the bathroom, the kitchen, and living area have high propriety for polishing. Furthermore, after accumulating enough financial means these polished surfaces should be covered with tint.

The final point is the architect's support to families' customization of their houses. The architect could provide sets of suggestions which families should avoid during settlement to save their money for the customization process. These suggestions would involve bypassing needless investments in finishing surfaces which will be later replaced or demolished. During my fieldwork, I recorded that families go through cycles of investments in adjusting their houses. These investments occur before families started the customization process. These cycles of investments and adaptations harm the incremental logic of construction. In this regard, the architect should provide the working template for family inhabitation of houses. This working template would secure successful customization of houses, and at the same time would increase chances for affordable and good quality complete houses.

In conclusion to this chapter, I present the findings which are related to the first three research questions posed in the introduction. Regarding the first research question which addresses the design outline of the base house, I conclude that the outline of the base house varies from project to project. In opposition to general definitions of the base house as a 40m<sup>2</sup> multipurpose room with one bathroom, base houses from Lo Espejo were delivered with two additional bedrooms and total area of 55m<sup>2</sup>. This interchangeable nature of the base house requires constant reinventing of the design outline by the architect.

Regarding the critical problems of the base house, I recorded that the architect abandoned the housing project early, leaving behind low-income families to cope with inhabiting and customizing their house. An additional issue of the base house is families' high expectations of the base house. In subchapter 5.2, I recorded their expectations of the houses which were not recorded by the architect. This issue is part of the bigger problem which concerns the occupation of the base house. To inhabit the house families face an absence of basic information about the house. Families have misconceptions of the structural limits and potential for customization of the base house. Furthermore, in subchapter

5.3 I present challenges of changing neighborhoods, safety issues, slow adjustment, and deprivation of space for families as the main issues of the base house.

These drawbacks to incremental housing are the direct product of the I-It argument of mono-logical perception of incremental housing. In this regard, in designing the base house as aesthetic objects the architect dominates the conversation about housing the people. This notion of design can be related to Walter Kaufmann's capture of Buber's argument about two worlds and two ways of doing things. According to Kaufmann, "man prefers to forget how many possibilities are open to them."<sup>159</sup> It is comfortable to treat one way as common and the other one to celebrate as superior. In this regard, the architect's design of the base house and their proposed customization is presented as a superior solution in opposition to conventional housing solutions. In contrast to this current mode, this dissertation proposes incremental housing which is embedded in dialogue with families.

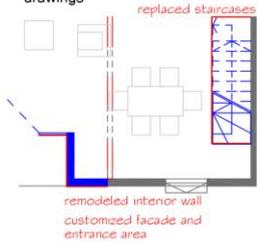
---

<sup>159</sup> Walter Kaufmann, "Introduction to I and Thou, (1970), Charles Scribners.

# Chapter 6. Customizing the Base House Initiated by Dwellers' Motivation and Organization

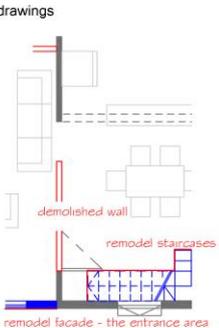
## 6.1. Analyzing Realized Customization

E1 Customization of the Base House

interviews	photo-elicitation	drawings
<p>• "From the original home, work, the second part is enlarge Yes, this was coming, we just <u>we removed the wall</u> that was here and I ran over here. And it was here, just <u>changed the door</u> and ran. And so is bigger because it was pure hallway there, then much space was lost, as this hallway just okay, because it was very long, as terrace, because it was there until like the wall, but did not remove anything, because everything was gypsum board, then we moved everything, everything "</p> <p><i>remodeled interior walls and changed doors</i></p> <p>• "On the second floor?"</p> <p><u>No, no, we have left just like that</u>, we put a floating floor."</p> <p><i>no changes on the second floor</i></p> <p>• "And the colors of the house? Why outside?"</p> <p>Is that <u>we paint ourselves</u>, but equally well have been that <u>all houses have the same color, not that one and one other color</u>. And inside, you told me that needs painting or not?"</p> <p>No, here need to put another layer, because the changes and all the walls are stained "</p> <p><i>A single color for facades of houses</i></p>		

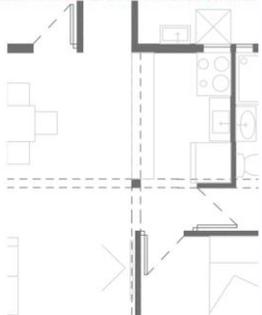
Family E1 stated that they replaced the dividing partition between the living and dining room. With this demolishing work they catered a larger living and multifunctional area. They replaced the entrance door and readjusted the facade. Furthermore, they repositioned the staircase and extended the kitchen. They painted the external and interior walls of the house, and constructed a floating floor on the third floor.

E2 Customization of the Base House

interviews	photo-elicitation	drawings
<p><i>encase of surfaces with ceramic tiles</i></p> <p>• "I bought one thing I wanted to do this, then the other, and so on. Place the window, so forth, then while we were a good time, much as two years, and when my two year old son started to work, and borrowed money to fix up the house, <u>put the ceramic</u>, I make cooking, and stuff. Right there, right, they install the ceramic and <u>change the ladder and everything</u>. I asked for a loan and I'm still paying a million and a half. And there we started "</p> <p><i>remodel staircases</i></p> <p>• "My plan was to make you last bedrooms and bathroom. And the bedroom to <u>put ceramic to all floors</u>. And paint it and everything. But then I said no, <u>the bathroom now and then the bedroom</u>. And that changed everything. We put furniture, this furniture with sink, <u>change mug, ceramic up top, everything changed everyone</u> "</p> <p><i>finishing of surfaces</i></p>		

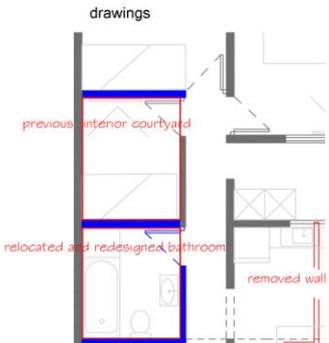
Family E2 replaced the dividing partition between the living and dining room. They reused doors between the living and dining room to close space under a new constructed staircase. This space is used as storage for the lady of the house. The family changed windows for balcony doors, which resulted in a personalization of the facade. Furthermore, they completely changed the third floor layout. Apart from the bathroom, all bedrooms were rearranged according to their needs. They added ceramic tiles in the kitchen and bathroom. Family E3 painted the facade of the house, and placed ceramic tiles in their hallway, bathroom, and kitchen. Apart from these minor customizations, the house stayed as delivered.

**E3 Customization of the Base House**

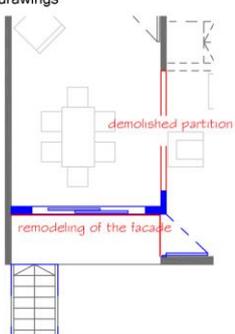
<p><b>interviews</b>  <i>low level of customizing the house -covered the surfaces</i>            • "And your sister has enlargement?            No, also do not have extensions, otherwise <u>just the way it's delivered</u>. They turned it over extended, like all but the bedroom is larger, even she made a bedroom for a girl who has, she is a woman.            Your mother has <u>trouble with stairs</u>? <i>her mother (neighbor upstairs) have problem with the staircases</i>  <u>Yes she has problems</u>"</p> <p>• "Yes, it is as neutral good, as it is not a color, other color, we discussed in a meeting that was the idea that not all houses were of any color, and that all were same. Here he spoke at a meeting that efforts were all households of the same color, were among the color we have is like, burgundy, outside, outside houses."</p> <p>• "I bought it. Well, in the beginning they had plaster, had been painted, but these artworks are all from the beginning [laughs] and my daughter is all scratched, are their graffiti."  <i>united color for all house of the neighborhood</i></p>	<p><b>photo-elicitation</b></p> 	<p><b>drawings</b>  <i>house as initial delivered with finished surfaces</i></p> 
--	--	--

Family E4 added one bedroom to the back part of the house. Their courtyard was transformed into an additional bedroom. Furthermore, they replaced their bathroom to the opposite side of the house. It remained in the central area of the house. An outcome after this rearrangement was a larger area for the kitchen. With these rearrangements to the layout, they created a larger living area in the house. Family E5 changed the original doors and windows, which changed the formal properties of the facade. They enlarged their living area by demolishing the dividing partition between the living and dining room. The third floor went through slight customizations.

#### E4 Customization of the Base House

interviews	photo-elicitation	drawings
<ul style="list-style-type: none"> <li>• "We changed this, <u>we take this room and this room moved back, inside my house was a courtyard and patio that transformed it in one bedroom</u> <u>developed four bedrooms by eliminating interior courtyard</u> <u>So there is big bedroom for my son, that was my daughter, the other larger of my son and the other one is mien."</u></li> <li>• "The over there after Yes <u>the first thing we did was a patio and bedroom for my son, after that extended the, we get this bedroom and expanded the living and dining room, here</u> Then <u>expand the bathroom and kitchen</u>. But we started backwards Oh, sure <u>extended the bathroom, and the kitchen</u> We had to do a room like this, the house came with 3 room, 3 large rooms over the yard, but we enlarged to have bigger the <u>living and dining room</u>. <u>enlarge the living and the dining room by eliminating interior courtyard</u></li> </ul>		

#### E5 Customization of the Base House

interviews	photo-elicitation	drawings
<ul style="list-style-type: none"> <li>• "Has it made extensions to the house? I did not Are the original size? <u>Just like the delivered</u> So I said, it's a properly, <u>one cannot enlarge</u>. That was a part, but we had to take to aggrandize the terrace and from there we cannot enlarge in further. <u>We were told very clearly, at the last meeting that we could not enlarge, nor the second floor or the bottom.</u>" <u>the house was not extended</u> • "I suddenly tell my daughter that I regret not having asked for <u>first floor house</u>, and she comforts me and tells me "but Mom, we have a big bath tub and upstairs is brighter than the houses below". I do not use artificial light except at night" <u>not satisfied with duplex house – prefer the first floor house with extensions</u></li> </ul>		

Family E6 destroyed the dividing partitions which were placed in the living area. As a consequence of the replaced interior partitions, they extended their bathroom. Furthermore, they turned their laundry room into an additional bathroom. They moved the kitchen to the left side of the central area of the house. In addition, they installed a floating floor in the bedrooms and living room. Furthermore, they painted the interior surfaces. Family E7 partially removed the partition between the living and dining room. They added roof structuring in front of the base house which made adjustments to the front facade. In addition, they painted the interior and exterior walls, polished some interior floors, and placed ceramic tiles in the kitchen and

bathroom.

#### E6 Customization of the Base House

##### interviews

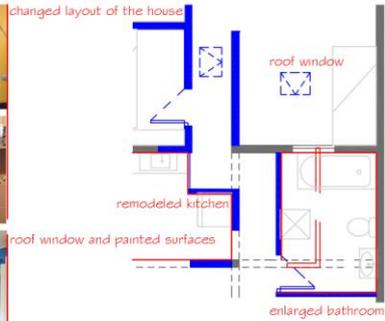
*an example of phases of customization*

- "And when they began to make enlargements? Immediately not happened like a long time, hope my husband has said a little more work and we started, were not things at once, but it little by little " and do this, do this other ", first the ceramic " rearrange the kitchen, the bathroom, the living, and dining r.
- "Look started over here, living-dining area Here below was a bedroom, there, that was a bedroom, and what we did, we got the wall there and said "ya, this is going to be living room" We started with that, then expand the bathroom, we said let's throw the kitchen because the kitchen space and bathroom were divided, was a little smaller but still comfortable, then said "no, we will do the cooking here" then there we reduce a little the bathroom, but start with living room and kitchen, and then went to bedroom, to the bedrooms. And the floor, then it took longer, passed as six to seven months to put the floor, because we had already spent all our money in living room, kitchen and bathroom, so we had to say "and do everything at once"
- "Then, while in the doors, that the subsidy did not come we changed the floor, painting, then there, I also include myself, at that time I struggled a bit about the floor " cover surfaces with ceramic tiles and painting

##### photo-elicitation



##### drawings



#### E7 Customization of the Base House

##### interviews

*finished the customization of the bathroom*

- "We also put ceramic a year ago and we are just finishing the bathroom. That's cost us a little more because you have to hide the plumbing by drilling the walls "
- "Make the roof outside, closing, all that, all that protection from rain."
- "What happens is that, as is a plain brick house did not look nice, so we had to change colors" painted the interior

##### photo-elicitation



##### drawings



Family E8 extended their living area by removing the dividing partition between the living and dining room. The result of this unification was a larger balcony. They moved the exterior wall of the back facade. In that way, they created a larger back balcony with a view to the whole neighborhood. They polished interior floors. Moreover, they painted the interior and exterior surfaces of the base house.

## E8 Customization of the Base House

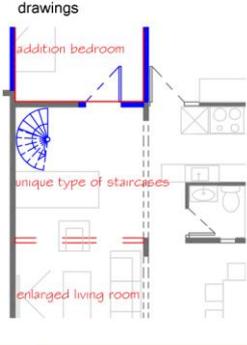
interviews	photo-elicitation	drawings
<ul style="list-style-type: none"> <li>• "Like the original color of material?"</li> </ul> <p>Yes, I just wanted to furnish the house. I like the material and color of the brick. I liked that, but my husband did not want to paint so here</p> <p>And painting the outside?</p> <p>That was a controversial, we agreed that all houses were painted other, the end never failed to buy paint at a general level then bought by each one, I got a scaffold in the municipality and painted my home"</p> <p>collective decision to paint facades of the houses – not implemented because of internal conflict</p>		

Family H1 recorded the start of their customization of the house with the construction of an additional bedroom on the second floor. After construction of the bedroom, they extended the living room by demolishing the dividing interior partitions. They relocated and created a winder type of staircase. Moreover, they replaced the original doors and windows. In addition, they painted and encased the interior surfaces of their house. Family H2 added two bedrooms on the second floor and two on the first floor by extending the house in the backyard. They replaced their old staircase and created a spiral staircase. This is the only house with a spiral staircase among all the houses. They implemented a floating floor on the second floor. In addition, they covered the walls and beams and painted the interior and the facade of the house.

## H1 Customization of the Base House

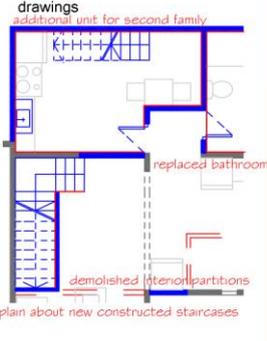
interviews	photo-elicitation	drawings
<ul style="list-style-type: none"> <li>• "What was the first thing you did?"</li> </ul> <p>No, the first thing we did was there, the room. Then we extend this part [living] and there, that as was the courtyard, that beam made my husband, he works at it. These beams made it. Because they had no beams there</p> <p>Then you extended this, then this here</p> <p>Yes, and then there where the machine is</p> <p>And after that?</p> <p>We extended the bedroom</p> <p>The first bedroom, and then later after the other bedroom. And then?</p> <p>No, not yet. We want to change, enlarge the kitchen. And change the bath back, as some have already done. And we want to expand the other bedroom."</p> <ul style="list-style-type: none"> <li>• "And color, how long did you have?"</li> </ul> <p>I have not change the paint, but we changed three times (laughs)</p> <p>Blue, green, pink"</p> <p>three times painted the house</p>		

## H2 Customization of the Base House

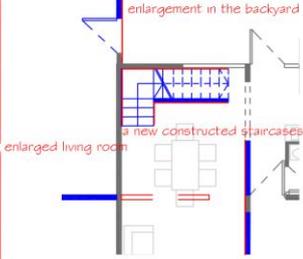
interviews	photo-elicitation	drawings
<ul style="list-style-type: none"> <li>• "And enlargement that year, what was? Does this wall?"</li> <li>T: No, this was the beginning. <i>customize the whole house</i></li> <li>R: Ceilings, walls, everything, almost everything</li> <li>I mean, that subsequent to that, do not place other expansion?</li> <li>T: No, nothing. <i>constructed addition bedroom</i></li> <li>R: After finishing, <u>fixing the room in the first floor</u>.</li> <li>There was improvement, then the expansion lasted a year, and what later became improvements?</li> <li>T: Sure, <u>painting, floating floor</u>. <i>painted interior</i></li> <li>R: The painting did the same year, <u>we have been changing the paint</u>, because we don't like white, ah, ya, painted to another color, because we are always changing</li> <li><u>The first year they did not live here</u>. <i>they did not inhabit the</i></li> <li><u>R: This year we have done everything</u>. <i>"base house – after customization they moved in"</i></li> <li>• "And how did he know what materials to buy?"</li> <li>R: Because it is part of one, imagine that you're <u>taking little by little, all in all you do it</u>. Although not learn something, slowly you <u>learn by doing</u>.</li> </ul> <p><i>explained process of incremental construction</i></p>		

Within house H3 lives two families. This phenomenon in Chile is known as *allegados*. To accommodate their needs, they enlarged their kitchen. Moreover, they replaced the original staircase. For the second family, they relocated their bathroom in the backyard. Furthermore, in the backyard they constructed an additional kitchen with a dining room on the first floor. On the second floor they constructed a additional bedroom for the second family. Family H4 added two bedrooms on the second floor. They replaced the original staircase on the corner of the house. Furthermore, they changed the original windows and doors and extended the house in the backyard.

## H3 Customization of the Base House

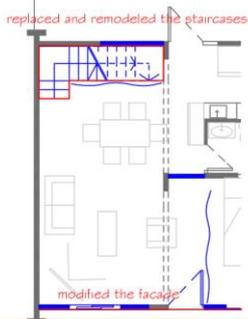
interviews	photo-elicitation	drawings
<ul style="list-style-type: none"> <li>• "I have no back yard, because I had a bit, as there, but as I mother lives with me, could not leave her in the street to the old lady, then we were building behind. We built up and down. <u>Upstairs has bedroom, kitchen and downstairs has</u>".</li> <li><i>two families within one house – additional unit</i></li> <li>• "Are the windows here?"</li> <li>Yes, the windows had iron there no more. And then I put some stuff, and looks pretty. Liked <u>the window</u>, but to be run, you cannot open, is set as a firm.</li> <li>What other things improved over time?</li> <li>Over time, well, soon I fixing it, finishing fixing it. I cleaned the windows, <u>the bathroom outside</u>.</li> <li>What you did? <u>replaced bathroom in the backyard</u></li> <li>And now what remains is to fix the kitchen because we do a kitchenette. We need to cut the pipes, put it put ceramics, but we are still poor."</li> </ul> <p><i>additional unit for second family (balcony)</i></p>		

#### H4 Customization of the Base House

interviews	photo-elicitation	drawings
<ul style="list-style-type: none"><li>• "I liked, because first thought put here, from here to there up after this room and reach from there. I did not like because it was going to cover half of that wall and I liked the wall this. And as I was bringing my dining here, I said, no, it will destroy the wall. It was better."</li></ul> <p>demolished interior partitions</p> <ul style="list-style-type: none"><li>• "Why is it important improvement? Because we need above all the liner, line it I lack the part of the roof, which is peeled. I need down here to expand this. You have not been able to further expand the house. No. The CAS record not brought us any help, but often by the help of the municipality, the CAS tab fucked us."</li></ul> <ul style="list-style-type: none"><li>• "That window I had to place it, with my little money, I gathered money and I did. I bought and put the door, too."</li></ul> <p>replaced window – modified the facade</p>		 <p>enlargement in the backyard</p> <p>enlarged living room</p> <p>a new constructed staircases</p> <p>not satisfied with size and location of the bathroom</p>

Family H5 constructed an additional bedroom on the first floor. They repositioned and constructed a winder staircase on the corner of the house. Demolishing partition walls, they enlarged their living room. Moreover, they painted the facade of the house and covered surfaces of the bathroom. Family H6 replaced their bathroom to the backyard. They enclosed their backyard with walls. Moreover, the family extended the kitchen by demolishing dividing partitions. They constructed three bedrooms on the second floor which resulted in spatial and formal customization of the house. In conclusion, they painted their bedrooms and placed ceramic tiles in the bathroom.

#### H5 Customization of the Base House

interviews	photo-elicitation	drawings
<ul style="list-style-type: none"><li>• "The first thing I did was change the color of the house [laughs] there's my friend and know the story, the first thing I did was change the color outside, when he joined him, gave jar of paint and ready, painting. It was a color, like damask first, yes, and then we changed the color, it's like a petrol blue, turquoise, this is the only house that has different color."</li></ul> <p>repainted the house</p> <ul style="list-style-type: none"><li>• "And the staircase was also changed? Yes, of course staircase, he (husband) also changed here, yes. And your neighbor's help? Yes, he too, among the three put the staircase here. You changed this part? Yes, also turned. How did with the times? Every weekend."</li></ul> <p>replaced the staircases</p>		 <p>replaced and remodeled the staircases</p> <p>modified the facade</p>

## H6 Customization of the Base House

### interviews

*enlarged the second floor – bedrooms*

• "And how was that, what began applying?"

First I expanded the bedroom upstairs, buy wood and make a room. He invited some friends who work in construction and his friends made the ceiling. And there then put floor, then the bedrooms of the girls and then to mine.

Are the parts were first?

Yes

And there were friends who worked in construction.

Yes

And how much was spent?

I do not remember because my husband brought all things, bought zinc, bats, everything.

And how long did enlargement?

How one week."

• "Here was a window, and he bought me these windows (balcony doors) because there were no windows, was small windows and doors. And little by little he started buying things."  
*customized facade of the house*

### photo-elicitation

*a new envelope of the house*



### drawings

*enlargement in the backyard*



## H7 Customization of the Base House

### interviews

• "The first thing we did was change the stairs. We changed the stairs, and had this small bedroom. That was the first thing we did."

*reposition the staircases*

• "I told my husband that we removed the wall there and we put there. Then we replaced dining, living and kitchen there to here. It was like everything bum small, little by little. Then we made it there, and then did the bathroom. Hence we get the bathroom, and that's the bathroom." *reposition the bathroom in the backyard*

• "When I got pregnant and my husband first thing he said, was to make more space, was to make the terrace, just for me. Then he started making concrete flooring, and put the roof with these irons. We put that roof and put that terrace."  
*added roof in the front yard*

• "And then and with him three years ago, four years, we sold my house, my parents' house as a month, my husband received a money in the job because he was fired. Then that money we used for outside - courtyard gate did the all-new, gated, yes, and we bought a car, thank god"  
*constructed a gate in the front yard*

### photo-elicitation



### drawings

*extension in the backyard*



Family H7 removed interior partitions and enlarged the living and dining room. With these customizations, the family united their kitchen and living areas. This unity of different functions is the consequence of replacing the staircase. The family repositioned the staircase to the corner of the house. Furthermore, they added two bedrooms on the second floor. In addition, they added a roof structure on the front facade. Regarding surfaces, they painted the interior of the house and placed ceramic tiles in the bathroom. Family H8 constructed an additional two bedrooms and a second bathroom on the second floor. They enlarged the kitchen on the first floor. Furthermore, they replaced the staircase, installed ceramic tiles in the bathroom and

kitchen.

#### H8 Customization of the Base House

**interviews**

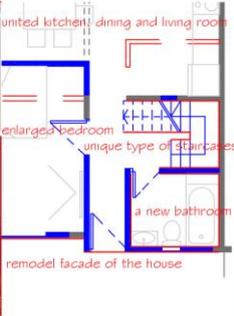
- "It is that my dad worked a little, working weekends or arrived in the afternoon a little. For this part we did not needed longer as one month, three weeks.  
And there were organized with your partner?  
Yes, right  
And when it was ready, what else did?  
After my dad and I started to settle down there in that room and my dad started building above, it would be my sister's part. We made another bedroom for my sister."
- "But once they were up, it was just better, because, we move as we want, for example the kitchen, cooking no longer was a problem. Because before we were sometimes three person into the kitchen, and my partner just loves to cook, he is good Master Chef, I tell you (laughs)."
- "I will not go up that staircases for example, I'll cut a staircases out, I will not bother my mom. Below is a door with no stairs, there's I have to do."

**photo-elicitation**

*extension in the backyard*



**drawings**



#### H9 Customization of the Base House

**interviews**

- "And that's the third bedroom?  
That is, one, two, three, also made bedroom. He did that and I saved money. I'm buying things, I am saving a little. And with the same mode of support from my boss."  
*story of financing the customization - incremental construction*
- "And you did this bedroom later.  
Yeah, like, you know how I made it, like four years ago, more or less. Little by little, it took us a year, something like that, because after the gate had to be done."
- "There are still things to extend. I want to get the bathroom, that's first. The second would finish up my stuff, parts of my bedroom, to put the window, those would be my dream, that's what I want to do next."

*first customization then painting*

- "And what things improved?  
I have not painted the house, because I want to finish it and then paint it.  
Yes. The other thing I did was this, the floor and walls, all this was not, and the wall from here forward, I changed the door."  
*remodeled walls and change doors*

**photo-elicitation**

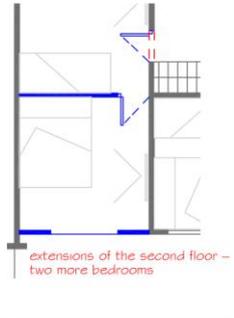
*modified facade*



*unique roof structure*



**drawings**

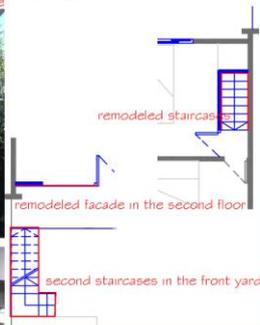


Family H9 made spatial, formal, and functional customizations to their house. They did not covered surfaces of the house. They constructed two bedrooms on the second floor. A wooden structured roof with aluminum plates covered this extension. This family maintained the original staircase of the base house. Family H10 changed the direction of the staircase. They constructed two bedrooms and a second bathroom on the second floor. They painted the interior of the house and placed ceramic tiles in the bathroom and dining room.

## H10 Customization of the Base House

<p><b>interviews</b></p> <ul style="list-style-type: none"> <li>• "And my neighbor there have no problem, my neighbor from here either, they did there that side and she did the other side and help and here the same, then the fence there as well of iron and like half and half here."</li> <li>rearrange the staircases – change the direction</li> <li>• "This bedroom, that bedroom, readjust the staircases"</li> </ul> <p>How was the staircases before? The staircase, you went there, and up to here, up there Sure, sure I turned them around, gave it back because everyone changed it, almost all people, staircases well, and has a rest here, most people have it as well I do not mean to do it well, I told my old lady "yes, we will be slower but I'll put that way," and cut a bit because it was longer and put it there and then put the average there are 4 doors for each bedroom."</p> <ul style="list-style-type: none"> <li>• "Ah you like the original floor"</li> <li>Sure, sure This is the original floor, later I want to place ceramic in the bathroom and bathroom floor, there also I am missing ceramics, at least we have done nothing in this direction so far, but we want a future."</li> <li>maintained the original floor</li> </ul>	<p><b>photo-elicitation</b></p> 	<p><b>drawings</b></p> 
---	---	---

## H11 Customization of the Base House

<p><b>interviews</b></p> <ul style="list-style-type: none"> <li>• "Yes, if it cost too much. That, that windows there were made by someone else, I did that 3 years or so Here it was dark, but ... also a hole here, missing window and I had no window and I did put that window install new windows (balcony doors)</li> <li>The 2 windows ...</li> <li>I have redesigned the house [laughs] I have shaped my home. And the back then I made? I did that because I did several years ago."</li> <li>replaced the bathroom in the backyard</li> <li>• "In the background is the bathroom"</li> <li>Yes, in the background This is the bathroom, see? That's the bathroom. No I don't want a tiny bathroom that you barely fit in For bathroom, because the bathroom was there</li> <li>added second staircases and replaced original</li> <li>That, and the dining room had it there</li> <li>This staircase</li> <li>Sure, And no, and another thing, the bathroom was there.</li> <li>Next to the dining room</li> <li>That was the most terrible, ake the bathroom there, because otherwise you could not, as will be there the dining room and the bathroom there."</li> </ul>	<p><b>photo-elicitation</b></p> <p>remodeled facade</p> 	<p><b>drawings</b></p> 
--	--	--

Family H11 relocated their bathroom to the backyard. They enlarged the living area and created a wide hallway on the first floor. In addition, they constructed an additional external staircase and balcony on the front facade. Thus, they introduced formal changes to their house by placing balcony doors on the front facade. In house H12, three generations of the same family live together. They constructed an additional unit in the backyard of the house. This unit contains a bathroom and a larger bedroom. They remodeled the original staircase, and added a second staircase which leads toward an additional two bedrooms on the second floor. Furthermore, they covered the dining and living room with ceramic tiles and painted interior walls. In adding balcony

doors, they changed their front facade.

### H12 Customization of the Base House

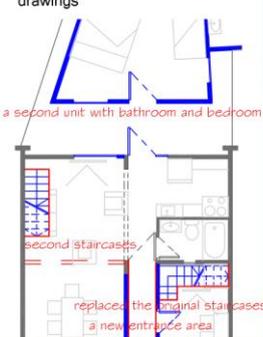
**interviews**

- "After over time and, like 5-6 months began to extend. Sure, first did that bedroom and change the stairs because the staircase was here, at the entrance and moved there and there was this bedroom and there so to have more comfort, because we left the kids there and us here and my parents here below, while doing that bedroom there."
- added second staircases and replaced the original
- "Yes, my dad was a carpenter, my dad knew how, and also his friends, they are living in the same house at the end, they also helped him."
- "And a bedroom?  
One bedroom and one bathroom  
Now house has two bathrooms? An additional bathroom for your parents?  
No, that one we all share. For one, there were some fights in the morning."
- additional bathroom and bedroom as a second unit

**photo-elicitation**  
a new entrance area



**drawings**



a second unit with bathroom and bedroom

entrance of a second unit

second staircases,

replaced the original staircases

a new entrance area

### H13 Customization of the Base House

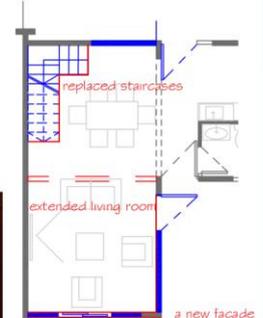
**interviews**

- additional windows
- "For example what I do here below, is to a terrace, a balcony, and I put two windows. Then from inside of the room we opened the window and go outside. That I pretend, be putting a chair that. Because here many that have changed are beautiful. I did not like my house, the colors, I felt discriminated. I did not think it would be well, they showed us this and I said, "but are painted well?" And I said yes, "but why do that?"
- dislike the original color of facade
- "Sure, he disarmed all here. The other thing it got wet when it rained here to inside and the door was spoiled. And my other daughter was not here at that time, I went with my partner for new doors."
- remodeled the facade of the house

**photo-elicitation**  
remodeled the facade of the house



**drawings**



replaced staircases

extended living room

a new facade

Family H13 added two bedrooms on the second floor (a1). They changed the entrance door. Furthermore, they placed a balcony door on the facade of the living room. In conclusion, they painted the interior surfaces of their house.

From this analysis of base house customizations, I argue for the working template of incremental housing. This template will directly influence design and construction of the base house. Furthermore, it would support the customization process by dwellers. This support is embodied in design templates which represent the concluding point of this dissertation.

## 6.2. Dwellers' Motivation to Customize their House

The customization of the base house represents the essence of incremental housing. However, motivation for this customization of houses changes in different projects. There is no universal set of motivations that influence every incremental housing project. Thus, every low-income family after inhabiting the base house has its own set of motivations for customizing their house. From data from my fieldwork, I define three groups of families who share similar motivations for customizing their houses (table 15).

Dwellers' motivation for customizing their houses			
		Explanation	Recorded cases
(1) Extension of the base house	Lo Espejo	<b>Low level:</b> Houses delivered with additional two bedrooms. Most of families were satisfied with spatial property of delivered base house.	Family E4 used the opportunity to extend their base house on the community parking place. Family E6, "we needed more space for the arrival of new family members" ( )
	Las Higuera	<b>High level:</b> Customized the base house to gain enough space for their need to provide a bedroom to all members of the family.	Families H1, 2, 4, 7, 8, 9, 10, 12, and H13 share similar motivation for their customization which is embodied in creating more room for their family members.
(2) Remodeling of the complete house	Lo Espejo	<b>Moderate level:</b> three families did not customize their house. Other families performed moderate level of remodeling.	Family E1 remodeled the whole house. Family E2 remodeled their staircases and the whole third floor layout.
	Las Higuera	<b>High level:</b> almost all families remodeled their complete house. Exceptions are families H5, 9 and H13.	Families H1, 2, 3, 4, 6, 7, 8, 10, 11, and H12 completely remodeled their house.
(3) Covering the surfaces of the complete house	Lo Espejo	<b>High level:</b> most of families painted their facade and covered interior surfaces with ceramic tiles.	Families E1, 3, 4, 6, 7 and E8 painted facade. All families used ceramic tiles for interior.
	Las Higuera	<b>High level:</b> most of families painted their facade and covered interior surfaces with ceramic tiles.	Families H1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and H13 painted facade. Families H1, 3, 7, 8, 10, 11, and H12 used ceramic tiles for interior.

Table 15. Dwellers' motivation for customizing their houses

In the first group are families which had enlargement of houses as their main motivation for customizing the house. Family E4 used the opportunity to extend their base house to the community-parking place. The community leader of Lo Espejo allowed the family to enlarge their house in the front yard. The family to create their own local business used this extension of the house. In this regard, family E4 invested most of their effort and money to formal customization and a small percentage to interior adjustment of the house. Family E6 had similar motivation, they inhabited the

smallest house in the condominium. From observation of their neighbors, they customized the base house to gain enough space for their changing needs. These needs are present with their statement that they “need more space for the arrival of new family members.” During my fieldwork, I recorded a low level of extension in the Lo Espejo project.

In comparison to Lo Espejo, families from Las Higeura were more motivated to customize their house since they did not have a second subsidy for the extension of their houses. The base house of Las Higeuar was delivered with a single bedroom and a total area of 45m<sup>2</sup>. This small unit was not enough to house large families. Most of the families from Las Higeura have five or more family members. Families H1, 2 4, 7, 8, 9, 10, 12, and H13 share similar motivations for their customization, which is embodied in creating more room for their family members.

In the second group are families which remodeled their complete house. Most families from Lo Espejo initiated a customization process which resulted in rearranging their house according to their needs. In this regard, families from Lo Espejo represent a moderate level of customization in regards to remodeling the complete house. An example of this practice is family E1 which initiated customization after inhabiting the house because of unsanitary conditions they found while moving into the house. To achieve a sanitary environment for their family members, they remodeled the whole house. In continuation, family E2 initiated their customization of the base house for more convince. They felt that the staircase of the base house took up too much space and that the house was not functional enough. In addition to Lo Espejo, Las Higuera famileis performed a high level of remodeling of the complete house. The layout of their house is more diverse and every family developed their personal housing solution. In this regard, families H1, 2, 3, 4, 6, 7, 8, 10, 11, and H12 completely remodeled their house.

The third group represents families that customize their house for aesthetical reasons, in particular for covering surfaces of their complete house. In both case studies, I recorded high levels of covering the surfaces of the complete house. This notion is explained though the architect' s suggestion to families that they can freely cover their surfaces without restraints.

### **6.3. Dwellers' Organization of Customizing their House**

Customizing the base house represents additional challenges to low-income families. During their life in the slums, families lost the habit of paying utilities bills. This aspect of a new living environment represented a troublesome situation when inhabiting their house. According to collected data from my fieldwork, I recognize three categories of family investment in the customization of the house, low, moderate and high level of investment in the customization of the base house (table 16).

The low-level of investment of customizing the base house has a similar percentage present in both cases. An example of a low-level of investment in customizing is family H5. They after inhabiting the base house customized their house with 200 Chilean pesos which is equivalent to US\$400. Family H5 performed this low-level investment by recycling materials from their previous settlement and developing by themselves construction methods to accommodate their limited financial structure. For similar cases of families that moved out of the illegal settlement into the base house and do not have financial resources for customization, the architect should provide to them necessary information for customizations made by recycling existing materials.

<b>Families' investment in customization of the house</b>	
<b>(1) Low level</b>	more than 1/5 of families in both cases. An example of low-level of investment is customizing is family H5.
<b>(2) Moderate level</b>	3/5 of all interviewed families. Family H12 who customized their house as part of community action. Other families adopt similar strategy for customization.
<b>(3) High level</b>	less than 1/5 of all interviewed families. Families E4 and H12 represents the highest investment in customization.

Table 16. Families' investment in customization of the house

The middle-level investment of customizing the base house embodies 3/5 of all interviewed families. Based on experience from my fieldwork, these families are the majority of the participants in incremental housing. In this regard, it is of importance that the architect provides recommendations to the most effective and at the same time the most affordable building techniques which would accommodate families' plans of customization. An example of this phenomenon is family H12 who customized their house as part of community action. With their four neighbors, they created a community organization with the aim of customizing their houses together. This action provided to every family in the group free labor for construction and a shared knowledge base of customization.

The high-level investment of customizing the base house represents less than 1/5. Families E4 and H12 represent the highest investment in customization. This level of investment displays the ultimate limit of customization of the base house. Any customization by dwellers, which goes beyond this limit, would jeopardize the safety and long-term success of the housing project. From this structure of investment in the base house, I present the organization of customization process (table 17).

<b>Families' organization for customizing houses</b>	
<b>Source of construction materials</b>	<b>Explanation of construction process</b>
<b>(1) Home Center Sodimac</b>	- Families E1, 4, 7, H1, 2, 5, 7, 8, 10, 11, 12, and H13 using this hardware store because of the available credit payment. Credit payment combined with community construction process represents the most affordable building solution.
<b>(2) Support and help of families and friends (community construction)</b>	- Family E1, 3, 4, 7, 8, H1, 2, 3, 5, 6, 7, 8, 9, 10, 12, and H13 completed their house using existing social network. Families H3, 5, 7, and H12 stated that the whole family participated in construction process with help from the community. Construction materials are generated through personal connections between families.
<b>(3) Other sources</b>	- Families E2, 6, and H11 hired a construction worker who brought their own construction materials. - Family H4 received additional housing subsidy which took control of whole construction process. - Family E2 bought their materials online, and it was delivered to their address

Table 17. Families' organization for customizing houses

Most families bought materials for customization in the nearby Home Center Sodimac (families E1, 4, 7, H1, 2, 5, 7, 8, 10, 11, 12, and H13). The reason for using this hardware store is the available credit payment that families are able to use for their customization. An additional factor for customization is that some family members had already experienced working in construction sites. This tacit knowledge combined with existing social networks present, represents the strongest point of families organizing the customization process. Most families get support from their friends and family members to complete their house.

Families who did not buy their materials in the Home Center Sodimac depended on support and help of their families and friends to complete their house. For example, family E3 stated that their father took materials for the fence from his employment place. I recorded a similar scenario from family H3 who received construction material in the form of a donation from friends. In addition, E2 family bought their materials online, and it was delivered to their address.

Families E1 used the help of their parents to construct their house. In addition, the husband of the family worked in construction. Similarly, family E3 performed the construction with the collaboration of their children and their friends. In addition, their parents brought materials for the fence from their work. In the same manner, family E1, 3, 4, 7, 8, H1, 2, 3, 5, 6, 7, 8, 9, 10, 12, and H13 completed their house with the help of cousins and

their friends. This organization of the construction process represents the strongest argument for future incremental housing projects. Most families work after their working hours and during weekends to complete their houses. Families H3, 5, 7, and H12 stated that the whole family participated in the construction process with help from the community. This community design represents the most affordable solution to organize the construction of their houses. During the construction period, the ladies of household H7 and H12 recorded that they were cooking for workers and kids who were delivering food and tools for construction. This cheap labor and shared knowledge of construction is the main argument for the incremental logic of construction.

In contrast to community construction, I present as a third category, another alternative source for construction materials. Families E2, 6, and H11 hired a construction worker who brought their own construction materials. In all cases, this was a person from the neighborhood or recommended by friends. Family H4 received an additional housing subsidy which covered the whole construction process. In addition, family E2 bought their materials online, and it was delivered to their address. The outcome of this construction process created partial satisfaction in the family. In conclusion, the organization of customization was executed differently. However, most families depended on their social network and family bonds. This notion of organization represents the confirmation that houses for low-income families will be inevitably customized and the architect should support this customization.

#### **6.4. Outcome of Realized Customization**

From surveillance of the customization of base houses, I present the main methods and strategies developed by low-income families. I analyzed dwellers' customization strategies of the base house through lenses of four categories spatial, formal,

functional, and finishing of surfaces. These analytical categories support the discussion of the importance of customization as an instrument in bridging base houses with their adjustments achieved by low-income dwellers. In this regard, with drawings, photos taken by dwellers and interviews I present changes the base house underwent over a seven-year circle. From this analysis, I selected important lessons regarding customization and selectively display them here.

Family H2 and H9 discuss the process of customizations. Family H2 stated, “imagine that you are taking little by little [...] slowly you learn by doing.” This notion of dwellers’ construction as a process of learning and improving their work and their base house is the core idea of the program. In this regard, family H9 recollects their process of customizations. They explained their process, “he (spouse) did that and I saved money. I am buying things, and in same time, I am saving a little. We made it thanks to support of my boss, too.” They continue, “little by little, it took us a year.” Although the customization process is an additional weight for low-income members, these families support the incremental construction process. In contrast to this positive perspective, some families of Lo Espejo misinterpreted the nature of the base houses. Family E5 stated during interviews “we were told very clearly, at the last meeting, that we could not enlarge, nor the second or the bottom floor.” This misconception of the base houses harms customizations and it negatively influences the development of incremental houses. In this regard, it is of significance to inform low-income families about incremental process.

The most frequent customization of base houses by dwellers was the replacement and remodeling of the staircase. Most families customized the staircase of their house. The exceptions to this rule are families E5, 7, 8, and H9. Families E 3, 4, and E6 inhabit single floor houses without staircases. This notion of rearranging the staircase is supported by the statement of family H10, “I turned them (staircases) around, change their direction because

everyone changed it, almost all people.” Besides rearranging the staircase, families H3, 11, and H12 constructed a second staircase in front or within their house (table 18).

Recorded customization of the base house			
		Lo Espejo	Las Higuera
staircases	recycle parts of the original staircases	✓	✓
	spiral type of staircases	0	✓
	winder type of the staircases	✓	✓
location and size of the bathroom	extended original bathroom	✓	✓
	replaced the bathroom	0	✓
	constructed additional bathroom	0	✓
location and size of the kitchen	enlarged the kitchen	✓	✓
	replace the kitchen	0	✓
enlarged living and dining room	demolishing diving portion between living and dining room	✓	0
	extend the living and dining room	✓	0

Table 18. Recorded customization of the base house

From analysis of the customized staircases, I conclude that dwellers recycled parts of the original staircases. I argue that the attitude to recycling is partly related to dwellers’ limited tacit knowledge of construction and partially due to economic reasons. Exception to this notion of customizing the staircases is family H2 who developed a spiral type of staircase. Families E2, H1, 3, 4, 5, 6, 7, 11, 12, and H13 developed winder types of staircases. This type of staircase is the most common because of the relocation of the customized staircase. In this regard, similar to the rule that the bathroom should not be designed in the central area of the base house, not to prevent and disable customizing base houses, the staircases also should not be located in the central area. From the responses in my fieldwork, I can conclude that the corner of base houses represents a better area for the location of the staircase. On the subject of typology of the staircase, I conclude that a straight type of staircase used in base houses of Las Higuera is not the best solution for stimulating the customization process. From the responses in my fieldwork, the winder type of staircase is confirmed as a better solution.

After the staircases, the next focus of the customization process is the location and size of the bathroom. Families E4, 6, H3, 6, 7, 8, and H11 spatially extended, replaced, and covered their bathroom with ceramic tiles. In addition, H10 and H12 constructed an additional bathroom. Family H10 constructed an

additional bathroom on the second floor, and H12 in the back yard together with a supplementary bedroom. From surveillance of both housing projects, I recorded more cases of Las Higuera with replaced and remodeled bathrooms than in Lo Espejo. Excluding family E4, all families in the Lo Espejo houses kept the location of the delivered bathroom. From this observation, I conclude that instead of locating the bathroom in the entrance or the central area, it is a better solution to place it towards the back of the base house. Due to this, dwellers have more space to manage the customization of the base house. This suggested location of the bathroom is linked with my next suggestion of the location of kitchen.

Families E1, 4, 6, H3, 6, 7, 8, and H11 enlarged their kitchen. Furthermore, families H8 and H12 constructed an additional kitchen. From reported customizations of the kitchen, I conclude that the current location in the central area of the house represents the best solution. Furthermore, this original location of the kitchen should stay connected by a dividing partition with the bathroom. The change I introduce is the replacement of the bathroom from the central area to the back facade.

Except for families E3, H5, 9, and H10, all other families present in this dissertation enlarged the living and dining room by demolishing the dividing partition between the living and dining room. From this statement, I observed that some delivered partitions of base houses are not necessary and hinder customization by dwellers. Such an example is a dividing partition between the living and dining room. Instead of delivering needless dividing partitions within the base house, I propose that the architect should design columns instead. The source of this suggestion is the central area of the first floor houses of Lo Espejo. In Lo Espejo, Elemental designed a central column which is kept in the original state by families E3 and E4. This element enabled different customization strategies; one such strategy is visible in the house E6.

Almost all families covered the surfaces of their base houses. In addition, they modified their front and back facades and added new windows or balcony doors to their houses. These small-scale customizations characterize the authenticity of each base house and represent personalization of the base house.

From the lessons about the customization of the base house, I construct the main argument of this dissertation which is the role of the architect. These lessons are in the service of a profound knowledge base of the incremental process of construction. Collected data of the customization process allows us to understand in detail dwellers' needs and their expectations of the base house. From this understanding, I propose that the architect has to benefit from this knowledge base. In this regard, I use lessons from the customization process to propose that the architect should supervise the customization process. This supervision by the architect is represented by delivering the template of customization.

## **6.5. Positioning the Architect in the Context of Customization**

On the one hand, from the analysis of families' motivations and organization of customizations we can conclude that adjustment of the base house is an inevitable outcome of this housing solution. On the other, from recorded customizations of houses I conclude that families' adjustments of houses were performed with unnecessary spending. These outcomes were caused by nonexistent information by the architect about the customization process. The main argument of this dissertation is the onerous process of customization caused by the architect leaving ahead of time in the process of housing low-income families.

The absence of the architect from later stages in incremental houses represents the main issue of this housing solution. The

base house with its predictions of completion does not provide enough guidelines for future customizations by families. In this regard, we need to reposition the architect's responsibility in regards to the customization process. From examination of families' organizational skills and their social networks, which will support customization, the architect can learn practical lessons.

The architect can learn from how families obtain materials for construction. In both case studies, I recorded that twelve out of twenty one families bought their material and construction equipment in the nearby Home Center Sodimac. One possibility to how the architect can use this information is embodied in suggestions for construction materials. The architect could propose to families which material and construction tools in nearby hardware stores are most suitable for family use. Providing a list of affordable materials and construction gear would support affordable aspects of this housing solution.

Another possibility for the architect's involvement in families' organization of customization is suggestions for buying materials and gear for construction on the level of the whole community or groups of families. The families would be able to get discounted prices and lower levels of credit fees for buying larger quantities of materials in their nearby hardware store. This aspect of community construction would support families participation and would make their neighborhood bonds stronger. In both cases, the architect has a big say in the suggestions for improvements to the current organization of the customization process.

Families who did not buy their materials in the Home Center Sodimac depended on the support and help of their families and friends to complete their house. The architect can take valuable lessons from these practices. For example, family E3 stated that their father took material for the fence from his employment place. I recorded a similar scenario from family H3 who received construction material in the form of a donation from friends. In addition, family E2 bought their materials online, and it was delivered to their address. Analyzing these examples, the architect

would acquire more information of families' possibilities to organize the customization of their house. In knowing more about families' access to construction materials and tacit knowledge, the architect would be able to provide suggestions for building affordable and effective housing customizations. This notion of supervision of customization does not exist in current practice. In this regard, the architect should be more engaged in the customization process by providing understandable suggestion to families.

In conclusion of this chapter, I link the second group of research questions with my findings from the fieldwork. The second set of research questions addresses the customization of the base house. To answer the question about families' motivation for customization, I use subchapter 6.2. There I presented three categories of families' motivation for customizing their houses, in particular the extension of the base house, remodeling of the complete house, and covering the surfaces of the complete house. For the Lo Espejo project, I recorded that that families' motivation for extension of houses – was low level, for remodeling – moderate level, and covering of surfaces – high level. For Las Higuera I recorded high levels applicable to all three categories.

From analysis of families' organization for customization, I used subchapter 6.3. Families E1, 4, 7, H1, 2, 5, 7, 8, 10, 11, 12, and H13 used Home Center Sodimac for buying construction materials and organizing their self-help construction of houses. In addition, Family E1, 3, 4, 7, 8, H1, 2, 3, 5, 6, 7, 8, 9, 10, 12, and H13 used their social connections (family and friends) to complete their houses. In addition, families E2, 6, and H11 hired a construction worker for customization works. Family H4 received an additional housing subsidy which covered the whole construction process, and family E2 bought their materials online.

These findings on the customization of the base house I relate to Buber' s notion of actuality. For the argument of actuality, I use Buber' s notion that “actuality is an activity in which I participate

without being able to appreciate it.”<sup>160</sup> He argues that actuality does not support self-appreciation. This idea of detachment supports the argument of the role of the relational architect. Encouraging families to detach themselves from their construction process, the architect would be able to initiate discussion about completing their houses. This discussion would have the aim to approach the customization process as an individual perception instead of an organizational way of completing the house. This individual perception would be achieved with help from the architect’ s proposal of the working template. In personalizing the template, families would be able to achieve a layout based upon their needs.

---

<sup>160</sup> Martin Buber, “I and Thou,” (2010), Martino Publishing.

# Chapter 7. The Proposed Working Template for Incremental Housing

## 7.1. The Architect' s Prolonged Responsibility

How to improve the current structure of incremental housing by extending the responsibilities of the architect without reducing the participation process of low-income dwellers? In prolonging the responsibility of the architect the program runs the risk of becoming more *top-down* orientated. In addition to this statement, Gabriel Arboleda argues, “often incremental housing development projects are implemented in a top-down approach.”<sup>161</sup> This is the case in both projects in this dissertation. In this regard, Arboleda acknowledges, “donors and architects are not always accepted and well received by communities. Therefore, community involvement and acceptance of projects is essential. This means that incremental housing projects cannot be designed on an architect' s desk, but rather must be developed through a participatory, case-by-case process. Furthermore, such a process helps ensure cultural appropriateness and long-term sustainability of the project.”<sup>162</sup>

Current incremental housing already bears a resemblance to top-down housing development. In assigning the location, designing, and delivering the base house without the involvement of the low-income families, the current housing projects create onerous platforms for the participation of beneficiaries. In this regard, investing additional resources to the experts without extending the expectation of their work, as is the case of the current Chilean government's financial “improvement” of the

---

<sup>161</sup> Gabriel Arboleda, “Incremental Housing Design Consideration,” In Laura Delgado, Xenia Antipova, “Incremental Housing and Haiti,” (2010), UN World Urban Forum Rio, Global University Consortium.

<sup>162</sup> Gabriel Arboleda, “Incremental Housing Design Consideration,” In Laura Delgado, Xenia Antipova, “Incremental Housing and Haiti,” (2010), UN World Urban Forum Rio, Global University Consortium.

housing program, we lose the potential of dwellers' participating. In opposition, if we deliver a structural frame to families and allow low-income families to develop their houses as they please, they will break most of urban regulations by creating unsuitable neighborhoods which would bear a resemblance to current illegal settlements.

Considering these extreme positions of incremental housing, I propose the middle ground. The architect should prolong his/her responsibility by providing a working template before designing, during designing, and after families inhabit the base house. Alongside the design of the base house, the architect should examine the social structure of low-income families before the start of the design process and assists the customization process after design. This assistance is not an obligatory phase of construction. In contrast, it will represent a source of different construction strategies that would support dwellers tacit knowledge of the customization of their house. This proposed structure of a working template represents the prolonged responsibilities of the architect. Providing additional information to dwellers about design and construction of incremental housing would increase participation practice by families. Instead of depending on artisans customizing the houses of low-income families, with more information about potentials of the base house, families would be able to do more construction by themselves.

The notion of extending the responsibilities of the architect in incremental housing derives from their current distance from the customization process of base houses. Current incremental housing projects are delivered to low-income families as base houses with proposed stages of customizations. Both, design of the base house and proposed phases of customization reflect the architect's position of *I Know Best*. In contrast to this notion of design, I argue that architects need to relinquish their preconceptions of incremental construction. Furthermore, "the role of the architect

should not be viewed narrowly as a designer.”<sup>163</sup> I acknowledge that by designing the base house the architect does not demonstrate the full design capabilities. However, this does not represent a negative side of incremental housing. On the contrary, limited design potentials of the base generate possibilities for examining the customization process by dwellers. The architect who designs the base house should always have in mind different possibilities that their housing layout could open up to dwellers’ customizations.

The Ethnographic Non Arkaraprasertkul argues for the importance of the long-term process of construction. Arkaraprasertkul noticed, “when the architects know for whom they are building, they can design better and thus improve the long-term success of the incremental solution.”<sup>164</sup> He suggested that “architects should enter the field to find out what people want and need, to reduce the chance of architects designing what they think people need as opposed to what they actually need, as incremental housing lasts for a lifetime.”<sup>165</sup> The first-hand information gathered would help buffer the researcher from direct influence of other scholars’ interpretations. Then, the actual information learned in the field would benefit the architect to design better quality base houses and provide productive platforms for their customizations.

The prolonged responsibility of the architect would support the whole development of incremental housing. In this regard, we would avoid needless construction expenses of adjusting the base house for its customization. Therefore, in increasing the architect’

---

163 Laura Delgado, Xenia Antipova, “A Debate on Incremental Housing: Can an Old Answer be the New Solution for how to best rebuild Haiti?” (2010), UN World Urban Forum Rio, Global University Consortium.

164 Non Arkaraprasertkul, “Linking Architects, Planners, Builders, and Community in an Incremental Housing Approach,” In Laura Delgado, Xenia Antipova, “Incremental Housing and Haiti,” (2010), UN World Urban Forum Rio, Global University Consortium.

165 Non Arkaraprasertkul, “Linking Architects, Planners, Builders, and Community in an Incremental Housing Approach,” In Laura Delgado, Xenia Antipova, “Incremental Housing and Haiti,” (2010), UN World Urban Forum Rio, Global University Consortium.

s responsibilities the logistics of the project would be improved and low-income families would complain less about being forgotten by extorts.

For the argument of the scope of the architect's responsibility, I present three stages to incremental housing, preparing for design, design of the base house, and supervision of customization. These stages are regarded as potential areas for reinventing the architect's role in incremental housing. The first stage, from analysis of the base house, focuses on preparing the design of the base house. From analysis of two case studies, I propose a new set of activities for architects to follow in order to deliver high quality incremental houses. These sets of activities support the argument of better design solution of the base house which will support families' inhabiting the house. Furthermore, these sets of activities represent the platform for the working template for preparing the design of the base houses. The working template reinvents the current design practice of the base house.

The second stage focuses on controlling the design quality of the base house. From analysis of two case studies, I use four design lessons of the base house which are presented in chapter five. These lessons provide material for readjusting the current role of the architect and develop further designing of incremental houses.

The third stage of analysis is based on the base house customization. From dwellers statements, their photo-elicited photographs, and analytical drawings of different customization approaches, I propose that the architect should provide to dwellers different possibilities of customization embodied in the template. Base houses should be delivered with three types of templates of customizations which display instructions for completing the house. These three instructions would help the architect to unite the base house with the customization process. In this regard, I restructure current incremental housing by proposing a new responsibility of the architect as a supervisor of the customization process.

In the guideline, I display how the architect can improve the design of the base house and its customization. Thus, the architect takes a more responsible role of delivering the base house which supports the customization process. The motive for the working template of the base house is founded on dwellers' statements of their struggle with the initial house. Although, I do not agree with their statements that the structure of the base house is constructed with low quality material, I acknowledge their concern about different materials in their house. These concerns are established based on uncertainty about what level of the adjustment of the base house they are capable to achieve without harming the structure of the house.

This uncertainty of the existing structure of the house indicates that dwellers are not well informed about their options to adjust the base house. An example of this practice is the statement of family E5 that stated, "we could not place plaster on all walls supposedly because it is much weight to the house on the first floor." They continue, "we were told very clearly, at the last meeting, that we could not enlarge, nor the second or the bottom floor." This misconception of the base house harms and negatively influences development of incremental houses.

It is of significance to advise low-income families about the limits of customizations. Instead of passing this responsibility to community leaders who are not experts and do not know the structural properties of the base house, I add-on this responsibility to the architect's role. In accordance with the notion of advising low-income families about customization phases, I propose that the architect as supplementary material to the base house should deliver to low-income families a simple brochure with layout drawings of the base house, properties of materials of the base house, easy to read building instructions of customizations followed by short written descriptions.

Based on the FSV1 regulation about the architect's responsibility, I propose that within the regulation of the design of base house, governments should implement the extended role of

the architect, to advise dwellers on customization. This advising strategy by architects would be submitted together with the design of the base houses. Due to this, before approving the incremental housing project the government would ensure that the architect supports their expertise with the customization process. After the construction of the base house is finished it is the responsibility of the government to deliver with the house a construction brochure to each family.

## **7.2. Structure of the Working Template for Incremental Housing**

The additional responsibility of the architect is embodied within the structure of the working template. In this regard, it is important to consider the fact that the base house is not a conventional house which will be moderately customized by users. In contrast, the base house represents a housing nucleus that will take function and form according to dwellers' needs. This housing solution conceptually and practically depends on future customization by low-income families. In addition to delivering the base house, the architect should have the additional responsibility of providing a working template for incremental housing (table 19). This working template would in a simple manner explain to dwellers the designed layout of the base house and its potential for customization.

<b>The composition of the working template of incremental housing*</b>	
Three Phases of the Working Template	(1) Preparing design of the base house (2) Designing the base house (3) Customizing the base house
Applied Building	Housing
Application	New buildings   Low rise (maximum 3 stories high buildings)
Coverage of Phases	Organizing communities - Designing – Inhabiting - Customizing
Purpose	Useful for the architects, the developer, and low-income families involved in incremental housing projects.
Users	The architect (and other building professionals e.g. construction companies and the engineers) The developer The policy maker
Type of the Working Template	Performance, Perspective, and Advisory Guideline
Framework	How to design the base house stressing the importance of the architect? Approach & Principles
Category Base	Preparing the ground for design, designing, and supervising incremental process of construction
Critical Explanation	How to prepare the ground for designing process? How to design the base house which supports customization by families? How to support affordable customization process?
Compulsory Extent	Recommendation

\*From constructing the working template, I used the architect's responsibility of preparing the design solution, designing the base house, and supporting customization as three aspects of the architect's additional responsibility during delivering the base house. These three aspects support the argument of better design solution of the base house. The working template reinvents the current design practice of the base house.

Table 19. Framework for proposed working template for incremental housing

From constructing the working template, I used the architect's responsibility of preparing for design, designing the base house, and supervising customization of houses. These three aspects support the argument of better design solution of the base house. In this regard, the working template represents universal lessons in incremental housing. It should serve the architect, the developer and the policy makers involved in incremental housing solutions. The working template is constructed from three categories: preparing the design, designs the base house, and supervising families' customization.

This structure of the working template reinvents the current design practice of the base house. The proposed three categories of the working template directly influence the architect's responsibility and incremental process of construction. In this regard, I present the working template as a new structure of incremental housing. This new structure would provide sturdier relationships between the base house and its customization. In addition, the architect would take a more significant role in incremental construction. From this proposed structure, low-income families would gain the most. In avoiding needless

construction work and investment in troublesome construction processes, the families would be able to focus more on the extension and the improvement of the incremental houses.

The first category is preparation for the design of houses. Within the working template of preparing the design process, the architect should use five points for presenting the incremental house to families. Each of these points has two stages which the architect should use for delivering a good layout of the base house. In the short term, the architect should introduce the initial challenges of inhabiting the house such as heating systems, cold shower waters, lack of furniture and kitchen equipment. In the long run, the architect should inform families about unfinished surfaces, dust in the neighborhoods, unfinished landscape designs of the front and back yards.

In continuation, I present the second category of the working template. This category is the design of the base house. To deliver a flexible base house that supports customization I propose regulations for the design of the base house. These suggestions are based on analysis from my fieldwork. We should design communication on the edge of the floor plan. I propose that staircases should be located on the corner of the house, and hallways should present a logical connection between bedrooms and the staircases or/and the entrance area. During the design of the house, the architect should preserve the central area of the house. The central area should be delivered to families as an empty space. With dwellers customization in mind, the architect should design the basic elements of the house. In conclusion, the facade of the house should be enclosed. Families should inhabit the enveloped form of the base house. The envelope would protect families from bad weather and would enable customization process throughout the whole year.

The third category is the architect's involvement in families' organization of customization by suggesting a creation of communal practice. To buy materials and gear for construction the architect could advise families to perform this action on the level of the

whole community or groups of families. The families would be able to get discounted prices and lower levels of credit fees for buying larger quantities of materials in their nearby hardware stores. This aspect of community construction would support family participation and would make neighborhood bonds stronger.

With these three categories of the working template, the architect has an important impact on families inhabiting and adjusting their base house. These three categories of the working template should be taken as a universal rule for future incremental housing projects. In designing the base house and negotiating with low-income families, the architect should provide to families the working template for inhabiting and customizing their base house. These instructions for inhabiting and customizing the house would secure the successful start of long incremental construction by families. After inhabiting the house and performing minor adjustments, families should use the working template to organize the most efficient and affordable ways for their adjustment and customization process. Both levels of the working template principle would enable the architect to take additional responsibility by designing incremental housing.

### **7.3. The Working Template for Preparing the Design of the Base House**

Having in mind the dwellers expectation of the base house, the architect should deliver the working template for preparing the design of the base house. This working template would be presented in the structure of an empty pamphlet that is to be filled out by the architect with information about families' needs and wishes. In this regard, the working template would not be a universal lesson, but would represent particular families' expectations of inhabiting their incremental house.

<b>(a) The working template for preparing design of the base house</b>		
	<b>Phase 1</b>	<b>Phase 2</b>
<b>a1. Introduce the idea of the base house</b>	Definition of the base house and what that idea signifies for low-income families.	Having families' expectation in mind, presenting the idea of the base house to families.
<b>a2. Acknowledging families' expectation of the base house</b>	Recording families' expectation of the base house.	Evaluating families' expectation and finding implementation in the design of houses.
<b>a3. Introduce the design of the base house</b>	Present to families the first draft of the designed solution.	Present the possibility to adjust the design based on families' needs.
<b>a4. Inform dwellers about limits of the proposed design</b>	Acknowledge functional limits of the base house.	Introduce spatial limits of the house.
<b>a5. Prepare families to inhabit the base house</b>	Introduce possible challenges during first months of living in the base house.	Introduce long term challenges of the house.

Table 20. The structure of the working template for preparing design of the base house

Within the working template for preparing the design process, the architect should use five points for presenting the incremental house to families (table 20). First, the architect should introduce the idea of the base house to low-income families (table 21). This should be done with the definition of the base house and what that idea signifies for low-income families. After the definition, having families' expectation in mind, the architect should present the idea of the base house to families.

<b>a1. Introduce the idea of the base house</b>	
<b>Phases</b>	<b>Explanation of the Phase</b>
a1.1 present what is the base house	Provide in detail explanation of the base house and its potential.
a1.2 location of the project within the city	Introduce location for the project.
a1.3 location within the municipality	Introduce the urban context of the project.

Table 21. The structure of the introduction of the base house

Second, the architect should respect families' expectation from the design of the base house (figure 22). This practice is of importance because if implanted in the right way it can present a good asset for future customization of houses and high quality of the complete house. This action should be taken by the architect's acknowledging families' expectation of the base house.

<b>a2. Acknowledging families' expectation of the base house</b>	
<b>Phases</b>	<b>Explanation of the Phase</b>
a2.1 recording families' expectations	From observation of slum dwelling unit record families' expectation from the base house.
a2.2 acknowledge the feasible of expectation for designing the house	Address the most especial expectation of the family.
a2.3 consult families for redirect their expectation to customization process	Reach compromise with families in regard to their expectations.

Table 22. The structure of collecting data about families' expectations

The third point of the working template for preparing the design process is the introduction of the base house to families (figure 23). In meeting with the community, the architect should present to families the first draft of the outline of the base house. This outline is the pilot project and will be adjusted according to families' requests. To adjust the outline of the base house we must keep in mind the limited structural capacity of the house. This aspect represents the fourth point of the working template for preparing the design of houses (figure 24).

<b>a3. Introduce the design of the base house</b>	
<b>Phases</b>	<b>Explanation of the Phase</b>
a3.1 present the outline of the base house	Provide in detail explanation of the design solution. Conceptual and practical understanding of the base house.
a3.2 inform families about the structure of the house	In clear manner present the structure of houses and its regulation for future customization.
a3.4 connect inhabitation of the house with design solution	Present design of houses from the perspective of dweller.

Table 23. The structure of presenting the design solution

<b>a4. Inform dwellers about limits of the proposed design</b>	
<b>Phases</b>	<b>Explanation of the Phase</b>
a4.1 structural limit of the house	The limits of structure for future customization work.
a4.2 floor area ratio	The limits of the ratio of a building's total floor area.

Table 24. Presenting limitations of the base house

The final point of the guide is preparing families to inhabit the base house (table 25). This preparation should be presented with challenges in the short and long term. In the short term, the architect should introduce initial challenges of inhabiting the house such as heating systems, cold shower waters, lack of furniture and kitchen equipment. In the long run, the architect should inform families about unfinished surfaces, dust in the neighborhoods, unfinished landscape designs of the front and back yards.

<b>a5. Prepare families for inhabiting the base house</b>	
<b>Phases</b>	<b>Explanation of the Phase</b>
a5.1 inform in advance families what to expect from the base house	Create set of suggestions how to cope with unfinished house.
a5.2 prepare families to move in the neighborhood	Provide material which will inform families about their neighborhood.
a5.3 provide booklet with simple suggestions for inhabiting	For inhabiting the house families should have information how to personalize their house.

Table 25. Preparing families to inhabit the house

## 7.4. The Working Template for Designing Houses

<b>(b) The working template for designing base house*</b>		
	<b>Phase 1</b>	<b>Phase 2</b>
<b>b1. Present to families the final design solution of the base house</b>	Present the final draft of the house.	After families evaluate the design solution, the architect should present the final design solution.
<b>b2. Discuss with families the final design solution</b>	Ask families how they plan to inhabit the base house. Record their strategies for inhabiting the house.	Discuss families' priorities for keeping their house clean and organized.
<b>b3. Support families' occupation of the base house</b>	Outcome of discussion implementing in suggestion for occupation of the houses.	Create consensus with families about their strategy to occupy the house.
<b>b4. Support families' maintenance of the base house</b>	Suggest regular examination of their houses for detecting structural issues.	Provide to families set of suggestion for preventing deterioration of the house.
<b>b5. Support families' customization of their houses</b>	Suggest set of construction materials which are in price range of families and present good solution for completing their house.	Suggest set of tools and construction methods for customization.

Table 26. The structure of the working template for designing of the base house

In continuation, the architect should present the working template for the design of the base house (table 26). This working template is presented with five points. These points should support the design process and ensure the success of the housing solution. The first point is the architect' s presentation to families of the final design outline of the base house. For the structure of this point, I present four suggestions based on experience from my fieldwork (table 27). These suggestions derive from recordings of the fieldwork. Analyzing two case studies, I present four improvements of these cases in the form of organization of the base elements of the house.

b1. Present to families the final design solution of the base house	
<p><b>Four suggestions for design of the final design solution</b></p> <p>b1.1 structure of the base house without needless partition in the interior</p> <p>b1.2 location of the staircases in the corner of the house</p>	
<p>b1.3 location of the kitchen</p> <p>b1.4 location of the bathroom</p>	

Table 27. Introduction of design of the base house, subcategory b1

With these four suggestions, I acknowledged one advantage from delivered base houses, and three weaknesses that are present in the current housing solution. In addition, I constructed design suggestions which would enable better housing solutions for these two communities.

The first suggestion addresses the position and use of dividing interior partitions of the base house. During my fieldwork, I recorded the construction of needless dividing partitions. These partitions, existing in both projects, create unnecessary spaces and do not support future customization by dwellers. In contrast to this current design solution of the base house, I propose to use columns instead of dividing partitions for the structure of the base house. An example of this practice is the first floor houses of Lo Espejo.

The second suggestion of the working template concerns the design and location of the staircase of the base house. I propose that architects by any means should avoid the location of straight staircase in the central area of the house. As an answer to

recorded issues of the staircases in two case studies, I present the corner of the base house as an appropriate area for the location the staircase.

The third suggestion of the working template is the position and orientation of the bathroom. In designing the base house, the architect should avoid central zones of the base house for the location of the bathroom. In avoiding the central area of the base house for locating the bathroom, this would enable dwellers to focus on customization of other parts of house. I propose the location of the bathroom on one end of the layout of the base house. The fourth suggestion of this working template presents the location and size of the kitchen. Concluding the remarks of this observation, the current position of kitchen supports the customization process of houses.

After the architect presents the final draft and after families' evaluate in order to close the design process, this is then followed with discussion between the architect and families, the second point of the working template (figure 28). The architect should ask families how they plan to occupy the base house. What is important for them to have a good living condition? From this questioning of families, they can record families' priorities for keeping their house clean and organized.

<b>b2. Discuss with families the design outline</b>	
<b>Phases</b>	<b>Explanation of the Phase</b>
b2.1 introducing to families design outline	Present design solution to families in the form of rendering images and simple drawings.
b2.2 review the design proposal together with families	Evaluate proposed design in section of quarantine and answer with families.
b2.3 implementing outcome of discussion in design solution	Create design solution based on lessons from meeting families.

Table 28. Structure for discussion with families, subcategory b2

<b>b3. Support families' occupation of the base house</b>	
<b>Phases</b>	<b>Explanation of the Phase</b>
b3.1 introduce the final design solution to families	Present the design outcome of collaboration with families.
b3.2 present potential issues of inhabiting the house	Present the project with multiple scenarios for inhabiting the house.

Table 29. Structure for inhabiting the house, subcategory b3

Third is the support of families' occupation of the base house (figure 29). Instead of investing in paint to cover their facade, families should protect surfaces of the house that can present hygiene menace to their members first. Based on experience from my fieldwork, I introduce that surfaces of the bathroom and the kitchen should be a priority during the family inhabitation period. The architect should provide simple explanations and suggestions for types of emulsions families should use for covering their interior surfaces. According to family E1, exposed surfaces of bathrooms can harm the safety of the house and accelerate deterioration of the house. In this regard, the architect should instruct families to concentrate on covering the urgent parts of the house. In that way, families would improve hygienic aspects of the base house. After they protect surfaces, families should insist on covering the surfaces of their living area, bedroom, and on the end of facades.

<b>b4. Support families' maintenance of the base house</b>	
<b>Phases</b>	<b>Explanation of the Phase</b>
<b>b4.1</b> signs of water damage on walls and ceiling	Advise families to check their roof twice in the year. One time in the summer and one time in the winter.
<b>b4.2</b> defective doors and windows	Record and resolve any issues with doors and windows.
<b>b4.3</b> damaged electricity cords	Advise once in the year inspection of electricity cords.
<b>b4.4</b> issues with plumbing in the kitchen	Introduce set of actions for maintenance of the kitchen.
<b>b4.5</b> issues with plumbing in the bathroom	Introduce set of actions for maintenance of the bathroom.

Table 30. Structure for maintenance of the house, subcategory b4

In contrast to slum settlements, the base house should provide different living environments which would motivate families to improve their life situation. The architect can achieve this by providing to families sets of suggestions for affordable ways of maintenance of the base house. This represents the fourth point of the working template for the design of the base house (figure 30). The first part of this process is the architect' s suggestion for regular examination of their houses for detecting in time potential issues. The second is a set of suggestions for preventing the deterioration of houses. In this regard, the architect could advise families to invest in polishing of particular interior surfaces that would improve their settlement process. Based on my fieldwork, I

notice that floor of the bathroom, the kitchen, and living area to have high proprieties for polishing. Furthermore, after accumulating enough financial means these polished surfaces should be covered with tint.

<b>b5. Support families' customization of their houses</b>	
<b>Phases</b>	<b>Explanation of the Phase</b>
b5.1 community based provision of construction materials	Support community organization of construction.
b5.2 suggestion for using hardware store (community organization)	Introduce to families the possibility to get discount from the local hardware store for buying materials as a group. Present logistic of this action.
b5.3 alternative methods of customization (recycling materials)	Present alternative mind set for customization. Introduce recycling and other low-cost methods of construction.
b5.4 informs about limits of customization	Present in clear manner what I the spatial limit of customization.

Table 31. Structure for supporting customization, subcategory b5

The final point of this working template is the architect' s support to families' customization of their houses (figure 31). The architect could provide a set of suggestions which families should avoid during settlement to save their money for the customization process. These suggestions would involve bypassing needless investments in finishing surfaces which would be later replaced or demolished. During my fieldwork, I recorded that families go through cycles of investments by adjusting their houses. These investments occur before families started the customization process. These cycles of investments and adaptations harm the incremental logic of construction. In this regard, the architect should provide the working template for families' inhabitation period. This template would secure successful customization of houses, and in the same time would increase chances for affordable and good quality complete houses.

The aim of these five points is to empower the architect in the context of incremental housing. In this regard, I argue for a relational attitude of the architect which engages in constant dialogue with families. Providing the design principle would unify the design of the base house and construction process. This unification is achieved with the architect' s cooperation with families and dedication to improvement of living conditions of low-income families. This approach of designing incremental houses

would be supported with a design solution of the empty shell for the base house. This empty unit, which encloses basic elements of the house, would allow families more freedom to perform customization and satisfy their needs. This approach would create a platform for the working temple of customization which would support families' adaptation of their house. These templates would enable the architect to influence future customization of the base house and ensure better quality construction performed by low-income families.

## 7.5. The Working Template for Customizing Houses

The discussion of the findings presented in the last section reveals the need for unity between the base house and its customization. With reference to the working template that the architect should follow in designing the base house, I propose that the architect should supervise the customization process of the base house in the form of the working template for customization. The main apprehension of this proposition is the equilibrium between the architects influence and the families' participation level. We need to take into account that the architect's additional responsibility of supervising the customization of houses should never present a hindrance to families' participation. How can the architect supervise customization of houses without the overregulation construction process by families? On the one hand, the architect should deliver an open-ended base house to families. This base house would enable low-income families *a freedom to build* according to their needs. On the other hand, the architect should supervise dwellers' customization by providing them with additional information and awareness of limitations of the base house.

Grounded on my surveillance of the Comunitada Andalucía housing project by Chilean architect Fernando Castillo Velasco, for the design of the base house I propose that the base house should

have bare facades. This *empty shell* of the base house contains the kitchen, the bathroom, the living room, the dining room, and the bedroom. This proposal presents a solution without a spatial void present in the base house of two case studies. Instead of presenting a spatial void from the base house, I propose that the architect provide better support for customization by enclosing the base house and deliver an empty interior space for customization. Based on my research of customization, dwellers will inevitably adjust facades according to their needs. Furthermore, they will always personalize their base house. Applying the four points of the guiding principle, I propose the house with the kitchen and the bathroom on one end of the floor (figure 45). In addition, the staircases of duplex houses are located on the corner of the house. This strategy of the base house enables more space for dwellers' customization of houses.



Figure 45. Proposed layout of the base house, duplex house (left), single floor house (right), Source by author

This structure of the base house provides the platform for the architects' focus on supervising the customization process by families. This supervision is presented in the form of the working template for customization. For the customization working template I present four categories such as introduce the idea of the template of customization, discuss the possibilities of the template, connect the template to families' financial structure, and introduce maintenance sets of the completed house (table 32).

<b>(c) The working template for customizing the base house</b>		
	<b>Phase 1</b>	<b>Phase 2</b>
<b>c1. Introduce the idea of different templates for customization</b>	Definition of the template and what that idea signifies for low-income families.	Having in mind families' plans for completing their house, presenting the set of suggestion for self-help construction.
<b>c2. Discuss the possibilities of the template</b>	Recording families' plans and strategies for customizing the house.	Evaluating families' strategies for customization and supervise its realization.
<b>c3. Connect the template to families' investment in customization</b>	Group families according to their planned investment in customization.	Inform each group of families' about positive and negative sides of proposed template.
<b>c4. Introduce to families the limit of the template</b>	Present three or more types of the template.	Introduce the limits of proposed templates. This information should help families' choose of which template to use.

Table 32. The structure of the working template for customizing the house

The first category is the introduction of the template of customization. The architect should introduce to families what the template is and how to use this it for their customization process. This introduction would enable necessary information to support families to improve their base house. Subcategories of this aspect of the working template are presented in table 33. In continuation, the architect should create meetings with families in order to discuss the template. These discussions would enable better understanding of the base house (table 34).

<b>c1. Introduce the idea of different templates for customization</b>	
<b>Phases</b>	<b>Explanation of the Phase</b>
c1.1 present the concept of the template	Introduce the template as the architect's suggestion for customization.
c1.2 introduce different types of the template	Acknowledging the differences between families, present the template as an open-ended structure.
c1.3 implementations of the template	With simple presentation method introduce the possible outcome of the template.

Table 33. Introducing the template to families

<b>c2. Discuss the possibilities of the template</b>	
<b>Phases</b>	<b>Explanation of the Phase</b>
c2.1 defining the challenges of the template	Inform in front families about the challenged during implementation of the template.
c2.2 improve families' understanding of the template	During implementation of the template support families with additional information about construction process.
c2.3 acknowledge families' limits for using the template	Present the positive and negative sides of the template.

Table 34. Discuss with families the possibilities of the template

The third category connects the template to families' investment in customization. During preparation for design, the architect collected data about the financial limits of the families. The outcome of this data resulted in three categories, low, moderate, and high possibility to invest in customization. In this regard, the proposed working template should acknowledge these financial limits of families. This acknowledgment is presented in the table 35. In continuation, families should know at the beginning, the limitation of the template. These limitations are presented in the table 35.

<b>c3. Connect the template to families' investment in customization</b>	
<b>Phases</b>	<b>Explanation of the Phase</b>
c3.1 group families according to their planned investment in customization	Create groups of families' who share financial possibility to invest in customization of houses.
c3.2 link families planned investment with the outline of the template	Created groups connect with design solution of the template and provide the structure for realizing their planned customization.

Table 35. Intertwining the template and families' financial possibilities

<b>c4. Introduce to families the limit of the template</b>	
<b>Phases</b>	<b>Explanation of the Phase</b>
c4.1 organizational issue of self-help construction	Present to families common issues which occur during customization process.
c4.2 present calculation of costs for construction materials	Introduce catalog of constructing materials for customization of houses.
c4.3 present construction techniques for customization	Introduce booklet with simple explanation of construction process.

Table 36. Limitation of the template

An example of the working template for customization is three designed templates for future customization of the base houses. These templates enable low-income families to adopt the customization solution they find most appropriate for their needs. These templates are presented to low-income families for their selection of elements which they will construct within their house. In this regard, these templates do not hinder dwellers to customize their house according to their needs. In contrary, templates represent toolboxes for dwellers to find the best solution for themselves.

I present three levels of the architectural template. First, the architect should provide to families delivering three set of layout drawings of customizations. These drawings would suggest how families can approach the customization process. In selecting some

ideas from the architect, low-income families would have a foundation of knowledge about their customization. Second, the architect should explain the customization process in written form. With clear and direct writing, with the dweller's expectations in mind, the architect should deliver short text explaining how to complete the house in the most efficient and affordable way. These explanations should contain information about market prices and possibilities to recycle materials at hand and buy adequate materials for construction. Third, the architect should provide the list of tools, possible techniques and materials of construction. This list would specify what families would be able to construct by using affordable tools and familiar construction techniques. This catalog of construction methods should be explained in segments. Therefore, low-income families would be able to follow suggested methods and use appropriate construction tools.

The argument for the template directs toward the following points. First, the template represents open-ended structure delivered by the architect to low-income families. Families after inhabiting the base house would use the template to create their personal strategy of customization. Second, the template represents a segmental system which enables families to selectively choose the part of proposed layout, suggested materials and construction methods for completing their house. Therefore, families are not forced to blindly follow the architect's propositions. In contrast, they can choose which part of the template is the appropriate solution for their needs. Third, the template takes into account the dwellers different financial possibilities.

### 7.5.1. The Framework for the Working Template of Customization

From the proposed framework of the working template, I use data from my fieldwork to create three types of templates. Data about financial structures of families is used to propose three alternative solutions. These solutions are presented to families in order to adapt one of them and create their own path of customization.

The template type A represents the recommendations for the low-level of investment of customizing the base house. This level of the template should provide to families enough information about the ability to customize the base house with minimal financial costs. An example of a low-level of investment in customizing is family H5. They after inhabiting the base house customized their house with 200 Chilean pesos which is equivalent to US\$400. Family H5 performed this low-level investment by recycling materials from their previous settlement and developing by themselves construction methods to accommodate their limited financial structure. For similar cases of families that moved out of illegal settlements into the base house and do not have financial resources for customization, the architect should provide to them the necessary information about customizations recycling existing materials.

An example of the template type A is presents in the figure 46. The template type A represents low level of customization of houses. This template is designed for families who are satisfied with minor adjustments of the base house. I present template A for two scenarios, in particular for the single floor house and the duplex house (figure 46). The type A template should be constructed with gypsum boards and sterling board (acronym: OSB). Furthermore, the outside surface of gypsum and OSB board should be covered with paint, aluminum board, and ceramic tiles. The interior surface of boards should be covered with 5cm thick thermal insulation and plaster.

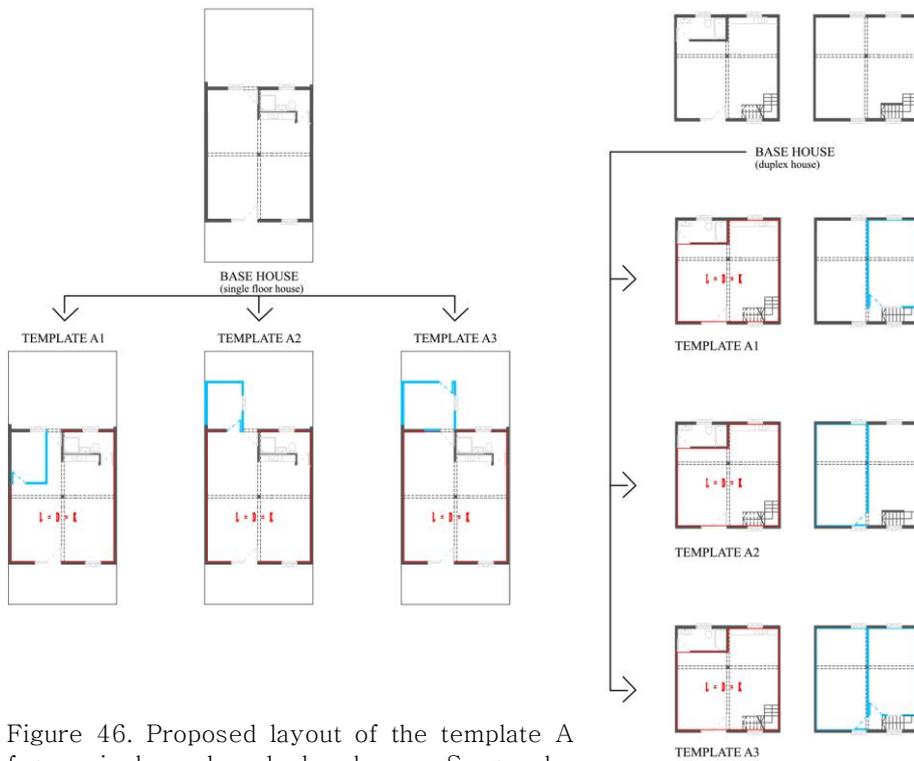


Figure 46. Proposed layout of the template A for a single and a duplex house, Source by author

The temple type B represents the recommendations for the middle-level investment of customizing the base house. This level of the template provides necessary knowledge of construction to families that gathered moderate amounts of money for customization of their house. Based on experience from the fieldwork, these families are the majority of the participants in incremental housing. In this regard, it is of importance that the architect provides recommendations to the most effective and at the same time the most affordable building techniques which would accommodate families' plans of customization. This level of template examines the supportive structure of a family and proposes supportive attitudes of neighbors. An example of this phenomenon is family H12 who customized their house as part of community action. With their four neighbors, they created a community organization with the aim of customizing their houses

together. This action provided to every family in the group free labor for construction and a shared knowledge base of customization. Creating templates that accommodate the needs of families with community interdependence, the architect would influence good quality customization with moderate spending by dwellers.

An example of the template type B is presented in figure 47. The template type B represents middle level of customization of base houses. This template is designed for families with need for more adjustment of the original layout. The template proposes families to extend their living areas to the front yard of the house. In addition, it proposes that they should use the backyard and second floor (figure 47) to adjust the night zones of the house. The type B template should be constructed with bricks. Furthermore, families should use paint, balcony doors, and ceramic tiles for enclosing the customization part of their house. The interior surface of walls should be covered with 5cm thick thermal insulation and plaster.

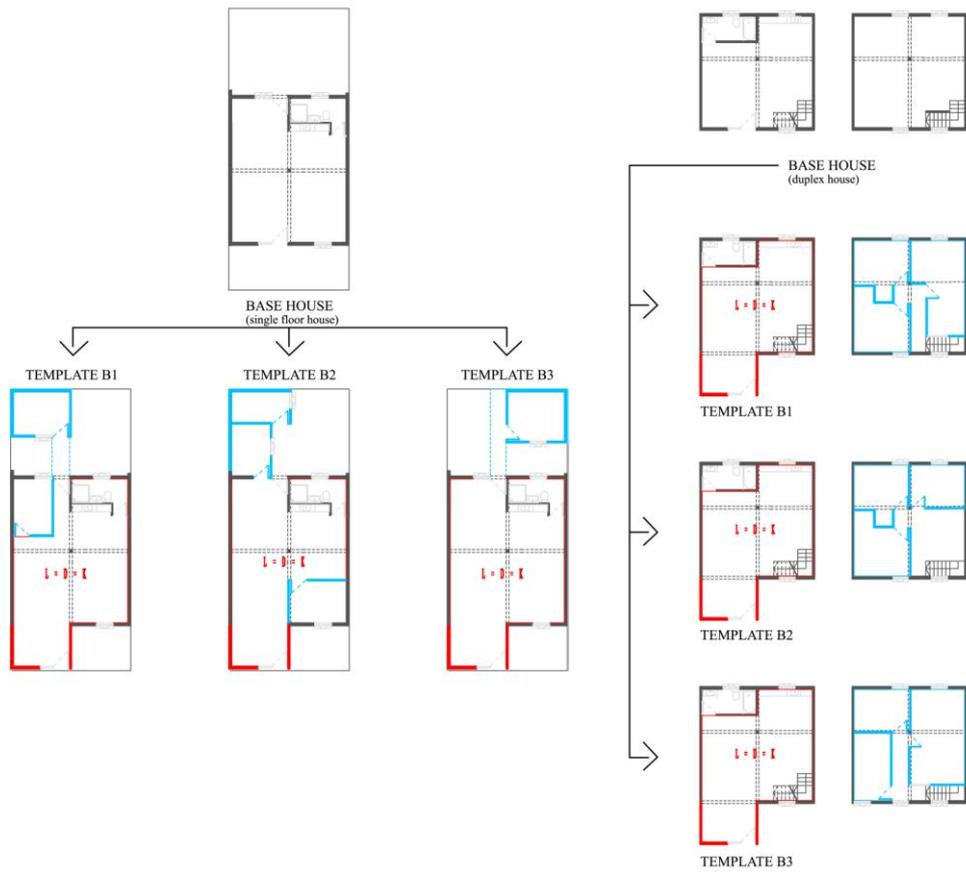


Figure 47. Proposed layout of the template B for a single and a duplex house, Source by author

The temple type C represents the recommendations for the high-level investment of customizing the base house. This level of the template displays the ultimate limit of customization of the base house. This part of the template provides information on the structural, spatial, formal, and functional limit of the base house. Any customization by dwellers that goes beyond this limit would jeopardize the safety and long-term success of the housing project. Furthermore, this part of the template provides additional information of different solutions of customizing the base house for achieving a middle-income quality house.

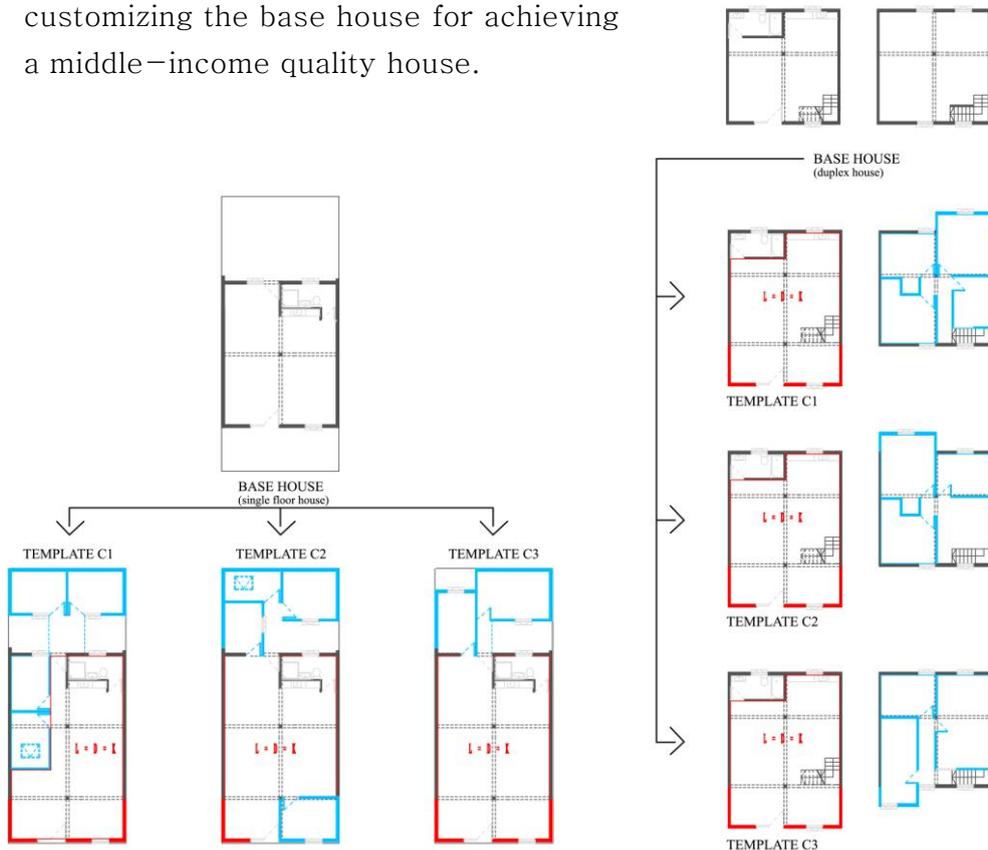


Figure 48. Proposed layout of the template C for a single and a duplex house, Source by author

An example of the template type C is presented in figure 54. The template type C represents the final stage of customization of base houses. This final stage represents the spatial, formal, and functional limit of customizing the base house. Type C template is designed for households with more than five members. To accommodate their needs, these families intend to extend the living areas and occupy complete areas of the front yard of the house. In addition, this type of template proposes that they should use the backyard, and extended the second floor (figure 48) to customize the night zones of the house. Every single customization phase beyond this template would accelerate the deterioration of houses. The type C template should be constructed with concrete and bricks. Furthermore, families should use paint, balcony doors, and ceramic tiles to enclose the customization part of their house. The interior surface of extended walls should be covered with 5cm thick thermal insulation and plaster.

There three types of templates enable the architect to take additional responsibility in the context of incremental housing without opposing participation by the low-income families. On the one hand, each temple derives from the guidelines. The temple of customization allows the architect to make designs and construction suggestions to low-income families without imposing their design solutions on them. This supplementary responsibility of the architect opens the discussion of reinventing the current incremental housing structure without additional financial costs. This notion of the proposed changes ensures that future incremental housing projects will be more affordable solutions for housing low-income families in the developing world.

In the example of the third category of the template for customization of the base house, I propose the template as an incomplete structure which should be adapted by dwellers. In this regard, the architect should deliver the template that represents a set of suggestions only. These suggestions explain in detail potential avenues of customization and their limits. From different

solutions of adjusting the layout of their houses, families are able to critically examine and select the parts of the template that best respond to their needs. This position to choose the parts of the template for their customization secures certain autonomy for low-income families. We can show the progressive development of the houses in the following way:

- *delivering three sets of layout drawings.* These drawings would suggest how families can approach the customization process. I presented an example of these drawings in the subchapter 7.5. In selecting some ideas from the architect, low-income families would have a foundation of knowledge about their customization.

- *explaining the customization process in written form.* With clear and direct writing, and with the dweller's expectations in mind, the architect should deliver a short text which explains how to efficiently and affordably complete the base house. These explanations should contain information about market prices and possibilities to recycle materials at hand and buy adequate materials for construction.

- *providing a list of tools and possible techniques of construction.* This list would specify what families would be able to construct by using affordable tools and familiar construction techniques. This catalogue of construction methods should be explained in phases. Therefore, low-income families would be able to follow suggested methods and use appropriate construction tools.

This leads to the following points. First, the template represents an open-ended structure delivered by the architect to low-income families. Families after inhabiting the base house would use the template to create their personal strategy of customization. Second, the template represents a segmental system which enables families to make an informed choice regarding the proposed layout of their house. Therefore, families are not forced to blindly follow the architect's propositions. In contrast, they can choose which part of the template is the

appropriate solution for their needs. Third, the template takes into account dwellers different financial possibilities. The following considerations could be taken into account in the design of the structure of the template:

- *low-level of investment for customizing the base house.* This level of the template should provide to families enough information about the ability to customize the base house with minimal financial costs. An example of low-level of investment in customizing is family H5. After inhabiting the base house, they customized it using 200 Chilean pesos, which is equivalent to US \$400. Family H5 performed this low-level investment by recycling materials from their previous housing unit in an illegal settlement. They developed by themselves the construction methods to accommodate their limited financial structure. For similar cases of families that moved out of illegal settlements into the base house and do not have financial resources for customization, the architect should provide the necessary information for customizations by recycling existing materials.

- *middle-level investment for customizing the base house.* This level of the template provides the necessary knowledge of construction to families that gathered moderate amounts of money for customization of their house. Based on the data of the fieldwork, these families are the majority of the participants in incremental housing. In this regard, it is of importance that the architect provides recommendations of the most effective and at the same time the most affordable building techniques which would accommodate these families' plans of customization. Likewise, this level of the template should support the community actions of families. An example of this phenomenon is family H12 who customized their house as part of community action. With their four neighbors, they created a community organization with the aim of collectively customizing their houses. This action provided free labor to every family in the group and offered a shared knowledge base for the customization. Creating a template that accommodates the needs of families with community

interdependence, the architect would influence good quality customization with moderate spending by dwellers.

- *high-level investment for customizing the base house.* This level of the template displays the ultimate limit of the customization of the base house. It provides information on the structural, spatial, formal, and functional limits of the base house. Any customization by dwellers which goes beyond these limits would threaten the safety and long-term success of the housing project. Furthermore, this part of the template demonstrates the potential of customizing the base house in order to produce a middle-income quality house.

Concluding remarks of the chapter address the research question about success of families' customizations in respect to the design of the base house. In subchapter 7.4, I conclude that both projects were delivered with needless interior partition walls and misplaced staircases and bathrooms of the base house. Families to make room for customization of houses readjusted these parts of the layout. This notion represents a drawback for customization of the base house. In addition, I answer the seventh research question that poses the question of the current role of the architect. The current role of the architect as designer does not support the lasting process of housing low-income families in the context of incremental housing.

In subchapter 2.5, I presented four drawbacks to the current role of the architect such as the absence of information about the structure of low-income families during the design of the base house; discontinuity between proposed plan (a singular design solution) of customization and its realization; the customizations process was not adequately presented to low-income families; and the discontinuity between the construction of the base house and its customization. These issues were answered with the structure of the working template for designing and supporting customization of the base house in subchapters 7.4 and 7.5. I proposed that the architect should deliver a set of categories which would support families' involvement in incremental construction. In continuation,

these subchapters embody the prolonged responsibility of the architect in the context of incremental housing. Without reducing families' participation, I proposed a set of steps that the architect of future incremental housing projects should follow for delivering high quality incremental house.

These steps derive from a critique of the organizational approach of designing houses in which the architect present structure of houses and informs families about the expectation of authorities from their inhabiting process. With this process of design, the architect directs families' customization process and provides a set of rules which should be followed. This rigid organizational approach is challenged with a relational attitude of the architect. Buber argues that relational attitude "between an I and a You" and not in content based argument.<sup>166</sup> In this regard, the relational architect presents the project with the attitude of designing it together through conversation with families. The architect listens and observes family' s needs with the objective to readjust the design solution. This notion of constant readjustment before, during, and after designing of the base house represents the paradigm shift in incremental housing.

Based on the data collected from two case studies in Santiago, Chile, this dissertation aims at prolonging the responsibility of the architect involved in incremental housing which is embedded in dialogue with low-income families. To overcome the top-down approach of designing incremental housing I used Martin Buber's philosophy of the *I and Thou* for developing the theory of the relational architect. The relational architect represents the shift from the organizational way of designing houses to stressing the importance of individual perceptions of the house. It proposes a dialogue -based design process embedded in the coexistence between families and the architect. The relational architect perceives houses not as an object to be designed, but as a opportunity to trigger dialogue with low-income families. This

---

166 Martin Buber, "I and Thou," (2010), Martino Publishing.

mode of developing future incremental housing projects represents the proposed paradigm shift in the role of the architect.

This paradigm shift is presented in the form of the working template. The working template represents phases which the architect should follow to strengthen communication with low-income families, which directly influences outcomes of the program. The architect should follow proposed phases before, during and after the design of the base house. This structure of the working template is based on findings from fieldwork conducted over seven months in Chile.

These phases of the working template derive from three groups of research questions which lead to three main chapters of the dissertation. The first group of research questions addresses supportive structures for inhabiting and designing the house. These questions relate to the findings presented in chapter five. In subchapter 5.1, I analyzed the design of the base house present in two case studies in Santiago, Chile. Furthermore, in subchapter 5.2 of the dissertation I presented living conditions of low-income families during their life in the slums and how these conditions shaped their expectations of incremental housing. Most of the families who participated in my research developed unrealistic expectations of the base house which directly influenced their perception of the house. Furthermore, in subchapter 5.3 I presented a set of drawbacks to the two case studies embodied in issues related to inhabiting and adjusting the base house. The lesson of families' misunderstanding of the base house was presented in 5.5. In this subchapter, I constructed the argument for the architect's responsibility through delivering the base house embedded in conversation with families.

The second group of questions addresses the supporting structure for dweller's customization. In subchapters 6.2 and 6.3 I presented on families' motivation and organization of customizing their houses. In this part of the dissertation, I presented how families developed their structure for customizing houses. Furthermore, in subchapter 6.4 I analyzed the outcome of

families' customization. This chapter was concluded with the argument for the additional responsibility of the architect who is more involved in the customization process (subchapter 6.5).

The final group of questions stresses the importance of the architect's prolonged responsibility. These sets of questions summarize the whole dissertation. In subchapter 7.1, I proposed that architects need to relinquish the top-down tendencies and replace them with horizontal structure of design incremental houses embedded in communal relationships and dialogue between community members and the architect. This horizontal structure of incremental housing represents the platform for the role of the architect embedded in community organizations. In addition, the embedded architect needs to address not only the community as a whole with advice and instructions, but they must engage families on the relational level. This mode of design and organization of incremental housing is achieved in the form of the working template. The structure and three levels of the working template were presented in subchapters 7.2, 7.3, 7.4, and subchapter 7.5. Each of these levels is presented with in-depth analysis. Furthermore, each level of the working template contains subcategories deriving from the data collected for this dissertation.

## Chapter 8. Conclusion

The aim of this dissertation was to criticize the conventional role of the architect as a key agency for the top-down approach in incremental housing. The findings of this dissertation suggest that incremental housing represents a good strategy for housing low-income families and should be used in the future. However, the current structure needs to be reinvented. The paradigm shift in incremental housing depends on the role of the architect embedded in a relational attitude to designing houses. This attitude enables the architect to reevaluate the relationship between families and professionals. In contest to current modes of design where the architect approaches incremental housing as an invitation for exercising design skills, the relational architect approaches housing questions as the base for dialogue with families.

Current responsibility of the architect is to design the base house with proposed progressive adjustments by low-income families. This current practice delivers the base house to families without information how to inhabit, adjust, and customize their house. This structure of incremental housing results in families' unrealistic expectations of their base house, disappointments; complaints, and feelings of being portrayed by governments as poor members of society.

In opposition to the current position of the architect, this dissertation argues for the importance of the relational architect embedded in personal attachment with low-income families. The relational architect represents the shift from the organizational way of designing houses to stressing the importance of individual perceptions of the house. It proposes a dialogue based design process embedded in the coexistence between families and the architect. The relational architect perceives houses not as an object to be designed, but as an opportunity to trigger dialogue with low-income families. This mode of developing future incremental housing projects represents the proposed paradigm

shift in the role of the architect. This shift is achieved with the proposed working template before, during, and after the design of the base house.

The working template provides information to families to inhabit the house with less investment. In addition, it generates information about community organizations and structures of families, influencing the design solution of the base house. In addition, the working template expresses different possibilities of customization to satisfy families' limited budget in completing their house. With this universal working template, I synthesize my finding with the idea of a relational and personal attitude of the architect involved in incremental housing.

In contrast to current phases of constructing incremental houses, proposing the working template would enable the architect and low-income families to discuss and examine on the one hand the potential of particular design solutions and on the other, dwellers' expectations of the delivered house. Intertwining the architect's design solutions and dwellers' expectations of the base house would provide more potential for development of incremental houses. Furthermore, this new structure would reinforce the role of the architect in the incremental process.

The working template on incremental housing is based on processing the architect's responsibility before, during, and after the design of the base house. This argument was made in the context of two Chilean case studies, the Elemental Lo Espejo and Las Higuera housing projects. I used the lessons of the base house and its customizations learned there, to argue for the additional responsibility of the architect. This responsibility was implemented regarding the architect's preparation for design, actual design process, and support of families' customization of houses. This aim is achieved through the study of families' previous dwelling experience, onerous inhabitation of the base house, lasting adjustment to their new living situation, motivation for customizing houses, and organization of self-building for completing their house.

The results of this dissertation should be viewed in light of the study's limitations and strengths. First, despite the low-income families of two case studies from which this research sample was drawn, we must keep in mind that data from the current study were collected solely from the Santiago Metropolitan area. Therefore, we cannot assume that these findings hold for areas outside of Santiago with similar income and gender distributions. Replications of similar research designs are needed in other areas of Chile. Keeping this in mind, I plan in the near future to continue this research by examining more case studies of Chilean incremental housing.

Another limitation of this dissertation is the importance of different actors and their contribution to incremental housing. Apart from the architect, this housing solution depends on different actors, in particular policy makers, non-governmental organizations, religious organizations, private companies associated with construction of the base house, and artisans hired to perform the customization of the houses. Furthermore, the architect follows the structure already established by these actors. One aspect of this pre-established structure of incremental construction is housing policy FSV1, which directly influenced the design solution of the two case studies. I presented the basic outlines of this housing policy (in subchapter 2.1), which existed from 2002 until 2012 when together with FSV2 they were replaced with DS49. However, I was not able to examine in detail the structure and aims of this housing policy. This limit of my dissertation prohibits me to compare this housing policy with more recent housing regulations. Furthermore, my data do not support the study which would examine the housing regulation of the FSV1 program. Keeping this limit in mind, I plan to continue this research by examining governmental programs of housing low-income families.

A further limitation of this dissertation is the examination of the financial structure of the program. In the last decades we saw that the financial structure of incremental housing rapidly

increased. One reason for this increase is ongoing finance to the developing world provided by the World Bank, the United Nation Habitat, and the Inter-American Development Bank (acronym: IDB). The IDB financed the housing program in Chile from the early 70' s, and is still the major financial source for housing projects. In 2013, the financial structure in incremental housing projects doubled. From 7,500 Chilean pesos in 2007, current incremental housing projects are subsidized with 15,000 Chilean pesos. My data do not take into account the changing financial structures of incremental housing. Furthermore, I take into account that this changing financial structure is beyond the scope of my research.

Recognizing the dissertation' s limitations, we can nonetheless draw a number of firm conclusions from the study. From analysis of the base house, I introduce a new structure of incremental housing. This structure is based on the working template for preparing design, developing the design solution, and supervising customization of the base house. This structure of the working template reinvents the current design practice of the base house. The proposed three categories of the working template directly influence the architect' s responsibility and incremental process of construction. This proposed structure provides sturdier relationships between the base house and its customization. In addition, the architect' s more significant role in incremental construction, from this proposed structure would allow low-income families to gain the most benefit. In avoiding needless construction work and investment in troublesome construction processes, families would be able to focus more on the extension and the improvement of their incremental houses.

The first category is preparation for design of houses. Within the working template of preparing the design process, the architect should use five points for presenting the incremental house to families. Each of these points has two stages which the architect should use to deliver good layout of the base house. In the short term, the architect should introduce the initial challenges of

inhabiting the house such as heating systems, cold shower water, and lack of furniture and kitchen equipment. In the long run, the architect should inform families about unfinished surfaces, dust in the neighborhoods, unfinished landscape designs of the front and back yards.

In continuation, I present the second category of the working template. This category is the design of the base house. To deliver a flexible base house that supports customization I propose regulations for the design of the base house. These suggestions are based on analysis from my fieldwork. We should design communication on the edge of the floor plan. I propose that staircases should be located in the corner of the house, and the hallway should present a logical connection between bedrooms and the staircases or/and the entrance area. During the design of the house, the architect should preserve the central area of the house. The central area should be delivered to families as an empty space. With dwellers customization in mind, the architect should design the basic elements of the house. In conclusion, the facade of the house should be enclosed. Families should inhabit the enveloped form of the base house. The envelope would protect families from bad weather and would enable the customization process all year round.

The third category is the architect's involvement in families' organization of customization by suggesting the creation of communal practice. To buy materials and gear for construction the architect could advise families to perform this action on the level of the whole community or groups of families. The families would be able to get discounted prices and lower levels of credit fees for buying larger quantities of materials in their nearby hardware stores. This aspect of community construction would support families' participation and would make their neighborhood bonds stronger.

With these three categories of the working template, the architect has an important impact on families inhabiting and adjusting their base house. These three categories of the working

template should be taken as a universal rule for future incremental housing projects. In designing the base house and negotiating with low-income families, the architect should provide to families the working template for inhabiting and customizing their base house. These instructions for inhabiting and customizing the house would secure the successful start of long incremental construction by families. After inhabiting the house and performing minor adjustments, families should use the working template to organize the most efficient and affordable ways to enable their adjustment and customization process. Both levels of the working template principle would enable the architect to take additional responsibility by designing incremental housing.

All these categories are components of the main argument of a relational architect embedded in the community. This architect reflects the design process of incremental housing as the reflection of families' needs and the design outline of the base house. This twofold attitude of the relational architect directly reflects Buber's notion of I and Thou in which the I apprehends simultaneously its association with the world and its detachment. In this regard, the architect's position depends on, on the one hand dialogue with people and on the other the progressive, time consuming, design process of housing. This duality of incremental housing represents the paradigm shift in incremental housing. This paradigm shift is towards a more relationally-based scope of the architect's responsibility.

## Bibliography

- Abraham Wald, "Sequential Analysis," (2013), Dover Publications.
- Alan Gilbert, "Housing in Latin America," Inter-American Development Bank Working Paper Series I-7UE, (2001): 1-79.
- Alejandro Aravena, "Elemental a Do Tank," (2011), John Wiley & Sons.
- Alejandro Aravena, Andres Iacobelli, "Elemental: Incremental Housing and Participatory Design Manual," (2013), Hatje Cantz.
- Alejandro Aravena, Gonzalo Arteaga, Fernando García-Huidobro, "Conjunto de viviendas Lo Espejo: Lo Espejo, Chile" ARQ 69, (2008): 24-27.
- Alejandro Zaera Polo, "The Politics of the Envelope: A Political Critique of Materialism," In Cynthia Davidson "Log 16," (2009): 76-105.
- Andreas Witzel, "The problem-centered interview," Qualitative Social Research 1, (2000), <http://nbn-resolving.de/urn:nbn:de:0114-fqs0001228>.
- Axel Borsdorf, Rodrigo Hidalgo, Hugo Zunino, "Social housing policies under changing framework conditions in Santiago de Chile," *Forschen im Gebirge Christoph Stadel zum 75*, (2007): 233-248.
- Benedict Clouette, Marlisa Wise, "Hyperminimalism: Architecture of the Open Frame, " *San Rocco 9: Monks and Monkeys*, (2014): 1-12.
- Bruce Ferguson, "Micro-finance of housing: a key to housing the low or moderate-income majority?" *Environment and Urbanization* 11, (1999): 185-200.
- Bruce Ferguson, Jesus Navarrete, "New approaches to progressive housing in Latin America: A key to habitat programs and policy," *Habitat International* 27, (2003): 309-23.
- Bryan Lawson, "Language of Space," (2001), Routledge.

- Carlos Araya Salazar, Interview, Santiago, 03. October 2014.
- Carolina Poblete Toelg, "Mejoramiento Residencial: Tipos de Mejoramiento Residencial y Conceptos Asociados," In "Mejoramiento del Parque Habitacional," Instituto de la Vivienda (INVI), Universidad de Chile, (2005): 28–34. [In Spanish]
- César Patricio Bouillon, "Un espacio para el desarrollo: Los mercados de vivienda en América Latina y el Caribe," (2012), Banco Interamericano de Desarrollo. [In Spanish]
- Charles Abrams, "Housing in the Modern World: Man's Struggle for Shelter in an Urbanizing World," (1969), Faber and Faber.
- CHF, "Strategic Assessment of the Affordable Housing Sector in Ghana," (2004), CHF International.
- Colin Ward, "Cotters and Squatters: The Hidden History of Housing," (2002), Five Leaves Publications.
- Colin Ward, "Housing an Anarchist Approach," (1976), Freedom Press.
- Danny L. Jorgensen, "Participant Observation: A Methodology for Human Studies," (1989), Sage Publications.
- Diego Echeverry Campos, Stefano Anezellini, Rodrigo Rubio, "Vivienda Social: Antecedentes y Propuestas de Desarrollo Progresivo," (2003), Ediciones Uniandes. [In Spanish]
- Doug Harper, "Talking about Pictures: A Case for Photo Elicitation," *Visual Studies* 17, (2002): 13–26.
- Dwight Conquergood, "Ethnography, Rhetoric, and Performance," *Quarterly Journal of Speech* 78, (1992): 80–97.
- Dwight Conquergood, "Performing as a Moral Act: Ethical Dimensions of the Ethnography of Performance," *Literature in Performance* 5, (1982): 1–13.
- Edwin Haramoto Nishikimoto, Pamela Chiang Miranda, Ruben Sepulveda Ocampo, Ivan Kliwadenko Treuer, "Vivienda Social: Tipología de Desarrollo Progresivo," (1987), Instituto de la Vivienda, Facultad de Arquitectura y Urbanismo, Universidad de Chile.
- Elemental, Interview, Santiago, Chile, 19th February 2016.

- Esin Hasgül, "Incremental housing: A participation process solution for informal housing," ITU, (2016): 15–27.
- Félix Guattari, Suely Rolnik, "Molecular Revolution in Brazil," (2007), Semiotext(e).
- Fernando García–Huidobro, Diego Torres Torriti, Nicolás Tugás, "The Experimental Housing Project (PREVI), Lima the Making of a Neighbourhood," (2011), John Wiley & Sons Ltd.
- Ficha–CAS for Lo Espejo: [http://reportescomunales.bcn.cl/2013/index.php/Lo\\_Espejo](http://reportescomunales.bcn.cl/2013/index.php/Lo_Espejo);  
Ficha–CAS; La Florida: [http://reportescomunales.bcn.cl/2013/index.php/La\\_Florida](http://reportescomunales.bcn.cl/2013/index.php/La_Florida)
- Francisca Bustamante, María Paz Sagredo, "Allegados en comités de vivienda: Un análisis exploratorio," (2009), Documento de Trabajo N°3 Centro de Investigación Social Un Techo para Chile.
- Francisco Sabatini, Diego Campos, Gonzalo Cáceres Quiero, Laura Blonda, "Nuevas formas de pobreza y movilización popular en Santiago de Chile," In Gonzalo Saraví. "De la pobreza a la exclusión. Continuidades y rupturas de la cuestión social en América Latina," (2006), Ciesas–Prometeo.
- Gabriel Arboleda, Incremental Housing Design Consideration," In Laura Delgado, Xenia Antipova, "Incremental Housing and Haiti," (2010), UN World Urban Forum Rio, Global University Consortium.
- Geoffrey Payne, Are Architects and Planners Obstacles to Slum Upgrading? Papers from a seminar in Barcelona in April 2008, Dick Urban Vestbro: Stockholm, Sweden, Royal Institute of Technology, (2008): 13–20.
- George Gattoni, "A Case for the Incremental Housing Process in Sites–and–Services Programs," (2009), Inter–American Development Bank, Department of International Capacity and Finance.
- Herbert Blumer, "Symbolic Interactionism: Perspective and Method," (1986), University of California Press.
- James Spradley "The Ethnographic Interview," (1979), Harcourt,

- Brace, Jovanovich.
- James Spradley, "Participant Observation," (1980), Holt, Rinehart and Winston.
- Jan Van Der Linden, "Sites and Services Approach Renewed," (1986), Ashgate Publishing Limited.
- Jeremy Till, Tatjana Schneider, "Flexible Housing: The Means to the End," *Architecture Research Quarterly* 9, (2005): 287 - 296.
- Joan Mac Donald, "Viviend Progresiva," (1987), Corporación de Promoción Universitaria, Santiago. [In Spanish]
- John Collier, "Photography in Anthropology: A Report on two Experiments," *American Anthropologist* 59, (1957): 843-859.
- John Collier, "Visual Anthropology: Photography as a Research Method," (1967), Holt, Rinehart and Winston.
- John Habrakan, "Supports: An Alternative to Mass Housing," (1972), The Architectural Press.
- John Turner, "Barriers and Channels for Housing Development in Modernizing Countries," *Journal of the American Institute of Planners* 33, (1967): 167-181.
- John Turner, "Future Direction of Housing Policy," *Habitat International* 10, (1986):7-26.
- John Turner, "Housing Priorities, Settlement Patterns and Urban Development in Modernizing Countries," *Journal of the American Institute of Planners*, (1968): 354-363.
- John Turner, *Housing By People: Towards Autonomy in Building Environments*, (2000), Marion Boyars Publishers.
- John Turner, Robert Fichter, "Freedom to Build, Dweller Control of the Housing Process." (1972), Collier Macmillan.
- Jorge Hardoy, David Satterthwaite, "Squatter Citizen: Life in the Urban Third World," (1989), Routledge.
- Julia Ferrero, "La Vivienda Evolutiva," *Vivienda Popular* 3, (1998): 5-11. [In Spanish]
- Ken Tadashi Oshima, "Interview with Alejandro Aravena," In "Alejandro Aravena: The Forces in Architecture," (2011),

Toto Publisher.

- Laura Delgado, Xenia Antipova, "A Debate on Incremental Housing: Can an Old Answer be the New Solution for how to best rebuild Haiti?" (2010), UN World Urban Forum Rio, Global University Consortium.
- Margarita Greene, "The Progressive Housing Program in Chile 1990 - 2002," (2004), Inter-American Development Bank Sustainable Development Department.
- Margarita Greene, Eduardo Rojas, "Incremental Construction: A Strategy to Facilitate Access to Housing," *Environment and Urbanization* 20, (2008): 89–108.
- Margarita Greene, Enrique Gonzalez, "Chile Vivienda Incremental: Una Investigación del Banco Interamericano de Desarrollo," Banco Interamericano de Desarrollo IDB-DP-219, (2012): 1–8. [In Spanish]
- Mario Navarro, "Housing Finance Policy in Chile: The Last 30 Years," *Land Lines* 17, (2005): 12–14.
- Mark Napier, "The Origins and Spread of Core Housing," (2002), MIT Press.
- Martin Buber, "I and Thou," (2010), Martino Publishing.
- Michael Nickerson, "The Role of Architects Working in Slums of the Developing World," Undergraduate Research Opportunities Program, (2010): 1–13.
- Miguel Vargas, "Causes of Residential Segregation: The Case of Santiago, Chile," Center for Spatial and Real Estate Economics, (2006): 1–23.
- Nabeel Hamdi, "Housing without Houses: Participation, Flexibility, Enablement," (1995), Practical Action.
- Nestor Gandelman, "Female Headed Households and Homeownership in Latin America," *Housing Studies*, (2009):525–549.
- Non Arkaraprasertkul, "Linking Architects, Planners, Builders, and Community in an Incremental Housing Approach," In Laura Delgado, Xenia Antipova, "Incremental Housing and Haiti," (2010), UN World Urban Forum Rio, Global

- University Consortium.
- Norman Denzin, "Interpretive interactionism," (2001), Sage Publications.
- Norman Denzin, "The Research Act: A Theoretical Introduction to Sociological Methods," (2009), Aldine Transaction.
- Patrick Wakely, Elizabeth Riley, "The Case for Incremental Housing," Cities Alliance Policy Research and Working Papers Series 1, (2011): 1–56.
- Pauline Stockings, "Oferta y demanda de vivienda en la periferia santiaguina: Los nuevos desarrollos inmobiliarios," In Gonzalo Cáceres, Francisco Sabatini, (2004), "Barrios cerrados en Santiago de Chile: entre la exclusión y la integración residencial," Pontificia Universidad Católica de Chile.
- Peter Ward, "Issues in Self-Help and Self-Managed Housing," In Peter Ward, " Self-help Housing: A Critique," (1982), Mansell.
- Regulation of Solidarity Housing Fund 1, "Texto Actualizado del Decreto Supremo: N<sup>o</sup> 174," (2006), MINVU. [in Spanish]
- Roderick Lawrence, "Public and Private Responsibilities in the Definition of Housing Quality," In Nicholas Wilkinson, "Quality in the Built Environment: Public and Private Responsibilities in Housing Design and Settlement Planning," (1989), The Urban International Press.)
- Rodrigo Salcedo, "The Last Slum: Moving from Illegal Settlements to Subsidized Home Ownership in Chile," Urban Affairs Review, (2010): 1–29.
- Roland Barthes, "Camera Lucida: Reflections on Photography," (1982), Hill and Wang.
- Ruth McLeod, Kim Mullard, "Bridging the Finance Gap in Housing and Infrastructure," (2006), Practical Action.
- Slaven Antonio Razmilic Burgos, "Property Values, Housing Subsidies and Incentives: Evidence from Chile's Current Housing Policies," Department of Urban Studies and Planning, (2010): 1–35.
- Soyini Madison, "Critical Ethnography: Method, Ethics, and

- Performance," (2011), Sage Publications Inc.
- Terry Rosenberg, "New Beginnings and Monstrous Births: notes towards and appreciation of ideational drawing," In Steve Garner, "Writing on Drawing: essays on drawing practice and research," (2008), Bristol, Intellect.
- The United Nations Statistic Division, (2015): <https://data.un.org/CountryProfile.aspx?crName=CHILE>.
- The World Bank Annual Report, (2009), The World Bank.
- Ulf Wuggenig, "Die Photobefragung als projektives Verfahren," *Angewandte Sozialforschung* 16, (1990): 109–129.
- UNECLAS "Situación de la vivienda en Américas Latinas y el Caribe," (1996), Santiago. [In Spanish]
- United Nations Human Settlements Programme (UN–Habitat), "The Challenge of Slums: Global Report on Human Settlements," (2003), Earthscan Publications Ltd.
- United Nations, "World Urbanization Prospects: The 2011 Revision," (2013), United Nations.
- Victor Gubbins, Interview, Santiago, Chile, 04th September 2015.
- Western Cape Department of Human Settlements, "Incremental housing: research paper," (2013), African Centre for Cities.
- William Mangin, "Latin America Squatter Settlements: A Problem and a Solution." *Latin American Research Review* 2, (1967): 65–98

# Abstract

“점진적 완성 주택 (incremental housing)“이라 함은 한 번의 시공으로 건축물이 완성되는 개념이 아니라 2차, 3차의 시공과정이 더해져 건축물이 완성되는 개념의 주택을 말한다. 현재 일반적으로 이루어지고 있는 건축시공 방식과 비교하여 새로운 방법이며, 기존의 건축 과정과 주택 개발관련 투자에 새로운 모델을 제시하고 있다. 구체적으로는 정부나 지방자치단체 등 기관이 저소득 가정에 대하여 가장 ”기본적인 형태의 주택 (base house)“ 을 제공해주고, 이 주택을 제공받은 저소득 가정은 그들의 재정 능력의 변화와 필요에 따라 점진적으로 ”기본적인 형태의 주택 (base house)“ 을 그들의 요구에 맞게 발전시켜나갈 수 있는 방법이다.

이와 같은 “점진적 완성 주택 (incremental housing)“의 하우스징 전략(housing strategy)은 저소득 가정을 지원해야 하지만 재정적으로 어려움이 있는 개발도상국에서 특히 큰 호응을 얻고 있다. 하지만 전 세계 약 3분의 1에 해당하는 저소득 가정에 제공할 수 있는 획기적 방안임에도 불구하고 “점진적 완성 주택 (incremental housing)“이 제시하는 현재의 모델도 단점들을 갖고 있다. 특히, 이 모델의 구조는 저소득 가정의 참여를 어렵게 할 뿐만 아니라, 가장 ”기본적인 형태의 주택 (base house)“ 의 경우 생활하기에 불편한 주거 환경을 제공하기도 한다.

연구의 범위 및 방법은 칠레의 대도시권인 산티아고에서 진행된 “점진적 완성 주택 (incremental housing)“두 가지 사례를 바탕으로 하였다. 선정된 사례는 Elemental Lo Espejo와 Las Higuera 하우스징 프로젝트로 두 사례에 초점을 맞추어 관찰 조사, 인터뷰(semi-structured interview), 사진면담(photoelicitation interview), 건축학적 주택 드로잉 등의 방법을 사용했다. Las Higuera는 칠레 정부가 진행하는 점진적 완성 주택 사업을 관장하는 대표인물이고 Elemental Lo Espejo는 정부관할권 밖에서 사업을 진행하는 대표인물이다.

칠레의 두 사례를 바탕으로 한 논문을 통해 “점진적 완성 주택 (incremental housing)”의 건립과정 개선을 위한 건축가의 역할 범위를 확대할 것을 요구하는 한편, 사회적 하우스 프로젝트에서 통상적으로 제시되는 top-down 접근방법에서 건축가의 역할변화를 제안하고자 한다.

이 논문은 사회주택프로그램에서 일 방향으로 전개되는 건축과정에서 가장 핵심적인 기능을 하는 건축가의 기존 역할을 칠레의 사례를 통해 비판하고, “점진적 완성 주택 (incremental housing)”에 있어서 건축가 책임의 확대에 대해 밝히고 있다. 이는 건축과정에서 저소득층과의 소통을 통한 건축적 요구에 대한 구체적인 제안이 건축가의 가장 주요한 역할을 의미한다. 이 건축적 제안은 “템플릿(working template)”의 형태로 나타나며 건축가는 저소득층과의 대화를 통해 얻은 건축적 내용을 구체적 결과로 도출하기 위해 수행해야 하는 단계를 프로그램화 하여야 한다. 이렇게 사전 대화에서 얻은 내용들은 주택의 문제점들을 해결하는데 가장 직접적인 영향을 미치게 되며, 또한 이 과정의 결과로 얻게 된 “기본적인 형태의 주택 (base house)”이 설계 되며, 이후 계속되는 2, 3차의 건축적 확장이나 변동이 있을 때에도 건축가는 최초 단계의 제안에 충실하여야 한다.

“템플릿(working template)”은 건축가가 “기본적인 형태의 주택 (base house)”을 설계 하기 전인 설계 준비 과정에서 이루어진다. 건축가의 준비 작업은 설계 과정에서 입주 할 가족과 전문가간 적극적 협력을 유도하도록 플랫폼을 설정한다. “기본적인 형태의 주택 (base house)”이 설계될 시 “템플릿(working template)”은 디자인 및 설계의 실수를 줄이기 위한 제안을 제공한다. 이러한 제안의 내용은 칠레에서 진행된 7개월간의 현장연구 결과를 기반으로 하고 있다. 마지막으로 가족의 요구에 의해 결정되는 “맞춤변형(customization)”의 과정을 지원하기 위해 건축가에게 주택 설계 후에도 템플릿을 활용한다.

결과적으로 “점진적 완성 주택 (incremental housing)”에 제안 된 내용은 각각의 집이 갖는 개개의 가치가 중요함을 강조하고 있으며, 그에 따른 집 설계방식도 이에 맞게 적정화 되어야 한다는 점이다. 가족과 건축가 사이의 소통이 주요 요소로 포함 된 설계 프로세스를 기반으로 한 제안된 방식은 앞으로 개발도상국에서 추진 할 “점진적 완성 주택 (incremental housing)” 프로젝트를 위해 꼭 필요한 역할을 할 것으로 기대한다.

**주요 단어:** "점진적 완성 주택 (incremental housing)," "기본주택 (base house)," "맞춤변형 (customization)," "템플릿(working template)"

**학번:** 2010-31303