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Lessons of Incremental Housing
Two Chilean Case Studies: Elemental Lo Espejo and Las Higuera

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Abstract Low-income housing policies in South Korea have been pursued mostly by providing public rental housing for less privileged social groups. In contrast to this notion of housing, this article argues for housing ownership by low-income families. Two examples of this ownership policy are found in Chile. Incremental housing involves an open-ended housing platform, which requires home-dwellers to complete the construction process themselves. This article aims to examine structural, spatial and formal characteristics of the incremental housing projects. Taking the perspective of the home-dweller during the incremental construction process, we evaluate the houses before and after customization. Thus, we use data from field-work conducted for seven months in the Santiago Metropolitan Area of Chile. Using qualitative methods such as observation, semi-structured interviews, and surveys we focus on the Elemental Lo Espejo incremental housing project and then compare it with the Las Higuera housing project. The latter is representative of the incremental houses delivered by the Chilean government. In comparing these two projects, we aim to articulate the lessons of incremental housing with the intention of suggesting possible future developments for a wider-reaching incremental housing program.

Keywords: Incremental Housing, Housing Ownership, Elemental Lo Espejo, Las Higuera

1. INTRODUCTION

For the first time in history, the majority of world's population live in cities. Furthermore, modern cities are rapidly growing in size and population, generating approximately 70 percent of global GDP (The World Bank, 2009). This growth of urban areas results in unequal opportunities for different actors. The imbalanced forces within urban environments present challenges for conventional architectural and planning practices. The inability of professionals to fully grasp and integrate the complexity of rapid urbanization into their design solutions has led to the proliferation of illegal housing strategies. In the last few decades, we have witnessed a constant shift from traditional methods to hybrid design systems, which intertwine formal and informal, bottom-up and top-down urban development. An example of this practice is in the incremental housing programs in developing countries.

Incremental housing involves an open-ended housing platform, which requires home-dwellers to complete the construction process. Supported by governmental funding, incremental housing provides *multi-use frames* with a basic service unit containing a kitchen and bathroom. These open-ended units necessitate a process of adaptation by dwellers to attain a completely functional house. On the one hand, an incremental house consists of an empty frame, an unfinished house delivered to home-dwellers. On the other, it is a modular unit to be enclosed by the dweller. This type of housing process celebrates a collage strategy of urban development, and it lends itself to diversity in outward appearance of housing. A colorful facade of incremental houses juxtaposing different materials is the result of the dwellers' efforts to turn the house's structural frame into a livable home. This approach does not support a model of deductive design; but, in the words of Perez de Arce and De Ferrari, it explores "an idea of excellence related to the attainment of the essential rather than the more limited scope of the minimal" (Perez de Arce, De Ferrari, 2008). This notion of design privileges the essential over the minimal, seeking to achieve spatial and formal simplicity of a building.

Margarita Greene and Eduardo Rojas describe 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"(Greene, Rojas, 2008). In this regard, incremental housing depends on the dwellers' involvement and investment in the process of completing their units. From this notion of *housing as a process*, incremental housing represents a synthesis of multiple formal and spatial qualities of a built environment that is achieved by the dwellers' customization of houses. This process of customization can be quite lengthy, and it depends on location, community organization, financing

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mechanisms, and the dwellers' tacit knowledge.

Furthermore, the incremental process of constructing provides the possibility to low-income families of owning the house. This notion of ownership presents the main strength of this aspect of the Chilean housing program. In contrast, low-income housing policies in South Korea and other developing countries have been pursued mostly by providing public rental housing. An alternative to this housing solution represents incremental housing which can be implemented in less dense areas of Korean cities. Introducing incremental housing to Korean public housing policy would create necessary diversity within housing sector for low-income families. This diversity is based on ownership. Arguing for housing ownership by low-income families, this article examines the quality of the Elemental and Chilean governmental housing projects using the dwellers' perspective of their houses. Using qualitative methods such as observation, semi-structured interviews, and surveys, we investigate Elemental's first housing project in Santiago: Elemental Lo Espejo. This housing project is compared with the incremental housing project Las Higuera, which represents an incremental housing project designed, constructed, and delivered by the Chilean government. In comparing data from these two projects, we aim to explain some of the lessons of Chilean increment housing with the intention of suggesting possible future developments for a wider-reaching incremental housing program. From our investigation of Elemental Lo Espejo and Las Higuera, it is evident that the incremental housing has better impact on quality of houses when families extend a more flexible frame of the core unit.

2. SHORT HISTORY OF CHILEAN INCREMENTAL HOUSING

Through the history of its public housing programs, the Chilean government has fought against housing deficit and provided support for low income families. Responding to a more socially-driven political agenda, the main measure taken by the government in the 1960s was the establishment of the Ministry of Housing and Urbanism (República de Chile, 1956). The government found a Ministry for Housing and Urbanism (acronym: MINVU) to set policy and manage public funds. It promoted a cultural of saving in low-income households through the Popular Savings Program (PAP), and the establishment of saving and Loans Associations (S&L). Public funds were allocated to the Ministry of Housing and Urbanism to build low-cost houses that were sold to low-income households "under several subsidized loan schemes adjusted to households' needs, savings under the PAP program and repayment capacity. The S&L captured savings from middle-and upper-middle income households and used them to finance mortgage-backed loans for home purchase" (Rojas , 1999). MINVU took command in Chile's urban policy and the coordination of diverse institutions with the power to enact norms related to housing issues. Within this framework, "the national authority mandated MINVU to guide and control housing programmes, distribute public resources for the construction of affordable housing, plan the urban development and provide neighborhoods with social infrastructure and sanitary facilities" (Borsdorf, Hidalgo, Zunino, 2007).

During the 1970s and 1980s, the government reformulated the housing policy and created a "demand subsidy and its complement with a saving and mortgage credit" (Ministerio de Vivienda y Urbanismo, 2004). According to scholar Bruce Ferguson and his coauthors, "direct demand subsidies programs first arose in Chile in 1977 in reaction to this country's salary-tax funding housing program, which shared all the vices of traditional housing programs" (Ferguson, Rubinstein, Dominguez Vial, 2007). Rojas notes that "Chile invented this approach after the military coup of 1973 and the warm embrace that the new government gave to Chicago school economics" (Rojas , 2001). Rojas with Greene also point out that during the early years of the subsidy programme in Chile, "the government, when confronted with the lack of interest by developers to enter this housing sub-market and of private banks to lend to these households, had to assume an active role in the production of low-income houses, assigning them directly to beneficiaries and providing supplementary loans" (Rojas, Greene, 1995). This governmental intervention thus created a new environment for public housing programs. Fernando Kusnetzoff argues that "in Chile the ideological commitment to market forces and the power of the construction lobby were critical factors in determining the nature of the programme; a tendency accentuated by the negative reaction to the wave of invasion that had occurred during the years before the military coup" (Kusnetzoff, 1987). He suggests that "Chileans needed to sweep away the 'socialist' housing policies of Salvador Allende with his preferences for building public housing in massive quintiles through state companies" (Kusnetzoff , 1990). In this regard, „subsidies needed to be ‚market-led' and to be embedded in much more competitive economic and financial systems" (Castañeda, 1992).

The new demand-side subsidy system, according to Edwin Haramoto, „was not an immediate success and some years passed before it began to function effectively" (Haramoto, 1983). Although a program of incremental housing was present before the military government was established, it only achieved popularity in the 1970s and 1980s after eviction programs were implemented. According to Mario Navarro, from 1974-1984, the private sector Chilean housing models were solely focused on „providing housing for the upper-middle class. The public resources did not reach the poorest groups, so the housing deficit continued to grow" (Navarro, 2005).

In the 1990s, the strategy was changed and „the great accomplishment of this period was the reduction of the housing deficit to half of what it had been in the mid-1980s" (Navarro, 2005). In this period, the World Bank, the International Development Bank, and USAID were encouraging other developing countries to take up the Chilean housing model. Alan Gilbert argues that by 1993, „a Chilean-type model, or at least elements of the Chilean model, had become acknowledged *best practice*" (Gilbert , 2002). The model was embraced because of three characteristics that were approved by the World Bank: private market provisions, targeting the poor, and transparency (The World Bank, 1993). The transparency of the program was manifested in the families' saving strategy: "Families would become eligible for a subsidy if they could demonstrate that they had regularly put aside savings towards the cost of the housing solution and a home visit shoved that they had genuine housing needs" (Gilbert, 2000). This logic of providing support to people "according to the amount saved and the time over which the saving have been accumulated" was recognized as fair and not depending on political patronage (Gilbert, 2000).

3. ELEMENTAL LO ESPEJO

As the result of neo-liberal economics and open market policies, the private sector assumes an important role in the construction and delivery of incremental housing in Chile. In recent years, the Chilean government has almost fully stopped delivering social housing to low-income families. This phenomenon is the result of the argument that the private market should take over housing production. An example of private-sector distribution of housing is the Elemental Lo Espejo housing project. This housing condominium is the first project of the Elemental Architectural Office in Santiago Metropolitan area (Elemental Architectural Office, 2015). This housing area is located on the southern border of the municipality Lo Espejo (figure 1). Lo Espejo municipality is located in the southern portion of the Santiago metropolitan area and has a long history of public housing. In the past, this county was mostly inhabited by low-income families. The percentage of low-income residents has changed during the last two decades. According to Vargas, in 2006 county Lo Espejo had a poverty rate of 19.94 per cent (Vargas, 2006).

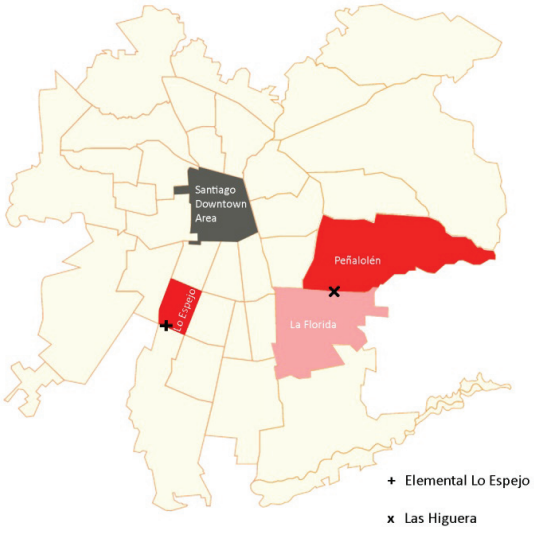

Figure 1. Location of Elemntal Lo Espejo and Las Higuera in contex of Santiago Metroploitan Area

The Elemental Lo Espejo housing is a small social condominium. This project was constructed for 30 families who had long lived in the camp *Vista Hermosa*, a block from the project site. The Lo Espejo plot itself occupies 1.000 square meters (Aravena, Iacobelli, 2013). Alejandro Aravena describes the location of houses as an area which "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" (Aravena, Arteaga, García-Huidobro, 2008). On the east side of the condominium is a police checkpoint and on the west is a consolidated plaza which separates the neighborhood from the Pan-American Highway. On the southern border of the neighborhood is Lo Espejo Avenue, which stands between the housing project and two service stations and some companies and industries. The land north of the project is where the illegal settlement, the Vista Hermosa, is located (figure 2).

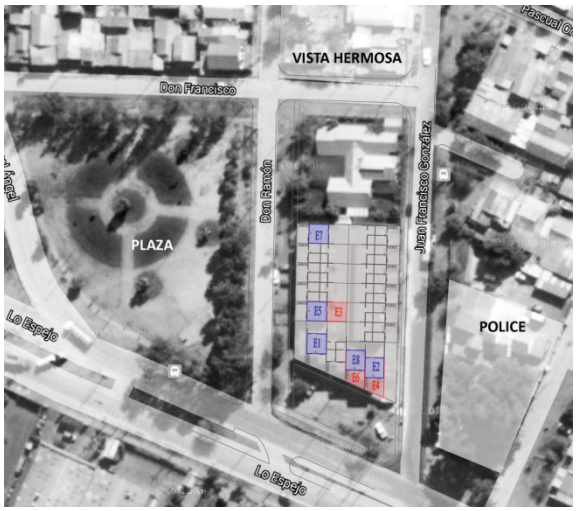

Figure 2. Elemental Lo Espejo site plan, eight houses of participants: first floor houses (red), duplex houses - second and third floor (blue)

In order to house families living in *Vista Hermosa, Un Techo para Chile*[1] and MINVU, in association with the Elemental architectural office, initiated the social housing condominium project. The project started in 2006."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 and with it brought unprecedented good construction standards to the social housing area" (Aravena, Iacobelli, 2013). Elemental designed a housing frame with one-story units on the first floor and duplex units on the second and third floor. The original plan for the first-floor units included an area of 6 x 6 meters, while allowing residents to expand 6 meters outward on to a patio area. For the duplex units, there is an area of 3 x 6 meters on each floor and an empty space of the same size between each duplex. This space is where the duplex units are expected to be expanded in the future (Aravena, Arteaga, García-Huidobro, 2008).

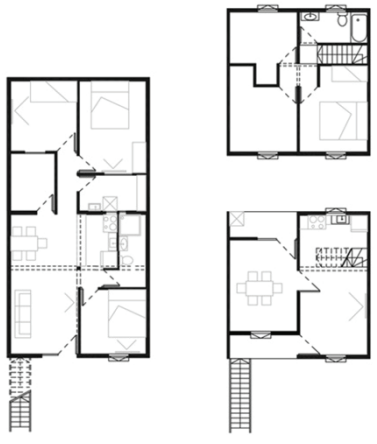

Figure 3. Floor plan of delivered basic house of Elemental Lo Espejo, first floor house (left), duplex house (right)

[1] *Un Techo para Chile* is a Latin American non-governmental organization. Through the work of young volunteers and slum dwellers, their aim is to overcome extreme poverty. Techo is seeking concrete solutions for housing low-income families and combating social inequality.

In June of 2007, the basic housing frames were delivered to families. Although the houses were designed to be extended by the dwellers, the houses were extended for the families by the building company *Simonetti*. The extensions were sponsored by the Chilean government in the form of a second subsidy for low-income families (figure 3). The extended houses thus filled external frame of the houses. Afterwards, the families customized their living spaces. This customization includes the reorganization of doors, windows, interior walls, and a number of rooms within the house.

4. LAS HIGUERA

Las Higuera houses are located near Avenue Departamental on the border of the Peñalolen municipality (figure 1). 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 1960s on, this area was sparsely populated by poor people from other parts of the city, "forming emblematic slums such as Lo Hermida and La Faena" (Salcedo, 2010). In 1981, Peñalolen was separated from Ñuñoa municipality, becoming in the process the county with the highest level of concentrated poverty. During the 1990s, Peñalolen's vacant land, attractive location near to the Andes, and good connection to the city center attracted different developers (Stockings, 2004). 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 per cent of its population under the poverty line and more than 20 per cent belonging to the elite groups" (Salcedo, 2010). According to Vargas, in 2006 Peñalolen had a poverty rate of 17.91 per cent (Vargas, 2006).

Las Higuera housing project was part of the governmental initiative to house low-income families from Peñalolen's illegal settlements. This slum represented at the time one of the biggest illegal squatting areas in Chile. According to Chilean scholar Rodrigo Salcedo, in 1999, "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*" (Salcedo, 2010). After squatters seized the land, they were confronted with the problem of obtaining access to electricity, sewage, and drinking water. They organized themselves and negotiated with the county to secure those urban goods and improve their living environment. However, residents always thought living in this environment was a transitory condition. Salcedo captures the resident's perception: "they never expected to live more than five years in the shantytown" (Salcedo, 2010). Nevertheless, over the years residents invested in the quality of their houses. Salcedo argues that, "once they moved out, most, if not all of houses were of decent size (65 - 74 square meters) and had a bathroom, shower, and some system of water heating" (Salcedo, 2010).

In 2001, a formal negotiation between the Chilean government and the squatters began; both sides acknowledged that the only sustainable agreement entailed building subsidized units inside Peñalolen municipality (Sabatini, Campos, Cáceres Quiero, Blonda, 2006). 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 value of around US$ 2.000. The government announced the construction of six incremental housing projects in Peñalolen and one in La Florida municipality, in which about 80 per cent of the squatting families would be located. The remaining 20 per cent of families would obtain an additional subsidy allowing them to buy better housing units elsewhere" (Salcedo, 2010).

One of the seven projects delivered to squatters from Peñalolen's illegal settlement is Las Higuera. This project was constructed to house 145 families. Las Higuera is located near the main road Tobalaba, which provides a good link to the center of the Peñalolen municipality. On the east and the west sides of the neighborhood are public housing projects from the 1960's and 1970's. On the land north of the project is an industrial water treatment plant. South of the neighborhood is Las Higueras Street, which is the main road of the neighborhood (figure 4). Within the project, there is a complex network of streets comprised of Las Taguas, Los Tordos, Las Tencas, Los Queltehues and Los Jilgueros. Besides the neighborhood's complex urban configuration, Las Higuera project has diverse design typologies of incremental houses. The basic house was delivered as four modular units, two on the first floor containing the bathroom, kitchen and dining room and two modular units on the second for bedrooms (figure 5). Most of the families have been able to enlarge and customize their basic houses as originally planned by architects and authorities. The enlargements and customizing have been made with high-quality materials. Salcedo concludes that "all the residents who have enlarged the houses believe they are now living in a nice and decent house. 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" (Salcedo, 2010).

Figure 4. Las Higuera site plan, thirteen houses of participants (blue)

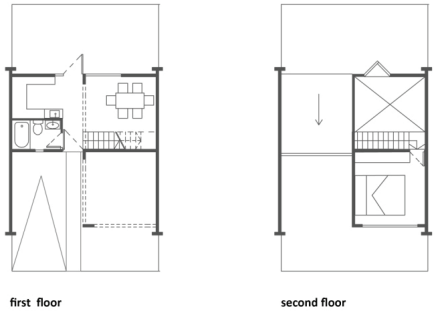

Figure 5. Floor plan of basic house of Las Higuera

5. LESSONS FROM ELEMENTAL LO ESPEJO AND LAS HIGUERA

Using qualitative methods such as observation, semi-structured interviews, and surveys we 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 despondence are women. All participants from Elemental Lo Espejo were women and had one or more children. From these participants, 75 per cent occupied the age category of 36-50 years old. The same percentage is 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 (figure 6).

Variables	Elemental Lo Espejo		Las Higuera	
	n.	%	n.	%
Age				
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
Gender				
Male	0	0	3	23
Female	8	100	10	77
Marital Status				
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
Care Responsibilities				
Children	**8**	**100**	**13**	**100**
Parents/ parents-in-law	3	37.5	4	30.5
Other person	2	25	5	38.5

Figure 6. The Demographic Characteristics of low-income Families

From the participants' responses in interviews and on questionnaires, it is evident that most of the families had a difficult time adapting to the first phase of their incremental house. The difficulty was a consequence of the small scale of the basic house, a lack of guidance for incremental extension and customization of houses, and high expectations for their first house. Fifty-eight per cent of Elemental Lo Espejo and 60 per cent of Las Higuera participants expressed gratitude for having their own property and being able to build something for a better future of their children (figure 7). In both housing projects, the families' satisfaction with the quality of the houses is partial. Almost one-half of all

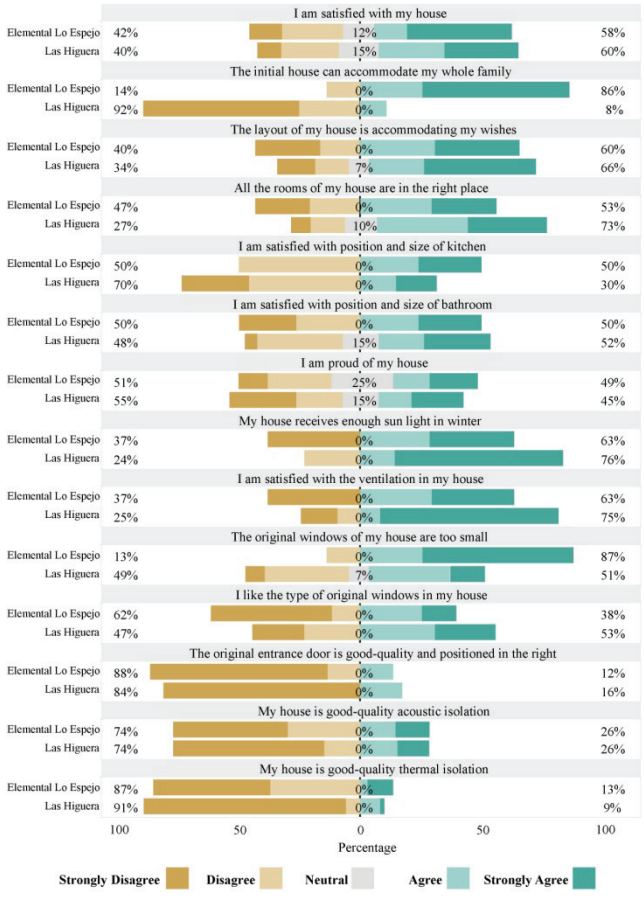

Figure 7. Percentage of dwellers with positive and negative perception of general satisfaction with incremental process of the houses in Elemental Lo Espejo (n=8) and Las Higuera (n=13), 2014-2015.

questioned participants from both projects (49 per cent of Elemental Lo Espejo and 45 per cent of Las Higuera) expressed the sense of belonging to their houses (figure 7). The pride and sense of identity that comes from owning one's own home represents the main argument of the Chilean government for supporting incremental houses. Owning houses encourages low-income families to invest time and money in customizing and maintaining their own spaces. However, the other half of participants (50 per cent of Elemental Lo Espejo and 55 per cent of Las Higuera) criticize the incremental housing program as inadequate for solving the social inequality present in Chilean society. Their discontent stems from the incomplete incremental process of construction. After more than seven years, most of houses are still unfinished. In addition to the frustration with the incompleteness of the houses, participants from both projects criticize the poor-quality of structural parts such as windows, doors and walls. Families from the Elemental housing project complained more about the small size of the original windows (87 per cent) than families from Las Higuera (51 per cent). In addition, 62 per cent of all participants from the Elemental project conveyed a dislike for the original type of windows installed in their houses. This percentage is lower in Las Higuera, at 47 per cent (figure 7). Families from both neighborhoods strongly criticized the quality of the original entrance door. Eighty-eight per cent of participants from Elemental

Lo Espejo and 84 per cent from Las Higuera do not like the quality and position of the original doors (figure 7). Furthermore, a large number of participants from projects, 74 per cent, expressed disappointment with the heating and cooling system. Similarly, 87 per cent in Elemental and 91 per cent in Las Higuera face problems with noise (figure7).

When participants moved in to the initial houses of Elemental Lo Espejo, 86 per cent had an overall positive perception of the structure (figure 7). This satisfaction with the initial houses derives from the fact that their houses were extended thanks to governmental grants. The formal and spatial properties of these houses were already defined, and the families invested their time and economic means in customization only. In this regard, the general perception was that the initial house provided good accommodation. In contrast to Elemental Lo Espejo, families from Las Higuera were left alone to extend and customize their basic houses without any additional support. Because of this situation, 92 per cent of all participants from Las Higuera had negative perceptions of their basic house (figure 7). Participants expressed disappointment with the size of the house and with the inability to accommodate all family members. This perception, however, started to change during the extension of houses.

During the incremental extension of the houses, participants praised the community construction process and their participation in decision-making. In extending the houses, participants establish a layout that was in accordance with their wishes. In this regard, 60 per cent of participants from Elemental Lo Espejo and 66 per cent from Las Higuera expressed satisfaction with the achieved layout of their house (figure 7). Fifty-three per cent of participants from Elemental expressed genuine satisfaction with position of their rooms. This percentage is slightly higher, 73 per cent, from participants of Las Higuera. In addition, 52 per cent of participant from Elemental Lo Espejo and 50 per cent from Las Higuera were pleased with the size and position of their bathroom. In contrast, 50 per cent of participants from Elemental Lo Espejo did not like the size and position of their kitchen. This disappointment with the original delivered kitchen is higher, 70 per cent in case of Las Higuera participants (figure 7).

From these spatial categories of houses from two neighborhoods, participants from Las Higuera achieved a customization rate far higher than those of families from Elemental Lo Espejo. This suggests that although it preferable for families to inhabit the whole house, as in the Elemental Lo Espejo, it is more productive to deliver only the basic houses, for this enables a greater diversity of housing typology and supports participants' creativity. As a consequence of residents being placed initially in a basic house, houses in Las Higuera are more diverse in typology than at Elemental Lo Espejo. Houses from Las Higuera embody more *auto-construction* processes, than houses from Elemental Lo Espejo (figure 8 and 9). This phenomenon of auto-construction, which is evident in the spatial and formal diversity of houses in Las Higuera, did not take place in Elemental Lo Espejo. In the case of Elemental Lo Espejo, the formal diversity derives from the families' small interventions on the front facades, the covering of their front yards, and the extension of the first floor houses into the back yard. The entire facade of Elemental Lo Espejo is a unified line with minor deviations from the original design. The facade of each house is made of brick and gypsum board covered by paint. Here,

Figure 8. (above) Initial incremental phases of Elemental Lo Espejo, Elemental, (2006 and 2007), Source: http://divisare.com/projects/280780-ELEMENTAL-Alejandro-Aravena-Lo-Espejo (below) of Elemental Lo Espejo houses after customazation, (2015), Source: by author

Figure 9. (above) Las Higuera before extension of houses, (2006), Source: Pamela Suarez, "La Salida de la Toma de Peñalolén," Institute of Ecological Neighborhood. (below) Las Higuera after extension of houses, (2015), Source: by autor

the diversity of individual facades is manifested through different types of connections between the original and customized parts of the houses (figure 8). These formal extensions of Elemental Lo Espejo are minor in comparison to the formal alterations at Las Higuera. Families from Las Higuera invested more time, effort, and financial resources in extending their houses. These autonomously extended houses have shaped the neighborhood, presenting a collage of diverse house typologies and facade shapes, which have different openings and are constructed of different materials (figure 9). This diversity and richness in typology and materials of Las Higuera houses support the argument for the incremental housing construction process. In this regard, it's better in the long-run for people to move into an open house, as it activates the creativity of the residents and results in a more livable environment.

The Elemental Lo Espejo and Las Higuera housing projects are comparable in terms of the spatial orientation of the houses. On the

Figure 11. Three customized houses of Las Higuera

Figure 10. Three customized houses of Elemental Lo Espejo

Figure 11. Three customized houses of Las Higuera

first floor, Elemental created longitudinal houses with courtyards. Most of the families covered those courtyards, creating very dark areas without natural ventilation (house E3, figure 10). In essence, these first floor houses designed by Elemental provide a low-quality environment for living. However, Elemental's duplex houses on the second floor are spatially similar to Las Higuera houses. The advantage of the Elemental Lo Espejo duplex is its distance from the street level, which offers families greater safety and a better view of the district. At the same time, this strategy of placing houses off the ground is subject to major critique, as families have no direct access to green space (figure 8). As for Las Higuera, while it offers direct access to land in front and in back of the house, these open spaces are often used to extend the houses, which eliminate the possibility of having gardens (figure 11). In this regard, both projects have not satisfied

the families' expectation of having private open space around their house. Las Higuera houses provide some space, but it is insufficient to meet the needs of most families. The same critique applies for the first-floor houses of Elemental Lo Espejo.

There are similarities in the architectural design that create problems which are present in both. These similarities relate to the delivery of the basic house with design errors. In both projects, the original staircases were misplaced; most of the participants either customized their staircase or expressed their desire to change them. The entrance area of houses in both projects present challenges for the occupants. In the case of Elemental Lo Espejo, the entrance area was designed to include a small deck. This idea was rejected by most families, and the space was used instead to expand their living areas. In Las Higuera, families also rejected the architect's design, developing their own solutions for the following the expansion process.

6. CONCLUSION

From our investigation of Elemental Lo Espejo and Las Higuera housing projects, it is evident that incremental housing creates a positive impact in terms of the social activities of families. This positive impact derives from encouraging families to save money in order to receive a housing subsidy from the government. Furthermore, the incremental housing program supports low-income households in dealing with housing cost. In contrast to public rental housing for low-income households, as is common in South Korea, we argue that housing ownership presents a better solution for number of reasons. The incremental process of construction supports community relationships and enables low-income households to integrate within the urban tissue. In contrast, public rental programs provide living spaces without any sense of belonging or of local pride on the part of the tenants.

From our interviews with subjects from two projects, the communal relationships between families disappeared gradually after moving into incremental houses. That is, the process of incremental construction of houses seems to promote good relationships between families until the extension of the houses has been completed. After the extension of an initial house is complete, families tend to distance themselves from the neighborhood community, focusing their attention inward. In terms of nourishing community and strengthening social bonds, incremental housing appears to disrupt the strong sense of social responsibility and community participation that characterized life in the illegal settlements. As a practice intended to embody communal practice, incremental housing in the long run fails to engender greater social participation among low-income families. Once families achieve a fully customized house, they assume patterns of living that characterize middle- and high-income families; their sense of social responsibility declines along with their active participation in society. This mode of living leads toward privatization, isolation, and competition among families from incremental housing neighborhoods.

Despite these problems, incremental housing represents a valid and practical method for activating community participation in governmental programs. This program gave housing with a limited amount of government investment to a larger number of people. Externally, the major urban impact of incremental houses is their formal extension and the shaping of facades. This phenomenon creates diversity within the urban tissue and enriches our experience of different neighborhoods. As for the houses themselves, the current incremental housing program involves

a rigid unfinished frame which is delivered to families for them fill in. For future implementation of the incremental process of construction, we recommend designing a more flexible frame of the basic house. The current incremental housing program fails to reach families' expectations, which creates negative perceptions of the initial houses. We propose reorienting the first phase of the incremental housing process with the focus on the families' needs and expectations for house. This can be achieved through close collaboration with each family from the community. Architects who designed the initial phase of the existing incremental houses communicated only with community leaders. As an alternative to this type of design process, we suggest that architects who design the initial phase of incremental houses should engage in conversation with every single family of a particular community. Through this complex and time consuming process of design, families would be able to get housing units which are, from the beginning, adapted to grow progressively, according to their lifestyles and habits.

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