

Sustainable Furniture For Small Dwellings in Mexico

By

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Abstract

This thesis project addresses a furniture design problem related to limited space in small housing units in Mexico. The study analyzes the sociocultural furniture needs for the living spaces of Mexicans with small dwellings and offers a sustainable design solution in the furniture sector.

The main hypothesis for this project is this: The use of the dining room for family gatherings is essential to sustaining Mexican culture, and the functionality of the dining room for this purpose is threatened by new housing that provides a very small area for these activities. This research included surveys and interviews of Mexicans living in small homes. A careful analysis was conducted of the various activities normally performed in their dining rooms. Throughout the process, the hypothesis was validated by a number of findings. These results indicate that (a) the number of furniture users varies on average from four people on weekdays to eight people on weekends; (b) most inhabitants have a strong preference for long-lasting furniture that reflects the cultural values of urban Mexican cities; and (c) there might be a design solution that supports and sustains Mexican culture. There is a lack of available furniture in the Mexican market that meets these needs while fitting into small dwellings.

The seating system presented here is a design solution to the problem of flexibility in using the dining room in small Mexican homes. The seating system addresses both environmental and cultural sustainability. This new design also embraces the Mexican preference for long-lasting furniture that can be handed down to future generations.

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List of definitions and abbreviations

Affordability

Affordability is defined as the 3% of the dweller's annual income they plan to spend on furniture purchases. In 2012, this figure is approximately \$3,365.82 MXN (\$270.71 CAD).

Basic housing unit (*Vivienda economica*)

This refers to a dwelling promoted by the Mexican Government through the INFONAVIT Instituto del Fondo Nacional de la vivienda para los trabajadores. The dwelling is mainly for low-income workers and is funded by different government institutions. Its characteristics include the following: A dwelling consists of a room to prepare meals (known as the *cocina*), one bedroom, and one bathroom, with an average total area of 31 m². "The dwelling should have basic services, such as electricity, water, and drainage and its design should allow for progressive growth" (Maycotte, 2005, p. 3); that is, it should be able to be built upon. The land area per house should be at least 90 m².

CAD

Canadian Dollars

Cultural sustainability

"Actions and issues that affect how communities manifest identity, preserve and cultivate traditions, and develop belief systems and commonly accepted values" (The Living Principles, n.d., "Four Streams" section).

Dwellers

People living in small houses.

Ecological design

The practice of designing products for reduced environmental impact, as well as for economic viability.

Ecological systems

“Composed of numerous living and non-living elements, such as a pond or forest. These systems continually interact to comprise a whole. Human systems function in similar ways” (Doppelt, 2010, p. 23).

Ixtapaluca

One of the 125 municipalities of the State of Mexico (Figure a).

LCA

“Life cycle assessment (LCA) is the practice of evaluating the environmental impact of a product throughout its lifetime. LCA considers the extraction of resources, product manufacture, the use of the product, and the method of product disposal” (Hawken, 2007, p. 250).

Mexico

The country of United Mexican States, a federal constitutional republic in North America bordered on the north by the United States; on the south and west by the Pacific Ocean; on the southeast by Guatemala, Belize, and the Caribbean Sea; and on the east by the Gulf of Mexico. Mexico is divided into 32 federal entities and is considered an upper-middle-income economy according to the World Bank (Figure a).

Minimum wage

The definition of the minimum wage in Mexico is determined on a daily basis by the Comisión Nacional del Salario Mínimo (National Minimum Wage Board). In 2012, the minimum wage in Mexico was \$62.33 Mexican pesos (\$5.13 CAD) a day (Secretaría del Trabajo y Previsión Social, 2011).

MXN

Mexican Pesos

Social system

“Two or more people interacting together to achieve a purpose” (Doppelt, 2010, p. 23).

State of Mexico

One of the 32 states of the United Mexican States. It is divided into 125 municipalities (Figure a).

Sustainable design

“Theories and practices for design that cultivate ecological, economic and cultural conditions that support human well-being indefinitely” (Thorpe, 2007, p. 13). “Design that is environmentally benign, economically viable and socially equitable” (Belletire, St. Pierre, & White, 2009, p. 70).

Sustainable development

Encompassing “economic and social development, it takes full account of the environmental and social consequences of economic activity and is based on the use of resources that can be replaced or renewed, meeting the needs and improving the quality of life of current generations without compromising the ability of future generations to meet their own environmental, social, and economic needs” (Hawken, 2007, p. 288).

Sustainable materials

“Materials used for building product and parts assembly, and other applications that are used in manufacturing. Sustainable materials are often renewable, energy efficient, and nontoxic, and are chosen for the low impact of the product over its entire lifetime. The sustainability of materials production, use, and discard is often determined using an LCA” (Hawken, 2007, p. 250).

System

“A system is a set of interconnected parts that make up a whole” (Doppelt, 2010, p. 23).

USD

U.S. Dollars



Figure a. Ana Mejia Map of Mexico, 2012, retrieved from: www.inegi.org.mx

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Dedication

To my godmother, Cuca, who has been my motivation to finish my master's studies.

To all my friends from the master's program.

To Mom and Dad; I love you so much.

To Alberto, the love of my life, thanks for believing in me and supporting me. I love you.

To all the members of the Emily Carr community, of which I am so proud to be a part.

Preface. A Tribute to Mexican Families That Will Use the Furniture Seating System

In the process of developing this thesis project, I had to fly back to Mexico urgently because Cuca, my godmother, suddenly became seriously ill. One year older than my mother, Cuca was my mom's sister. Despite being single, she was like a second mother to me and to many of my cousins. Because we loved her so much, many of us gathered to take care of her during her last days on earth.



Figure 0.1 Ana Mejia Guerra's Family I, 2012

During this period we felt most comforted at mealtimes, when we relaxed, talked, and reminisced about Cuca (Figure 0.1). This helped us relieve our sadness and gain the strength we would need to face her impending departure. When she died, we drew our friends and family around us to share their compassion for the pain we felt. One of my cherished memories was after the funeral, when close to 30 family members ate lunch in a restaurant, remembering our dear Cuca (Figure 0.2). After this memorial, we needed to continue with our lives and celebrate that we were alive, as well. We carried on in celebration by gathering together for our uncle Charlie's birthday that night (Figure 0.3). This time together made us stronger in our collectivity.



Figure 0.2 Ana Mejia Guerra's Family II, 2012



Figure 0.3 Ana Mejia Guerra's Family III, 2012

This project is dedicated not only to my family, but

also to all families that value being together, listening to one another, and sharing their meals with guests and friends. My family's experience, while difficult, validated the need for better dining room furniture and the importance of family members who are coming together to have a comfortable place to sit.

As a result, the bench has been named Cuca as a tribute to a wonderful woman.

Chapter I.

Motivation and Inspiration

Chapter I. Motivation and Inspiration

The main motivation behind this project began while I was looking for design opportunities in Mexico. A picture taken by Livia Corona in the series *Two Million Homes for Mexico* (Figure I.1), which appeared in a book called *Our Choice: A Plan to Solve the Climate Crisis* (Gore, 2009), inspired me to investigate social housing issues in the neighborhoods of Ixtapaluca, in the State of Mexico. There are many issues that could be addressed, such as “security, urban impact, available services, reduced spaces, transport, [and] population growth among others” (Paquette & Yescas, 2009, p.17, translated), but as I honed my view of sustainable design, the focus of the project turned to furniture that supports cultural rituals.



Figure I.1 Livia Corona, from the series *Two Million Homes for Mexico*

This study intends to benefit the inhabitants of small housing by understanding their needs and placing their situation at “the centre of the design process, rather than tackling design challenges from internal/organizational or technical frames” (Young, 2010, p. 5). I undertook research to

understand the local context, including surveys, interviews, and a pilot probe. A careful analysis was conducted of the various activities normally performed in these homes, and centered on the dining room as the design opportunity. Chapters 2 and 3 detail my research of the context and conditions in small Mexican homes.

This thesis explores, challenges, and gives an opinion on the following question: How could sustainable design practices be applied to the design of furniture that is scaled down for small dwellings in Mexico?

In 1987, the Brundtland Commission of the United Nations defined *sustainable development* as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987, p. 42). However, authors from the design discipline, such as Buckminster Fuller and Victor Papanek (in his 1984 book, *Design for the Real World*) had already begun talking about ecological and environmental concerns. In the early 2000s, the concept of applying sustainability to design began to be discussed. Authors such as William McDonough in his 2002 book *Cradle to Cradle*, John Thakara (2005) in *In the Bubble*, and Ezio Manzini in his publications, conferences, and classes (see, for example, Manzini, 1994) advocated that designers take the responsibility for designing sustainable objects, services, and systems.

The discipline of design is developing new sustainable practices. Works such as *The Designer's Atlas of Sustainability* (Thorpe, 2007), the Okala guide (Belletire et al., 2009), and *Design for Sustainable Change* (Chick & Micklethwaite, 2011) provide a deeper understanding of ecodesign and sustainable design. These reference work help designers consider the importance of sustainability, as well as offering strategies and methods.

Focusing on small living spaces, the design opportunity that I found is the lack of available furniture specifically designed for small interiors in Mexico. In order to find a solution for this design problem, I selected some sustainable design concepts that I considered were the most important for the development of this project. The Living Principles Framework describes the four streams of

sustainability: culture, environment, people, and economy. Within each of these streams, I selected sustainable principles that were relevant for this project, taking into account that some strategies could easily be linked to more than one stream.

The Living Principles Framework describes *cultural sustainability* as “actions and issues that affect how communities manifest identity, preserve and cultivate traditions, and develop belief systems and commonly accepted values” (The Living Principles, n.d., “Four Streams” section). This project refers to *cultural sustainability* as supporting Mexican culture, which is strengthened by the tradition of large extended family gatherings (Lomnitz & Pérez 1987, p. 147). These types of gatherings are negatively impacted by small spaces. For example, it is difficult to fill a small 2.6 m x 2.4 m dining room with enough chairs for a large gathering. (see Figure 1.2). Manzini (1994) suggests that “design can give form to a changing world, and offer opportunities for new types of behavior” (p. 43). Extrapolating from Manzini’s suggestions, the purpose of my research was to create new form in response to new constraints on space and offer opportunities to support a behavior that is ancient and very central to culture in Mexico: sharing mealtimes with friends and family.



Figure 1.2 Ana Mejia Family gathering, 2009

The second stream in the living principles framework is *environmental sustainability*. For this project, environmental sustainability is understood to be similar to ecodesign, the practice of designing products for lower environmental impact. “Eco-design addresses all environmental impacts of a product throughout the complete life cycle of the product, whilst aiming to enhance other criteria like function, quality and appearance” (Philip Goggin as cited in Chick & Micklethwaite, 2011, p. 106).

Chapters 2 and 3 explain the context that I am designing for in order to support cultural sustainability. In chapter 4 a framework for ecodesign within the four streams of the Living Principles

is applied to the design criteria for this project.

The third stream of sustainability is *people*: “actions and issues that affect all aspects of society” (The Living Principles, n.d., “Four Streams” section). In this project, the people that will benefit directly by the furniture design solution are the users (extended family) and the potential producers from Mexican society (see chapter 5).

The fourth stream of sustainability is *economy*: “actions and issues that affect how people and organizations meet their basic needs, evolve and define economic success and growth” (The Living Principles, n.d., “Four Streams” section). It is applied in this project when taking into account local production –wood and textiles– to encourage local economy and hand labour (see chapter 7).

Chapter 2.

Preliminary Research

Chapter 2. Preliminary Research

The preliminary case study in this work is the Municipality of Ixtapaluca in the State of Mexico. It is important to understand the conditions and the importance of this location in the geography at the centre of Mexico. According to Emilio Fernández Román (2011), from 2005 to 2010, the Government of the State of Mexico authorized the construction of more than 355,000 subsidized dwellings, representing a significant amount of social housing in Mexico. The Instituto Mexiquense de la Vivienda Social (Mexican Institute of Social Housing) states that one out of six dwellings constructed in Mexico is built in the State of Mexico. The State of Mexico surrounds Mexico City, commonly known as Distrito Federal, which allows some of its inhabitants to use some municipalities as dormitory towns (places to sleep), since they are working in Mexico City.

In 2000, the population of the Municipality of Ixtapaluca in the State of Mexico was 297,570; by 2010, the population was 467,361 (Instituto Nacional de Estadística y Geografía, n.d.), a 36.3% increase in 10 years. Most of the inhabitants in this particular municipality live in social housing. It is common for those who live there to obtain their houses through a government credit facility. The owners are workers with an average income equivalent to four or five times the minimum wage: from \$18.48CAD to \$23.10CAD a day (Instituto del Fondo Nacional de la Vivienda para los Trabajadores, n.d.b).

The lack of dwellings in the country has become an important problem for the Mexican government. According to Judith Villavicencio and Ana María Durán (2003), the government needs to reorient the current housing legislation and find and develop solutions and new programs that take into account the sociodemographic characteristics and aspirations of families in the area, in order to overcome housing problems such as the following:

- The inability to establish friendly relations among neighbors
- Noise at night
- Disagreement over having pets
- Problems with children

- Loud volume of radio or TV
- Social or cultural comparisons
- Lack of social areas
- Challenges in developing activities such as children's games at the playground, social gatherings or participation, youth sports, relaxation areas for the elderly, and so on. (p. 3)

With the excuse that dwellers can use the house as a transitory space or dormitory, and since the places they can spend leisure time in are close to their neighborhood, the developers are building smaller houses in the zone of Ixtapaluca and all over the country. Developers are refusing to focus on the activities that take place in these social spaces, or how the home functions. (Villavicencio & Durán 2003, p. 5, translated).

The small housing system

While most of the houses in the municipality of Ixtapaluca, are small, they do vary, as Mexican Industrial designer Diana Delgado (2007), in her master's thesis, *Creating a Design Revolution: Changing Paradigms for Reduced Spaces in Mexico's Small Housing Market in Alliance With Small-Scale Industries*, explains. First are *viviendas de interes social*:

A construction consisting of two stories, where the concept of a basement is not considered. The houses have two or three small bedrooms and the number of bathrooms varies. In general, there is one full bathroom upstairs and a half bath on the ground floor. Dining and living rooms are open areas, while the kitchen still is confined to one room. New projects, however, are starting to incorporate the kitchen within the main open living area. The front yard is considered to be a driveway with space for one vehicle. The size of the rooms varies accordingly with the lot specifications and price. These types of homes are considered the biggest of the small house types. (Delgado, 2007, p. 51)

Second are apartments:

In general they have one or two bedrooms which vary in size, plus one main living area, one bathroom, and a kitchen, which includes a laundry room. The tendency is for kitchens to open into the foremost living area. Some of the apartments include a small balcony. These are common homes for Mexico City residents. (Delgado, 2007, p. 51)

Third are small dwellings:

These have a single level (no basement). The homes are mainly one open area (dining and living rooms), which usually function as a sleeping area as well. Sometimes these types of homes have one or two small bedrooms, but all of them have one small full bathroom. Kitchens are still enclosed; however, newer styles are incorporating them within the main room. The front yard is considered a driveway with space for one vehicle. The size of the rooms varies accordingly with the lot specifications and price. (Delgado, 2007, p. 52)

Ixtapaluca, due to the concentration of many small dwellings, was chosen as the site for this research. Surveys, interviews, and a pilot probe were conducted to discover and refine the approach to the design. This is detailed further in the chapter on methodology and research.

The current housing system in Mexico

With support from the Mexican government, housing developers are responsible for meeting the social housing needs in Mexico. However, "they do not pay enough attention to the real needs of inhabitants for their home interiors. Moreover, developers do not take into account the activities, customs, and rituals that inhabitants perform on a daily basis" (Villavicencio, & Durán, 2003, p. 3).

Dwellers have limited options to purchase furniture designed specifically for the size of their homes. Their only alternatives are to buy furniture from one of the big transnational chains such as Costco or Walmart, or to buy from local chains such as Famsa or Elektra. However, furniture from these

chains does not satisfy the basic needs of the dwellers in these houses because it is not designed for small spaces and not adapted for the Mexican context (Figure 2.1). At first glance, a solution to this problem could be to furnish small housing complexes with IKEA products; however, IKEA does not have a presence in Mexico.



Figure 2.1 *Classic dining set*, retrieved from www.elektra.com.mx

Moreover, all of these companies sell products imported from China, the United States, and Europe (Grupo Elektra, n.d.). This furniture is designed with North American or Western needs and preferences in mind, such as minimalistic aesthetics, short product lifetime, or do-it-yourself assembly. According to the research described in chapter 5, these characteristics do not align with what Mexican consumers require of their furniture. Mexicans have a strong preference for long-lasting furniture and a different aesthetic from what these chains offer.

Looking at the system of purchasing furniture for small housing, I have identified many transactions from different sources. One of the most important directions for money to flow is from Mexican workers in the United States to their families in Mexico; “in 2010 the remittances were USD\$22.6 billion” (Ratha, Mohapatra, & Silwal, 2011, p. 26). “Remittances are sent in various ways—through banks, money transmitter companies (e.g., courier agencies such as Western Union), or postal services—or they may be delivered by the actual sender or by a third party” (Garza & Lowell, 2002, p. 126). Western Union branches are, coincidentally (or rather conveniently), located within local stores such as FAMSA or ELEKTRA.

Elektra, generally exchanges the money at 10 percent less than the interbank rate, meaning that up to 20 percent of the remittances are lost in transfer costs. Elektra also encourages

consumption by providing a discount on goods bought with the remitted money. (Garza & Lowell, 2002, p. 56)

Thus, housing location and lack of better options force local home buyers to purchase, often on high-interest credit, furniture and products not specifically designed for their home style or preferences.

The desirable system

To make the ecology of the social housing system appropriate for its context (Mexico), users (the dwellers) and actors (furniture producers) would need to develop a “broad perspective on the complexity of the design problem and analyz[e] it from many particular aspects that were not tangible before the visualization of the information ecology, marked by strong interrelationships and dependencies among its different parts” (Nardi & O’Day, 1999, p. 51). After analyzing the current social housing system, I identified the main purpose of this research: to design a piece of furniture that supports family, culture, and rituals despite the increasing shortage of space in Mexican homes.

At this phase we have identified problems within the social housing system. Based on estimated growth in the social housing sector, there is an opportunity to design furniture to fit these homes. Within this scenario, design can respond to the lack of furniture for small dwellings in Mexico, with a valuable focus on the extended family (the users) and their needs when living in small housing.

Chapter 3.

Cultural Context

Mi casa es tu casa
My home is your home

CHAPTER 3. Cultural Context

Family in Mexico. Why is it so important?

It is important to understand the context, rituals, and habits of furniture users living in small dwellings in Mexico. However, in order to design for Mexico, it is also necessary to understand that the value of the family includes not only the nuclear family (mother, father, and children) but also the extended family (grandparents, uncles, aunts, cousins, partners, friends, and so on) (Lomnitz & Pérez 1987, p. 147).

Mexicans' passions for the honor of their own people take precedence over any other value in Mexico. They are very family-oriented and always looking to preserve their values. The family union is a symbol of protection, as well as a release from the troubles that come from the outside world. This is why everything is a motive to make a *fiesta*. These big reunions, where everyone is related, bring the old and the young together. People will constantly find a way to get reunited, even if this means to close the street, invite the neighbors, and break a *piñata*. This is part of everyday life. For some families, it is common to be together and watch soap operas at home during the evening, and when there is a soccer game or boxing event, people do not hesitate to look for ways to share the experience. . . .

Families will be together for each other in good times or bad times, always fomenting the union through gatherings. This tradition has been threatened by the development of small dwellings that constrict the ability of a family to gather comfortably. (Delgado, 2007, pp. 19–21)



Figure 3.1 Livia Corona Mexican Family, from the series *Two Million Homes for Mexico*

However, small dwellings in Mexico are designed mostly for families of four: a mother, a father, and two children (Figure 3.1).

The dynamic of the use of the space changes depending on the days of the week. For example, on weekdays, it is only the nuclear family members inhabiting the house, but on the weekends, Mexican families tend to celebrate and have extended families in their homes (see page 38).

Las penas con pan son menos. All grief with bread is less.

Imagine the following scenario. We are in Mexico, where we have been invited to celebrate a popular festival there, the Day of the Dead. It is 7:00 p.m., and, although it's early November, it is not really cold. The temperature is around 12°C. There are many people in the house, and they are placing the altar where we will remember our loved ones who have passed away.

Mom is making hot chocolate while we are wait for Dad, who went to the bakery for some “bread of the dead.” Following the tradition that says we have to cook our loved ones’ favorite foods—the ones they used to enjoy when they were alive—all the guests are bringing special dishes, so there is a variety of food, from *mole* to Kentucky Fried Chicken and even pizza.

As children, relatives, friends, and neighbors come to remember our loved ones, we all squeeze together in the living room and at the dining room table. Even though it could be seen as a sad event, everybody is happy, since we are all able to talk and share some time together. The food is amazing. Everybody has been waiting to eat *pozole* and *tamales*. This is a joyous event except for one problem: We must to wait our turn to eat because we cannot all fit together at the dining room table.

This is a brief example of how Mexicans relate to food, family, and traditions. The story illustrates how important food is to a family gathering, and therefore how the dining room is an important social space in the home. Given that this is one of the most important rooms in the home, there is an opportunity in designing dining room furniture to support the family interactions that are key to

Mexican culture.

Cuca bench (a system that converts two chairs into a bench) (see Figure 3.2) allows people to double the seating capacity of the existing chairs. Once the family is all together they can continue spending quality family time and sharing their stories, jokes, and experiences. This allows users to continue the tradition of sharing food with their extended family.

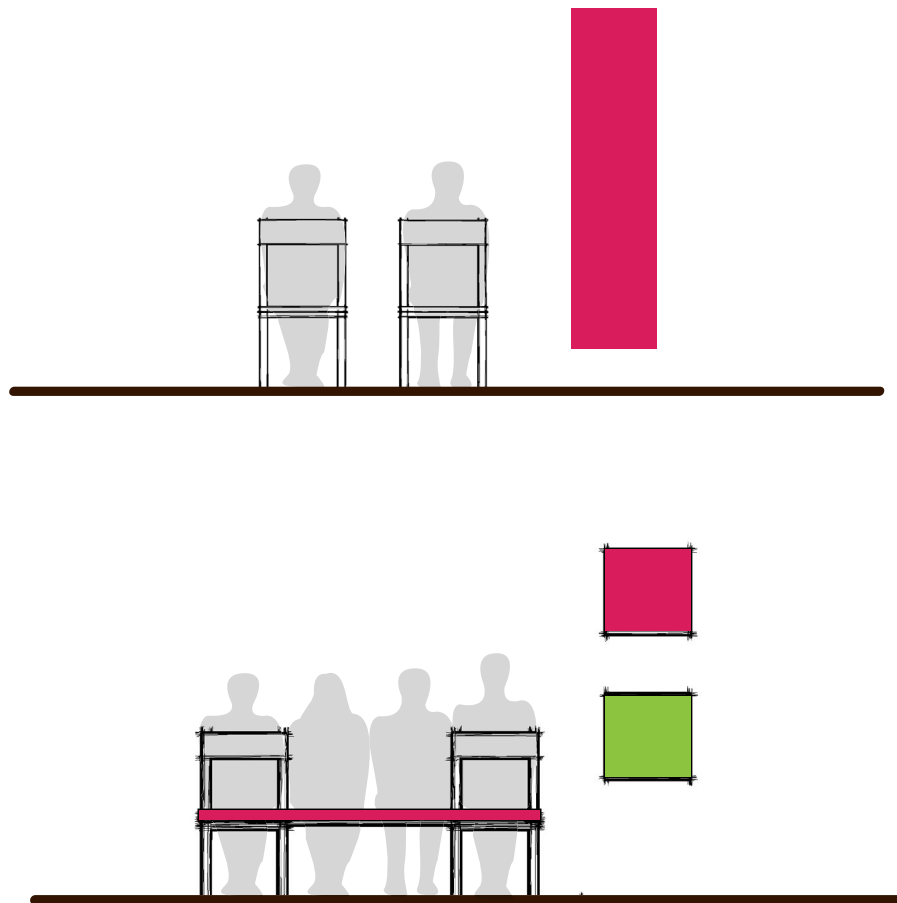


Figure 3.2 Ana Mejia *Cuca Bench System* 2012

Having established that the dining room and its elements (chairs and table) are important objects for the activities at home, I will next examine other qualities such as character, comfort, durability, and desirability. Mexicans are proud of their culture, and dining room furniture can reflect their aesthetics as well as their needs.

Mexican aesthetics preference. Background

Ancient Mesoamerican civilizations such as those of the Olmecas, Zapotecas, Mayas, Mixtecs, and Aztecs (Mexicas) were located in the current Mexican territory from approximately 8000 B.C. to 1520 A.D. (Smith & Masson, 2000, p. 9) (Figure 3.3). The Spanish conquest took place around 1519;



Aztec and Maya kings were stripped of their power; commoners were put to work in mines and plantations, native religions were suppressed, and people died by the millions of epidemic diseases brought from Europe. The Spaniards tore down native temples and cities and built their own churches and cities over the ruins. (Smith & Masson, 2000, p. 11)

Figure 3.3 Jorge Velazquez Bonampak, 2012

Hernán Cortés (the Spanish conquer) “forced conversion to Christianity, so he had the statues of Maya gods removed from their temples and replaced with a cross” (Hassig, 2006, p. 63).

La Malinche

(probably a corruption of Malinalli, ‘Grass’; baptized as Marina) was one of twenty women given to Cortés by the Mayas, she spoke both Yucatec Maya and Nahuatl and served as a linguistic link between Cortes and the Aztecs. She was also the mother of Cortes’s son, Martin. (Hassig, 2006, p. 198)

Martin was considered the first mestizo (a mix of Spanish and local). Malinche’s people called her a traitor since she facilitated the Spanish invasion of Mexico-Tenochtitlan. In Mexican Spanish there is an adjective *malinchista*, which means “traitor who prefers the foreigner for the Mexican and those

who have been corrupted by foreign influences” (Octavio Paz, as cited by Elenes, 2010, p. 156).

Spanish influence in Mexico is notable:

Every city and town that existed prior to the 20th century has its colonial monuments.

(see Figure 3.4) The churches copy those of Spain, many of which were influenced by or converted from the mosques of Spanish Islam. The houses of the well-to-do, plain and drab on the outside and luxurious inside, can likewise be traced to Muslim Spain. (Robinson, 2004, p. 81)



Figure 3.4 Ana Mejia Mexico City Metropolitan Cathedral, 2012

Mexico declared its independence

in 1810 but the Mexican culture and

aesthetics continued to be influenced by Europe. Maximilian (1832–1867), who was born near Vienna, was the son of Francis Charles, Archduke of Austria. In 1864 he was sent to Mexico by Napoleon III to become the Mexican emperor; since the Mexican political situation was not defined, the conservators wanted an Imperialist, and Maximilian was chosen (Hall, 1868). Maximilian and his wife, Charlotte, decided to reside in an old building used as the summer house of the viceroy in the 1700s and later used by the military school in 1844. The emperors hired several architects from Austria, France, Belgium, and Mexico, such as Julius Hofmann, E. Suban, Carl Kaiser, Carlos Schaffer, Eleuterio Mendez, and Ramon Rodriguez Arangoity (Museo Nacional de Historia, n.d., “History” section). The building is known as the Chapultepec’s Castle and its considered one of the best attractions in Mexico City.

Porfirio Diaz’s regime (1876–1880, 1884–1910) saw a dramatic increase in new construction. . . . Certainly, the best of the Porfirian Beaux-Arts buildings were worthy of

any European or North American city. The design and initial construction of Mexico City's sumptuous Palacio de Bellas Artes (Palace of Fine Arts) [Figure 3.5] was even overseen by internationally renowned Italian architect Adamo Boari (1863–1928). Begun with great fanfare in 1904 but delayed by foundation problems and the Revolution, it was finally completed in 1934 under the direction of Mexican architect and architectural theorist Federico Mariscal (1881–1971). (Coerver, Pasztor, & Buffington, 2004, p. 22)

The immigration of Spanish Republicans into Mexico in 1939 allowed modern cultural and intellectual influences to be brought to Mexico during the 20th century (Zabludovsky, 2002, p. 169).

Refugees such as Eduardo Robles and Cayetano de la Jara among others who came to Mexico like thousands of refugees with no money but with spirit and

encouragement to open a business, they started the artistic decoration industry embellishing cinemas and leisure building as well as designing landscapes. (Fresco, 2003, p. 133)



Figure 3.5 Areli Maciel *Palace of Fine Arts, Mexico City*, 2012

The North American Free Trade Agreement (NAFTA), which went into effect on January 1, 1994, “creates a preferred trade zone consisting of the U.S., Canada, and Mexico. Tariffs, quotas, and other trade barriers—such as licensing, local content, investment, and customs fee restrictions—are scheduled to be reduced or eliminated on transactions among the three countries” (Hinkelman et al., 2003, p. 79). For example

Wal-Mart owns 650 stores, supermarkets, and restaurants in Mexico. With annual revenues of USD\$11 billion, Wal-Mart is larger than the three next largest retailers in Mexico combined. . . . Mexicans by the millions are shopping in Wal-Mart, helping to boost the company's Mexican profits by nearly 30 percent in the first quarter of 2005. Whether this

is a good thing, a bad thing, or neither depends on your politics. At the very least, it is a big thing, and has been one of a number of major transformations that Mexico has undergone since the NAFTA came into effect. (Dawson, 2006, p. 118)

In summary, both the aesthetics and the culture of Mexico have been influenced by several cultures and civilizations from the Mesoamericans—Mayas, Olmecas, and Aztecs—as well as by current North American culture.

Chapter 4.

Design: Theory and Application

CHAPTER 4. Design: Theory and Application

Defining the design problem as how furniture designed for small spaces can sustain culture allowed me to view my design project as Jimenez Narvaez (2000) might define one:

A design project is not only a plan or willingness to act; it is the action to project oneself, and it requires two fundamental aspects: understanding the design problem and the act of developing an idea and defining what needs to be done with respect to social aspects. (p. 7)

The solution to the problem of a lack of furniture in Mexico that is scaled for small dwellings and helps sustain culture demands an understanding of the social aspects of Mexican dwellers, their activities, and their rituals, in order to define what needs to be done.

Narvaez (2000) refers to the design process as proceeding through these four stages:

1. Thinking about doing, which refers to the design process and project.
2. Thinking about how to do, which refers to technological production problems and technique.
3. Thinking about the dependence on doing, the financial and productive submission of design.
4. Thinking about what needs to be done to achieve institutional and social change (p. 7).

This type of research or acquisition of basic knowledge about the project is what Narvaez (2000) calls primary projectural research. "This is related to the subject matter of the design problem and may be documented so that it will become an element of knowledge compilation" (Narvaez, 2000, p. 15). Given this framework, it is clear that what needs to be done is to create atmospheres with meaningful objects (furniture) to maintain social and cultural behavior in a Mexican context. In order to understand the meaningful role that furniture plays in everyday life, along with its cultural and social values, I had to analyze it as a whole system in the Mexican context and extract some

characteristics that a designer would have to consider.

Jean Baudrillard (2006), author of *The System of Objects*, examines furniture and makes a comparison between “old” furniture (19th century) and “modern” furniture (20th century). Even though this book was first published in 1968 as a result of Baudrillard’s doctoral thesis in France, we can find many characteristics in Mexican dwellings that are similar to the bourgeois interiors by Baudrillard: “The primary function of furniture and objects here is to personify human relationships, to fill the space that they share between them, and to contain the soul of the family” (p. 14).

This affirms that the furniture must be designed to enhance the rituals and ceremonies of the culture for which we are designing. I thus had to consider the hierarchy that objects would need in order to create an atmosphere that would properly reflect the family members and their actions, even when they are not present in their dwellings. For example, on weekdays, the Cuca bench system can be used as just two chairs, whereas on weekends, it can accommodate four people.

Ecodesign: Selected strategies

Cultural sustainability has been discussed in the previous chapters, and the Cuca bench has been presented as a solution that supports a family’s ability to continue to gather in small dwellings. The following discussion covers additional strategies that fall under ecodesign. This is the practice of designing products to reduce environmental impacts.

The Okala Ecodesign Strategy Wheel (Belletire et al., 2009), shown in Figure 4.1, relates a product’s life cycle to ecodesign strategies. The key strategic approaches for ecological design are arranged around a circle, corresponding to the life cycle of a product. The beginning of the cycle refers to the creative inception of the product: design for innovation. Continuing clockwise, design decisions, such as material choices, manufacturing and distribution, the use phase, length of life, and end of life, are all arranged sequentially. (p. 34)

Using the Ecodesign Strategy Wheel as a reference, this project will employ the following strategies, with a particular focus on product longevity and local production:

- **Innovation**
 - Create opportunity for local supply chain
- **Reduce material impacts**
 - Avoid materials that damage human or ecological health
 - Use renewable resources
- **Reduced distribution impacts**
 - Source local materials and producers
- **System longevity**
 - Design for durability
 - Create timeless aesthetic
 - Foster emotional connection to product
- **Optimized end-of-life**
 - Use recyclable nontoxic materials

According to Manzini (1994), “design will have to develop products with both the technical and cultural capacity to survive over time: products which require care, with which the user can establish an emotional relationship” (p. 40). System longevity strategies reduce product impacts by extending the useful life of a product. This keeps materials out of the landfill longer and reduces the need for replacement products (Belletire et al., 2009, p. 34). In Mexico, this is a natural strategy for furniture, because, as this thesis discusses in chapter 5, Mexicans wish to keep furniture long enough to pass it on to their children. Due to this traditional aspiration, designing for longevity in Mexico requires only that furniture be durable, break resistant, adequate to the size of the home, and designed with a timeless and appropriate aesthetic.

Designing for local production creates the opportunity for a local supply chain and reduces transportation impacts. In Mexico 323,769 people work in the wood furniture sector (Instituto Nacional de Estadística y Geografía, n.d.b). Resources local to the country, such as pine and oak, are used to fabricate furniture. Textile production is a craft labor in many regions of the country; integrating these fabrics into contemporary design helps to sustain the economy of larger indigenous communities whose income is based on textile production.

Ecodesign Strategy Wheel

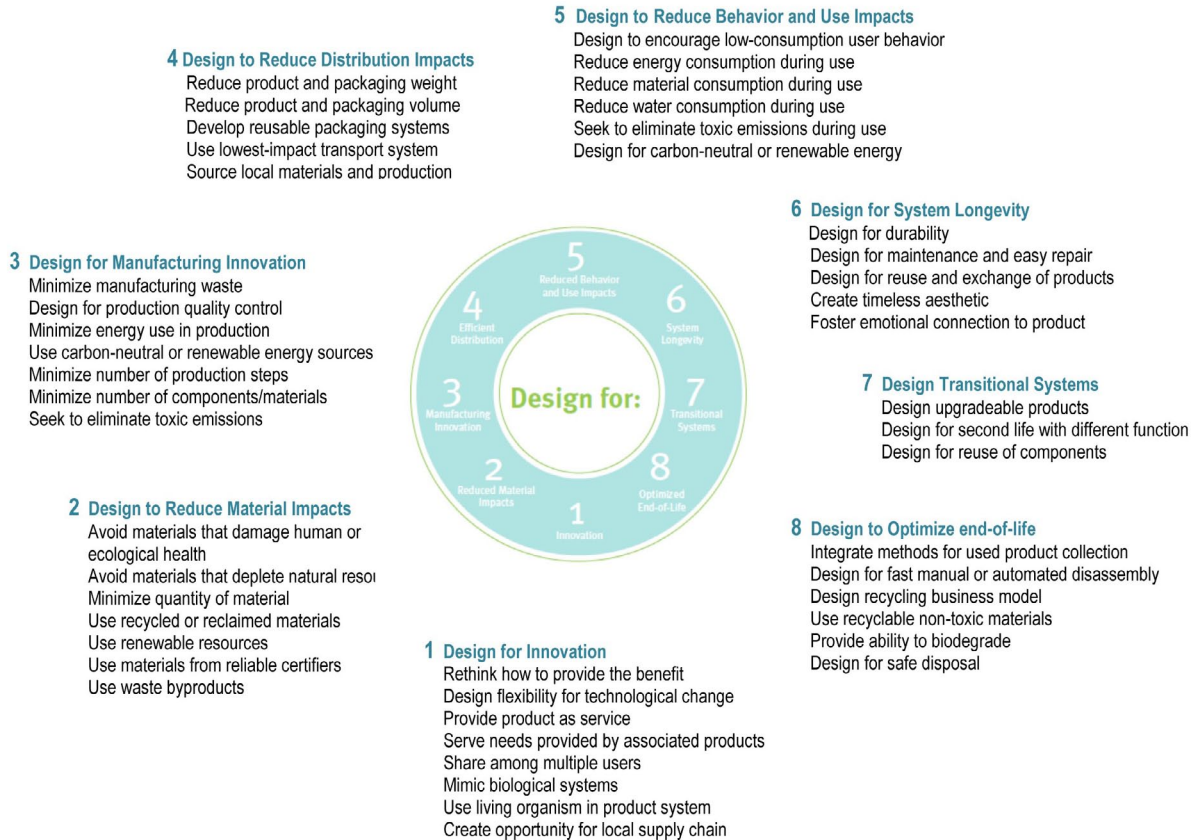


Figure 4.1 Belletire, St, Pierre, White, *The Ecodesign Strategy Wheel*, the Okala guide 2012

Chapter 5.

Research

CHAPTER 5. Research

This thesis addresses the following questions:

1. How might dining furniture be designed to support family dining rituals in small dwellings?
2. How might dining furniture be designed to take into account the culture, habits, and rituals of the dwellers?
3. Are there sustainable design strategies that are suitable to influence the design of furniture that is scaled for small dwellings in Mexico?

In order to answer these questions, I conducted surveys and interviews with Mexicans living in small dwellings. The findings revealed the information needed for creating a design brief. Qualifications were established for a furniture product that could meet the sociocultural needs of Mexicans living in small dwellings, as well as offer a sustainable solution for local production and promote a sustainable culture.

My first phase of research consisted of a survey. This survey (Appendix 1) was conducted with 87 people in Mexico living mostly in small dwellings. The intention of the study was to identify appropriate furniture options that are affordable, sustainable, functional, long lasting, scale appropriate, and aesthetically pleasing. Using Ixtapaluca, in the State of Mexico, as my primary case study, I first interviewed 30 people living there. For comparative purposes, I followed up on this study with a survey of 57 people living in Mexico City.

Attributes and their values

The survey listed 15 attributes of furniture, and the participants were asked to rate these according to their importance or value as very important, important, more or less important, less important, or not important (see Appendix 2).

The attributes included the following:

- Long lasting
- Coherent with current style
- Do-it-yourself assembly
- Easy to replace the parts
- Imported
- Fits well in the place
- Contemporary design
- Credit arrangements
- Adequate to the size of your home
- Easy to fix
- Easy to clean
- Modern
- Durable
- Made in Mexico
- Affordable price

The following six attributes were found to be the most important ones to take into account when defining the design brief, presented in Figure 5.1 in order of the strength of their value:

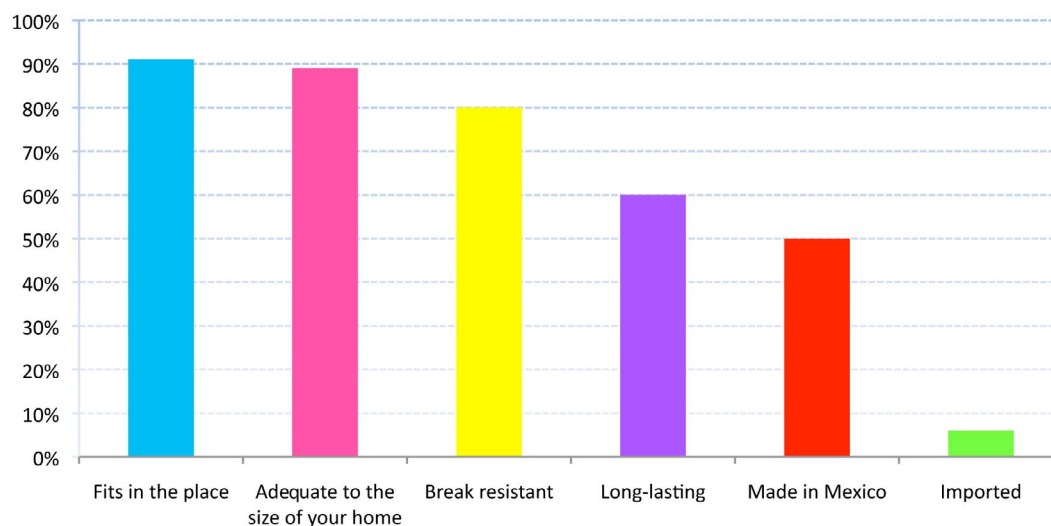


Figure 5.1 Ana Mejia, *Furniture Attributes*, 2012

1. **Fits in the place:** 59% of people considered having furniture that fits into their living rooms as very important, while 32% considered it important that it fit in their dining rooms or bedrooms, and, finally, only 1% gave no importance to this value at all.

2. **Adequate to the size of your home:** This option was similar to the previous one, the purpose of repeating the question was to confirm that those interviewed were consistent when answering the question: 52% considered it very important to purchase furniture adequate to the size of their place, and 37% considered important this attribute important.

3. **Break resistant:** Regarding this characteristic, which means that the furniture will be durable, 47% of the interviewees found it very important, and 43% found it important.

4. **Long lasting:** 30% of the people considered it very important to have long lasting furniture, while 30% considered this attribute as important; 4% give no importance to this characteristic.

4. **Made in Mexico:** 32% of those interviewed gave the purchase of products made in Mexico a value of more or less importance; only 18% considered it very important to consume local products. Given this information, it is assumed that less than a quarter of Mexican people take into account the value of local production and how this option could help to sustain a community or a profession.

5. **Imported:** If the majority of the people valued purchasing furniture made in Mexico only of more or less importance, we would expect that people would give more preference to imported products; however, the results showed that 38% of the interviewees gave no importance to purchasing imported products and 36% valued buying imported furniture as less important. This revealed a gap in knowledge of the Mexican people regarding buying locally, which gives the design model a good opportunity not only to educate the people on the benefits of local production, but also to promote it.

More than half (52%) of the interviewees also mentioned that the most uncomfortable piece of furniture in the home is the dining room chair. They explained that is because the seating surface is usually hard or cold.

Options

The participants were also asked to rate in order of importance, 5 being the most important and 1 the least important, their options when deciding on a furniture

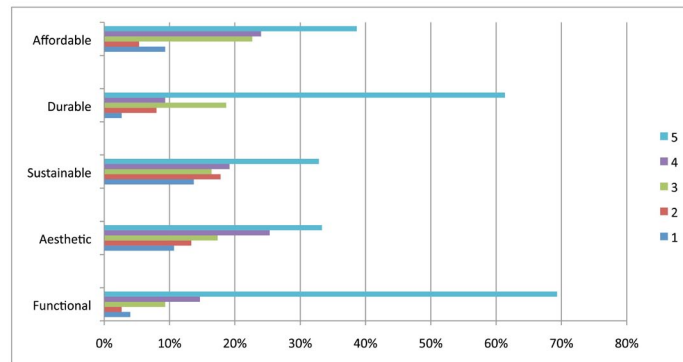


Figure 5.2 Ana Mejia, *Furniture Purchase preference*, 2011

purchase. The options included: affordable, durable, sustainable, aesthetic, and functional. The results showed that the inhabitants give little or no importance to whether or not furniture is sustainable, but functionality and durability were the main characteristics considered when purchasing products to furnish their dwellings (Figure 5.2). This actually aligns with point 6 of the Ecodesign Strategy Wheel, which lists the following attributes:

- Design for durability
- Design for maintenance and easy repair
- Design for re-use and exchange of products
- Create timeless aesthetic
- Foster emotional connection to product.

My assumption that sustainability would be the least important factor when dwellers are deciding on a furniture purchase was confirmed. However they wanted attributes of sustainability such as durability and longevity.

The main hypotheses of this research study are that (a) there is little to no furniture available for small dwellings in Mexico, and (b) the furniture that is available does not reflect the culture, habits, and rituals of the dwellers. The participants in the study also identified that the furniture they have is

large and not scaled for small dwellings. Most importantly, they also identified a need for flexibility in the dining room, since they have different users during the work week than on the weekends.

At this phase of the research, participants had helped me to identify clearly how Mexicans value attributes of furniture as well as how they prioritize their purchasing decisions. Function and aesthetics are highly valued. I further identified that the majority of those interviewed were not comfortable with their dining room chairs. In the next phase of the research, I focused on a pilot probe and on a hypothetical case study that allowed me to identify and describe the type of furniture to be developed.

Pilot probe

In order to gain a deeper understanding about the roles objects (furniture) play (as though they were actors) in everyday life, I developed a pilot probe for people in small dwellings in Mexico to gain a deep sense of familiarity and engagement with the people who might use the furniture. The identity of the users of small dwellings in Mexico was defined by several social, economic, and cultural behaviors such as solidarity among relatives, having the extended family over on the weekends, and family union, among others. The purpose of the pilot probe was to identify the users' behavior and how they manage to use furniture that is heavy, outdated, and not designed for small dwellings.

The pilot probe was designed using 10 icons that displayed popular Mexican aesthetics and colors (Appendix 3). Participants were prompted to place the icons in the living room in a Mexican home, and to photograph how they would carry out the ritual associated with that icon. Icons included images of a *piñata*, a birthday cake, and a vase of flowers, among others.

The pilot test of this probe took place in my parents' apartment (see Figures 5.3 to 5.8). It has two bedrooms, two bathrooms, a kitchen, a dining room, and a living room. It is 60 m², 29 m² larger than a basic housing unit. Despite this, when I performed the activities, I realized that the problem of oversized furniture is not confined to social housing. In my parents' case, they inherited furniture

that was not designed for the size of their place, but because of its sentimental and monetary value, decided to keep it.



Figure 5.3 Ana Mejia, *Context I*, 2011



Figure 5.4 Ana Mejia, *Context II*, 2011



Figure 5.6 Ana Mejia, *Context IV*, 2011



Figure 5.5 Ana Mejia, *Context III*, 2011



Figure 5.7, *Context V*
2011

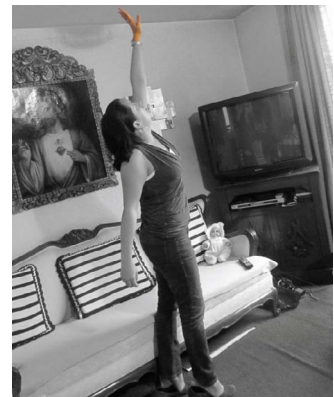


Figure 5.8 Ana Mejia,
Context VI, 2011

Testing the pilot probe was valuable in confirming assumptions and further identifying opportunities for the design of new furniture, as well as for identifying the following questions for further research:

1. Do other rooms in small dwellings (kitchen, bathroom, bedroom, etc.) require an analysis of the use of the space?
2. What other sociocultural aspects in Mexican families could be applied to design other types of furniture?
3. Are developers of small housing using sociocultural criteria to design and build new houses?

Chapter 6.

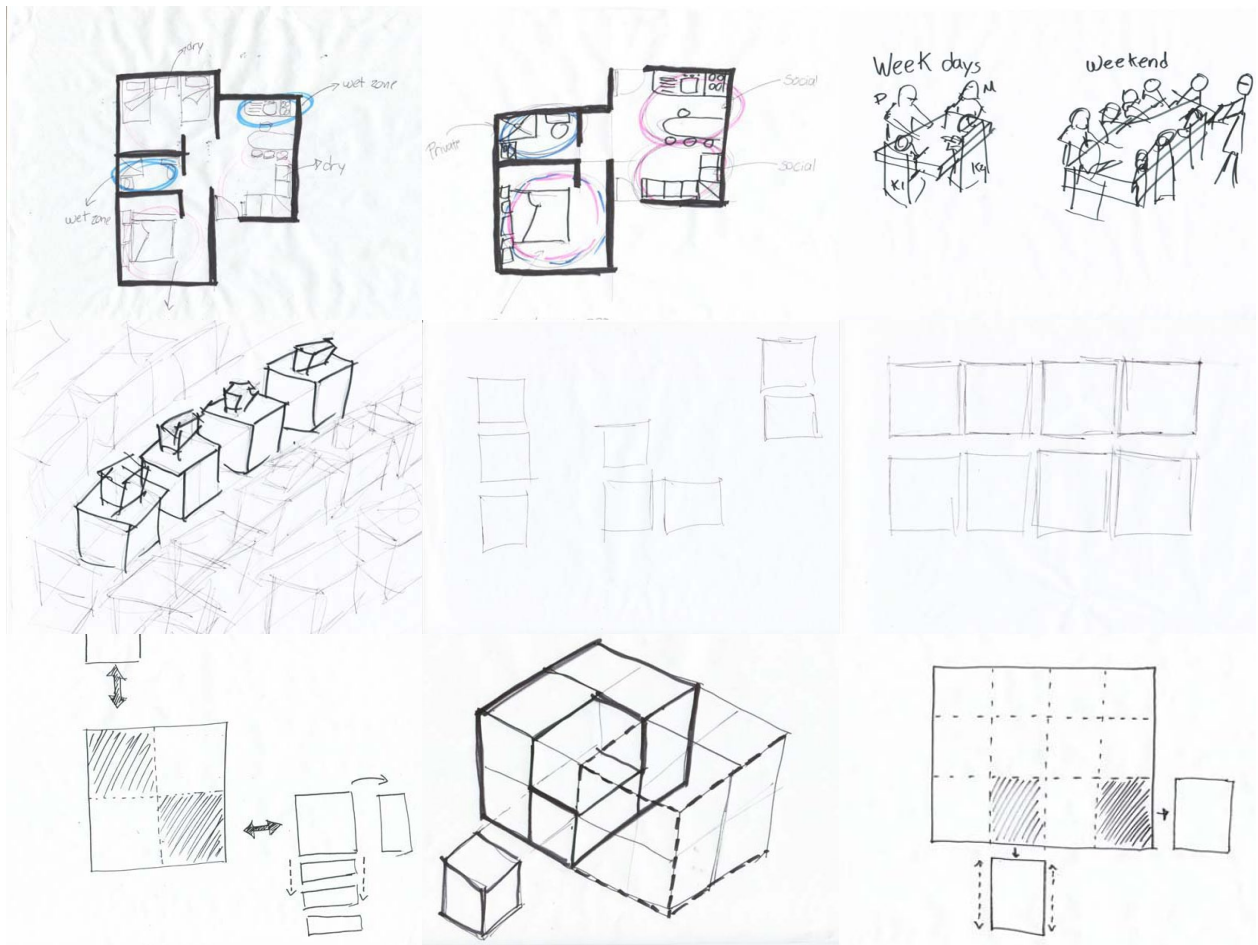
Design Exploration

CHAPTER 6. Design Exploration

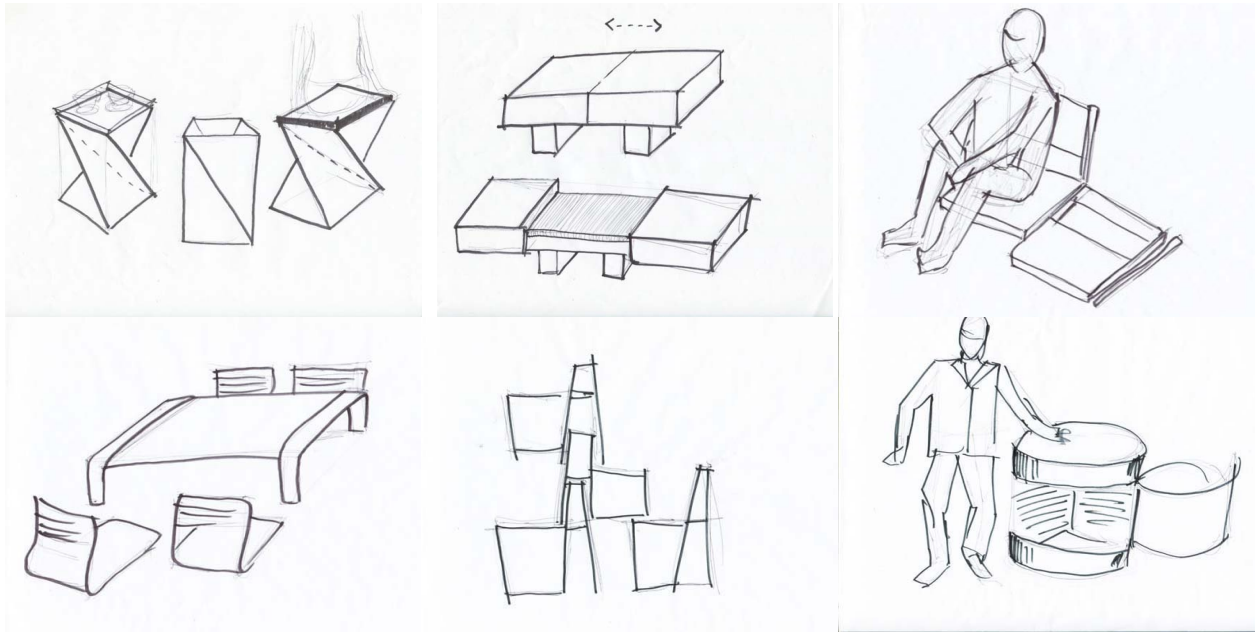
The process

Several design activities were used to explore the problem of small dining spaces and the need for residents to be able to accommodate large family gatherings on the weekend. Early on, I identified that a flexible solution might be the most useful.

Phase I



(Figure 6.1) I did some rapid sketching to attain the first iterations as a means to explore the design problem.



(Figure 6.2) I explored modular furniture, the Japanese influence, and ideas about how furniture could be made flexible.

In order to explore how social relations might be affected by subtle cues in furniture, rapid video prototyping was used. I divided the sitting space and the dining space with just with a few lines (Figure 6.3).



Figure 6.3 Ana Mejia, *Furniture Experiments*, 2011

Rapid video prototyping was used to illustrate the dynamics of the use of the space (Figures 6.4 and 6.5). Instead of relying on a specific theory to guide my creative process, I used these explorations to help me clarify my objectives in a less rigid way.

Phase 2.

The second phase of the design exploration involved the production of models and mock-ups of chairs that would offer a flexible system that would allow a varying number of people to sit down comfortably. The chairs in Figure 6.6 consist of two different pieces that integrate with each other in different ways to accommodate one or two people. The chair in Figure 6.7 can be converted into a larger chair on which two people can sit down. The two chairs in Figure 6.8 transform into a bench, on which four or more people can sit down.

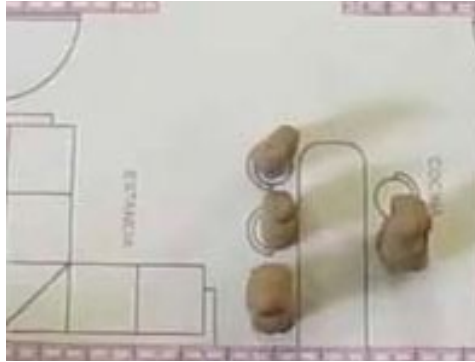


Figure 6.4 Ana Mejia, *Dynamic weekday*, 2011



Figure 6.5 Ana Mejia, *Dynamic weekend*, 2011



Figure 6.6 Ana Mejia, *Chair Models*, 2011

Design exploration: Phase 3

In the third phase of my exploration, I identified that the option with the greatest opportunity for development and exploration was the



Figure 6.7 Ana Mejia, *Chair Models II*, 2011



Figure 6.8 Ana Mejia, *Chair Models III*, 2011

transformation of two chairs into a bench. I began then to search for a way to identify how the design could correspond to the Mexican cultural identity and reflect the Mexican aesthetic. Inspiration was found in contemporary architecture, such as that of Luis Barragan, Ricardo Legorreta, and Teodoro González de León, as well as in popular and pre-Hispanic art (see Figure 6.9).

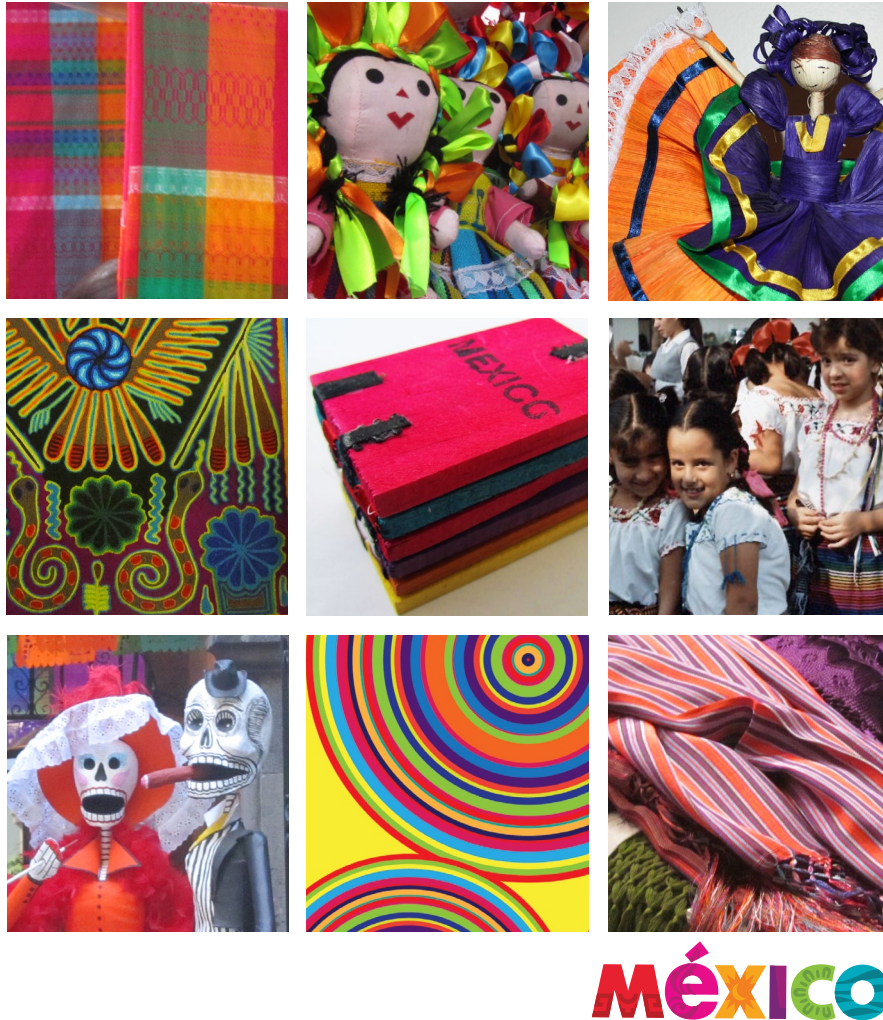


Figure 6.9 Ana Mejia, *Moodboard*, 2012

The pallet reflects color, happiness, and warmth. These colors are incorporated in textiles, traditional toys, and contemporary Mexican graphic design. I identified Frida Kahlo as an inspiration, since she incorporates Mexican elements, objects, colors, and traditions in her work.

Chapter 7.

Cuca Bench

The Seating Device

Chapter 7. Cuca Bench: The Seating Device

The objective of the Cuca seating device is to provide a system in which two chairs can become a bench. Instead of accommodating only two family members, the bench would have room for at least four people. Considering the weight of the 90th percentile of male adults (Chaurand, León, Muñoz, & Ergonomía, 2001) the product would have to support at least 400 kg. in total (Figure 7.1).

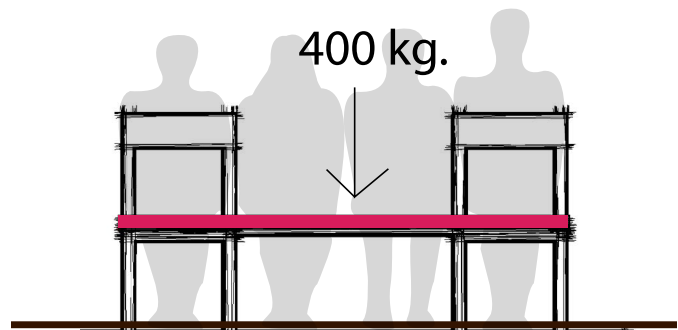


Figure 7.1 Ana Mejia, *Weight support*, 2012

The seating system is designed to be produced and sourced in Mexico. The production chain considers a small scale of production, using local woodworkers. The design embraces the Mexican tradition of family reunions at the dining room table and the pride Mexicans take when using their furniture. It looks strong and durable and reflects Mexican style. Traditional Mexican color patterns are used in the upholstery, incorporating colors such as hot pink, purple, and yellow.

I intend to employ local textile handcrafters to produce the fabrics for the upholstery. I will incorporate fabric patterns from the State of Chiapas and Oaxaca, where the geometrical forms are a reminder of the Mayan culture (Figure 7.2). According to Mahako Takahashi (2003), "Master weavers demonstrate techniques as ancient as the Mayan culture itself, creating the designs passed down from weaver to weaver for thousands of years. Although many aspects have been lost, Mayan



Figure 7.2 Ana Mejia, *Mexican Textiles*, 2012

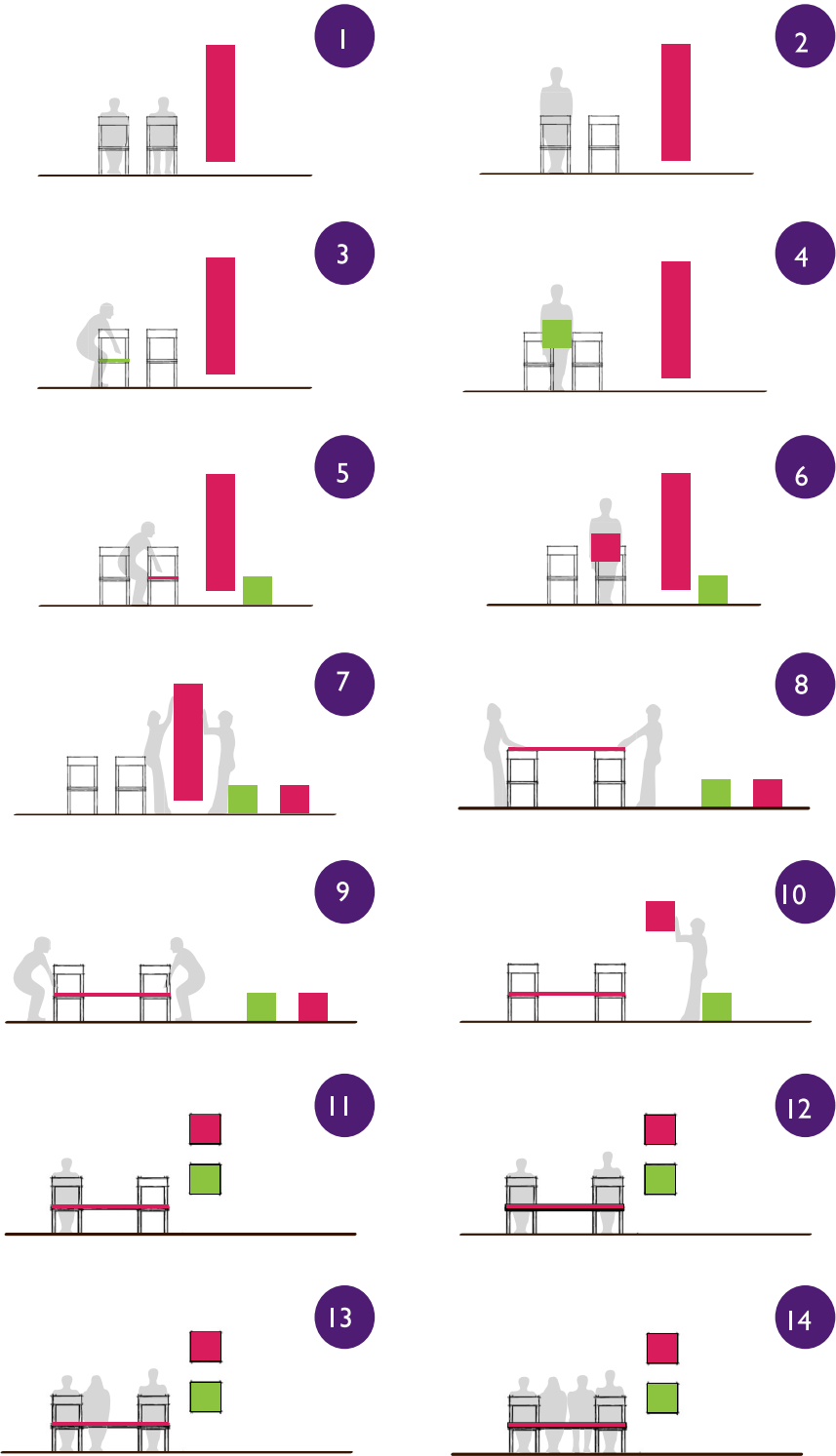
culture lives on, speaking to the future through its textiles" (p. 11).

Utilizing traditional craftspeople will sustain local cultures. Many of the artisans from these regions sustain their community. They are mostly women who work at home, and every time that they receive an order to produce textiles or products, they suspend household duties to gather at noon in order to participate in a large-scale production of weaving. Meanwhile, their husbands work in the agriculture sector (Rocio Graham, personal communication, 2012). For a large-scale production, I would have a variety of cushion designs to be produced by these communities.

The wood furniture sector in Mexico is of interest because it provides opportunities for an ecodesign approach to be sourced and produced locally. Sustainable wood harvesting for this work is evaluated by the Mexican catalog of certified woods as promoted by Reforestamos Mexico and supported by the Forest Stewardship Council (Rodríguez, 2009). The type of wood I will work with will be pine or oak from the Mexican sawmills certified by those institutions.

Ideally, the completion of this project should include a complete life cycle assessment (LCA). However, in order to have accurate data, the production of the bench has first to be developed. The next phase of this project after the publication of this thesis will be the development of a detailed bill of materials and a life cycle assessment.

Users' Scenario



Chapter 8.

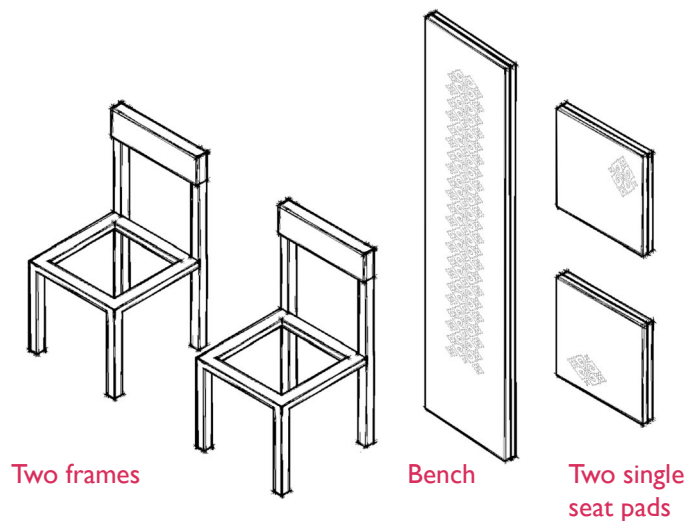
Conclusions

CHAPTER 8. Conclusions

This project began as an inquiry into how to design furniture that was appropriately scaled for small dwellings in Mexico. My research revealed that the small size of the dwellings not only had an impact on the type of furniture that would fit into a home, but the type of activities that could take place in such homes. In particular, it has an impact on how many family members spend time with each other over the weekend, given the space constraints in the dining and living rooms. My objective is to design dining furniture with the flexibility to accommodate different modes of use during the week and on weekends. The Cuca system is a practical way to increase the number of people who can sit at the dining table when required.

Mexican furniture is usually structured to be long-lasting and is handed down from one generation to the next. This is incorporated into the design by allowing for the modular pieces to be easily reupholstered and adapted by subsequent generations.

The product comprise



The two frames will be from existing wood chairs that customers bring to local woodworkers, they modify the chairs and use just the frames to start producing the Cuca System. The system is completed by adding the bench and single seats with natural latex foam for the cushions, and fabrics with bespoke patterns chosen by customers.

The system works by fastening simple blocks to the underside of the bench and seats. These blocks fit inside the frame of the chair to register the position of the bench or the seats, depending on



Figure 8.1 Ana Mejia, *Informal furniture sale*, 2011

which is being used at the moment.

The objective of the Cuca system is to support the local economy especially cottage industries such as textile cooperatives, which will provide the upholstery and small-scale, independent woodworkers who sell modified furniture on the side of the streets (Figure 8.1).



Figure 8.2 Areli Maciel, *Chiapanec weaver*, 2010

The textile cooperatives are found in different regions throughout Mexico. In some cases entire communities are sustained through the men and women involved in producing these textiles, which are dyed with natural materials such as crushed cochineal. In some cases the textiles cooperatives are run by women (Figure 8.2), who work within their communities to weave the fabric in order to supplement their husband's incomes. These women usually take care of household chores in the morning, while their husbands perform agricultural work and spend their afternoons weaving or taking care

of the children of their co-workers (Rocio Graham, personal communication, 2012).

In an effort to sustain these local, cottage industries, the Cuca system is not intended for large-scale production by foreign or multinational companies.

The design of the Cuca system offers distinct woven patterns from different regions, such as Puebla, Coahuila, and Oaxaca, among others. Some examples of patterns inspired by these different weaving regions include the following:

Puebla – “Playfully rendered satin-stitch embroidery is typical” (Takahashi, 2003, p. 131). This colorful weaving usually involves a narrative that includes animals and flowers (Figure 8.3).

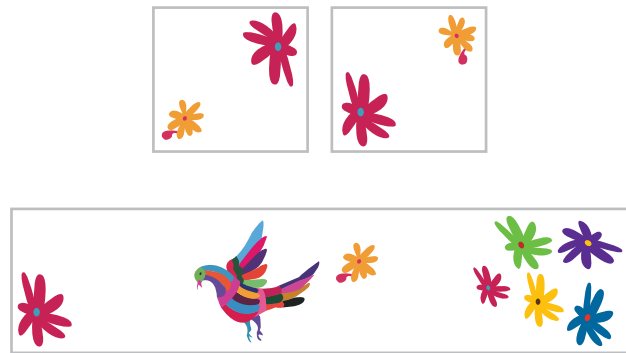


Figure 8.3 *Puebla patterns*, 2012, design by Ana Mejia

Coahuila - Saltillo is the capital of the State of Coahuila, and is famous for producing textiles “woven in graded stripes of color [and] reflect the style perfected in vintage Saltillo *sarapes*” (Takahashi, 2003, p. 9). These are the most popular with international tourists (Figure 8.4).

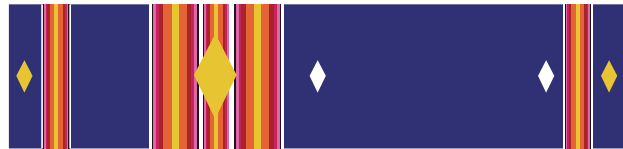


Figure 8.4 Ana Mejia, *Coahuila patterns*, 2012, design by Ana Mejia

Oaxaca - The textiles combine “beautiful floral designs thickly hand embroidered on [indigenous] gala costumes” (Takahashi, 2003, p. 121) and geometrical patterns inspired by native cultures such as that of the Zapotecs (Figure 8.5).



Figure 8.5 Ana Mejia, *Oaxaca patterns*, 2012, design by Ana Mejia

Figure 8.6, modified from a Living Principles Framework diagram that integrates environmental, social, economic, and cultural sustainability, shows how the Cuca system is related to these principles of sustainability. Although my initial objective was to emphasize environmental sustainability, the element of cultural sustainability was found to be equally important to Mexicans. While the Cuca system is designed to support people and culture through large family gatherings, other people like artisans and woodworkers are also important. In conclusion, this is a project that deals with sustainable, furniture design, but that situates people at the heart of the design (Figure 8.7).

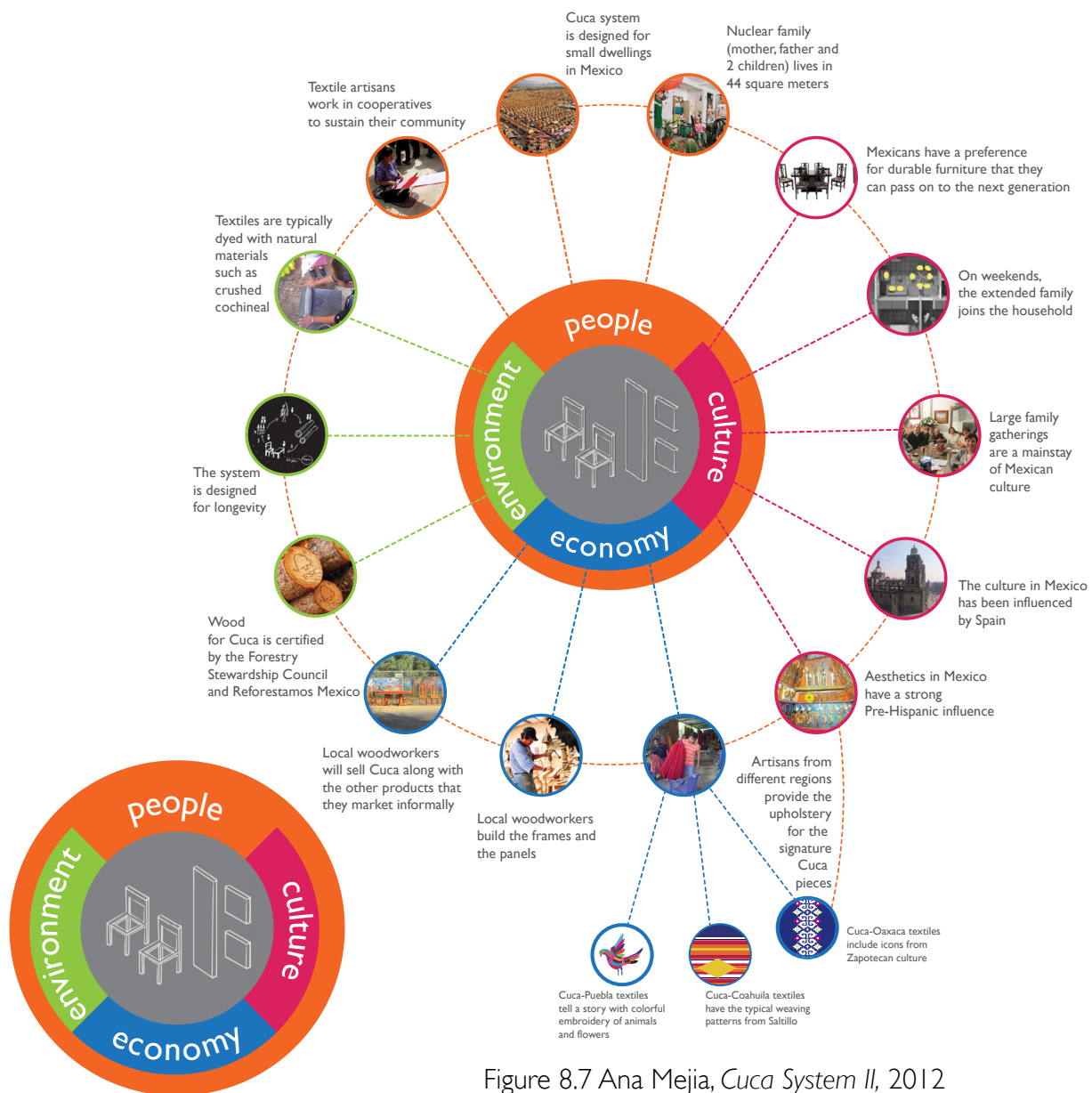


Figure 8.7 Ana Mejia, *Cuca System II*, 2012

Figure 8.6 Ana Mejia, *Cuca System I*, 2012

References

References

Baudrillard, J. (2006). *The system of objects*. New York, NY: Verso.

Belletire, S., St. Pierre, L., & White, P. (2009). *Okala: Learning ecological design* (2nd ed.). Dulles, VA: IDSA.

Chaurand, R. Á., León, L. R. P., Muñoz, E. L. G., & Ergonomía, U. de G. C. de I. en. (2001). *Dimensiones antropométricas de población latinoamericana: México, Cuba, Colombia, Chile*. [Anthropometric dimensions of population in Latin America: Mexico, Cuba, Colombia, Chile] Universidad de Guadalajara, Centro Universitario de Arte, Arquitectura y Diseño, División de Tecnología y Procesos, Departamento de Producción y Desarrollo, Centro de Investigaciones en Ergonomía.

Chick, A., & Micklethwaite, P. (2011). *Design for sustainable change: How design and designers can drive the sustainability agenda*. Lausanne, Switzerland: Ava.

Clarke, D. B., Doel, M. A., & Housiaux, K. M. L. (2003). *The consumption reader*. London, England: Routledge.

Coerver, D. M., Pasztor, S. B., & Buffington, R. (2004). *Mexico: An encyclopedia of contemporary culture and history*. Santa Barbara, California: ABC-CLIO.

Collins, H. (2010). *Creative research: The theory and practice of research for the creative industries*. Lausanne, Switzerland: Ava.

Dawson, A. S. (2006). *First World dreams: Mexico since 1989*. New York, NY: Zed Books.

- Delgado, D. A. A. (2007). *Creating a design revolution: Changing paradigms for reduced spaces in Mexico's small housing market in alliance with small-scale industries*. Retrieved from ProQuest Dissertations and Theses database. (Order No. MR28724)
- Doppelt, B. (2010). *The power of sustainable thinking: How to create a positive future for the climate, the planet, your organization and your life*. London, England: Routledge.
- Dunne, A., & Raby, F. (2001). *Design noir: the secret life of electronic objects*. Basel, Switzerland: Birkhäuser.
- Elenes, C. A. (2010). *Transforming borders: Chicana/o popular culture and pedagogy*. Plymouth, England: Lexington Books.
- Fernandez, E. (2011, January 3). Edifican 355 mil casas en seis años [355 000 houses were build in six years]. *El Universal*. Retrieved from <http://www.eluniversal.com.mx/edomex/4237.html>
- Fresco, M. (2003). *La emigracion republicana española: Una victoria de Mexico* [The Spanish Republican migration: A Mexican's victory]. Retrieved from www.biblioteca.org.ar/libros/89815.pdf
- Garza, R. O. D. la, & Lowell, B. L. (2002). *Sending money home: Hispanic remittances and community development*. Maryland, USA: Rowman & Littlefield.
- Gore, A. (2009). *Our choice: A plan to solve the climate crisis*. New York, NY: Rodale Books.
- Grupo Elektra. (n.d.). *Grupo Elektra, S. A. B. de C. V.: \$400,000,000, 7.25% Senior Notes due 2018*. [Offering Circular]. Retrieved from: http://www.ise.ie/debt_documents/ListingParticulars_13163c72-cc6e-4cd3-a2b8-d14022fab3f8.pdf

Hall, F. (1868). *Invasion of Mexico by the French; and the reign of Maximilian I., with a sketch of the Empress Carlota*. New York, NY: J. Miller.

Hassig, R. (2006). *Mexico and the Spanish conquest*. Norman: University of Oklahoma Press.

Hawken, P. (2007). *Blessed unrest: How the largest movement in the world came into being and why no one saw it coming*. New York, NY: Viking. Retrieved from <http://jupiter.ecuad.ca/ipac20/ipac.jsp?uri=full=3100001~!51828~!1&profile=lib>

Hinkelman, E. G., Manley, M., Nolan, J. L., Shippey, K. C., Bidwell, W., & Woznick, A. (2003). *Importers manual U.S.A*. Novato, CA: WorldTrade Press.

Instituto Nacional de Estadística y Geografía. (n.d.a). México en Cifras: Ixtapaluca, México [Mexico in figures: Ixtapaluca]. Retrieved from <http://www.inegi.org.mx/sistemas/mexicocifras/default.aspx?ent=15>.

Instituto Nacional de Estadística y Geografía. (n.d.b). Estadísticas a propósito del día del carpintero. Datos nacionales [Statistics on purpose the day of the carpenter. national data]. Retrieved from www.inegi.gob.mx/inegi/.../carpintero04.pdf

Instituto del Fondo Nacional de la Vivienda para los Trabajadores. (n.d.a). Requerimientos y características del crédito: Cálculo de puntuación [Requirements and characteristics of the credit scoring calculation]. Retrieved from http://portal.infonavit.org.mx/wps/portal/TRABAJADORES/CreditodelInfonavit/EnQueConsiste/RequerimientosCaracteristicas/!ut/p/c5/04_SB8K8xLLM9MSSzPy8xBz9CP0os3hvD3cjQ3cLlwsLQ0czA0-zkADPUM8AI3cXY6B8jG75AANidBvgAl6EdHvpR6Xn5CcBXennkZ-bqI-QGxpR6aioCACjdRd2/dl3/d3/L2djQSEvUUt3QS9ZQnZ3LzZf50hHMjFHODI4ODFBNjBJNIRQSVVJUDJHMzE/

Instituto del Fondo Nacional de la Vivienda para los Trabajadores. (n.d.b). Requisitos para solicitar mi crédito [Requirements to apply for a loan]. Retrieved from <http://portal.infonavit.org.mx/wps/portal/TRABAJADORES/CreditodelInfonavit/EnQueConsiste/RequisitosSolicitarCredito>

Jiménez, L.M., & Fehér G. (2000) Design's own knowledge. *Design Issues*, 16(1). 36–51. Retrieved from <http://www.jstor.org/stable/1511928>

Latour, B. (2007). *Reassembling the social: An introduction to actor-network-theory*. New York, NY: Oxford University Press.

Lomnitz, L. & Pérez. M. (1986) *La gran familia como unidad basica de solidaridad en Mexico* [The extended family as basic unit of solidarity in Mexico] Retrieved from biblio.juridicas.unam.mx/libros/5/2106/13.pdf

Manzini, E. (1994). Design, environment, and social quality: From “existenzminimum” to “quality maximum.” *Design Issues*, 10(1), 37–43. doi:10.2307/1511653

Maycotte, E. (2005, Month). *Nuevas tipologías de vivienda de Interés Social Financiadas por Programas Gubernamentales* [New types of Affordable Housing Programs Funded by Government]. Paper presented at the 28th Encuentro de la Red Nacional de Investigadores Urbanos [National meeting of urban scientists], Chihuahua, Mexico

McDonough, W. (2002). *Cradle to cradle: Remaking the way we make things*. New York, NY: North Point Press. Retrieved from <http://jupiter.ecuad.ca/ipac20/ipac.jsp?uri=full=3100001~!29743~!3&profile=lib>

Museo Nacional de Historia. (n.d.). Historia: Antecedentes históricos [History; Historical precedents]. Retrieved from http://mnh.inah.gob.mx/historia/hist_historicos.html

- Nardi, B. A., & O'Day, V. (1999). *Information ecologies: Using technology with heart*. Cambridge, MA: MIT Press.
- Papanek, V. J. (1984). *Design for the real world: Human ecology and social change* (2nd ed.). New York, NY: Van Nostrand Reinhold. Retrieved from <http://jupiter.ecuad.ca/ipac20/ipac.jsp?uri=full=3100001~!11182~!9&profile=lib>
- Paquette, C., & Yescas, M. (2009, April). *Producción masiva de vivienda en Ciudad de México: Dos políticas en debate* [Massive housing production in Mexico City: Debating two policies]. *Centro-h*, 15–26.
- Ratha, D., Mohapatra, S., & Silwal, A. (2011) *Datos sobre migración y Remesas 2011* [Migration and Remittances 2011] Retrieved from <http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1110315015165/Factbook2011Spanish.pdf>
- Robinson, C. M. (2004). *The Spanish invasion of Mexico 1519–1521*. Wellingborough, England: Osprey.
- Rodríguez, R. L. (Ed.). (2009). *Productos maderables certificados: Catalogo 2009, Mexico* [Certified wood products: Catalogue 2009, Mexico]. Retrieved from Reforestamos México Web site: <http://www.reforestamosmexico.org/madera-certificada>
- Secretaría del Trabajo y Previsión Social, Comisión Nacional de los Salarios Mínimos. (2011, December 9). *Boletín de medios* [Press release]. Retrieved from http://www.conasami.gob.mx/pdf/bolatines_sal_minimo/2011/Boletin_prensa_09_12_2011.pdf
- Smith, M. E., & Masson, M. A. (2000). *The ancient civilizations of Mesoamerica: A reader*. Oxford, England: Wiley-Blackwell.

- Thackara, J. (2005). *In the bubble: Designing in a complex world*. Cambridge, MA: MIT Press.
Retrieved from
<http://jupiter.ecuad.ca/ipac20/ipac.jsp?uri=full=3100001~!36236~!4&profile=lib>
- The Living Principles. (n.d.). Introduction. Retrieved from
<http://www.livingprinciples.org/framework/introduction/>
- Thorpe, A. (2007). *The designer's atlas of sustainability*. Washington, DC: Island Press.
- Villavicencio, J., & Durán, A. M. (2003). *Treinta años de vivienda social en la Ciudad de México: nuevas necesidades y demandas* [Thirty years of social housing in Mexico City: new needs and demands]. *Scripta Nova*, 7(146). Retrieved from
[http://www.ub.es/geocrit/sn/sn-146\(028\).htm](http://www.ub.es/geocrit/sn/sn-146(028).htm)
- World Commission on Environment and Development. (1987). *Our common future*. Oxford, England: Oxford University Press.
- Young, G. (2010). *Design thinking and sustainability*. Retrieved from <http://zum.io/wp-content/uploads/2010/06/Design-thinking-and-sustainability.pdf>
- Zabludovsky, G. (2002). La emigración Republicana Española y el pensamiento Alemán en México [The Spanish Republican Migration and the German thinking in Mexico]. *Revista Mexicana de Ciencias Políticas y Sociales*, 45, (184), 169–188.

Appendices

Appendix 1 Surveys

Appendix 2 Surveys' results

Appendix 3 Mexican icons

Appendix 4 Detailed list of parts

Appendix 5 Cuca Bench: Final design

Appendix 6 Research Ethics Board approval

Appendix I Surveys

Lo invitamos a participar en una encuesta para el proyecto: Mobiliario Sustentable Para Casas Pequeñas en México
El objetivo de esta investigación es encontrar soluciones de diseño de mobiliario adecuados a espacios pequeños con estética Mexicana. El proyecto es apoyado por la Universidad de Arte y Diseño Emily Carr en Vancouver, Canadá. Si usted tiene alguna pregunta relacionada con esta encuesta, puede contactar a Ana Luz Mejía Guerra al teléfono (001) 604-315-8550 o al correo electrónico: amejia@ecua.ca
Al contestar esta encuesta, usted autoriza su participación voluntaria en esta investigación y que es mayor de edad.
Le agradecemos de antemano su atención.

1. Sexo

Masculino ☐ Femenino ☐

2. Edad

18-25 ☐ 26-35 ☐ 36-45 ☐ 46-59 ☐ 60-69 ☐ 70-79 ☐ 80+ ☐
Prefiero no responder ☐

3. Ocupación

4. ¿Cuántas personas viven en su casa?

Adultos Niños Adolescentes

5. ¿Cuántas habitaciones hay en su casa?

Estancia (Sala-comedor) Recámaras
Baño Cocina Otra Especifique

6. Ingreso familiar mensual (Pesos)

Menos de \$1,700 ☐ De \$1,700 hasta \$8,500 ☐ De \$8,500 hasta \$17,000 ☐ Mas de \$17,000 ☐ Prefiero no responder ☐

7. Responda brevemente

a) En un día laboral ¿Cuántas personas **viven** en su casa?
b) En un día de **fin de semana** ¿Cuántas personas **viven** en su casa?
c) En un **fin de semana**, ¿Cuántas personas **comen** en su casa?
d) ¿En cual habitación de su casa pasa el **mayor** tiempo?

8. En su casa ¿Cual es el mueble mas cómodo para usted?

Describa brevemente

9. En su casa ¿Cuál es el mueble más incómodo para usted?

Describa brevemente

| 10. A un mueble de su casa, ¿Qué importancia le da que sea?: | Nada Importante | Poco Importante | Mas o menos Importante | Importante | Muy Importante |
|--|----------------------|----------------------|---------------------------|----------------------|----------------------|
| a) Resistente | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| b) Económico | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| c) Moderno | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| d) Adecuado al tamaño de su casa | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| e) Hecho en México | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| f) Fácil de lavar | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| g) Con opciones de crédito | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| h) Diseño contemporáneo | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| i) Que quepa en la habitación destinada | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| j) De importación | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| k) Fácil de reemplazar piezas | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| l) Fácil de arreglar | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| m) Armado por usted mismo | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| n) Coherente con el estilo de su casa | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| ñ) Durable, mas de 20 años | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

11. ¿Quién es el responsable de la compra de muebles para su casa?

12. ¿En qué tienda acostumbra comprar sus muebles?

Describe brevemente

13. Cuando compra un mueble, ¿cómo valora las siguientes opciones en una escala de 1 a 5 donde 1 es lo menos importante y 5 es lo más importante?

Funcional

Estético (como se ve)

Sustentable (para el ambiente)

Durable

Económico

14. ¿Alguna vez ha comprado muebles que se requieran armar?

SI ☐

NO ☐

Por favor, explique por qué

15. ¿Cuándo decide cambiar un mueble para su hogar?

Por favor, describa

16. ¿Ha heredado algún mueble para su casa? SI ☐

NO ☐

Respondio SI. describa brevemente el mueble

17. ¿Considera usted que el tamaño de sus muebles es adecuado al tamaño de su casa? SI ☐

NO ☐

Por favor, describa

18. Mencione cinco materiales locales que se utilizaron para la fabricación de su mobiliario

1.-

2.-

3.-

4.-

5.-

19. ¿Estaría interesado en participar en una actividad adicional para el desarrollo de este proyecto?

Duración Máxima 2 horas

SI ☐

NO ☐

Nombre:

Teléfono:

Correo electrónico:

We are inviting you to participate in a survey for the project Sustainable Furniture for Small Dwellings in Mexico.
 This project is supported by Emily Carr University of Art and Design in Vancouver, BC Canada. If you have any questions, please contact Ana Mejia at 604-315-8550 or amejia@ecuad.ca
 Your completion of this survey indicates your voluntary consent to participate in this research and that you are at least eighteen years of age

| | |
|--|---|
| Sex Male <input type="radio"/> Female <input type="radio"/> | Age 18-25 <input type="radio"/> 26-35 <input type="radio"/> 36-45 <input type="radio"/> 46-59 <input type="radio"/> 60-69 <input type="radio"/> 70-79 <input type="radio"/> 80+ <input type="radio"/> I'd rather not answer <input type="radio"/> |
|--|---|

| | |
|---|---|
| Occupation <input type="text"/> | How many people live in your house? Adults <input type="text"/> Children <input type="text"/> Youths <input type="text"/> |
|---|---|

| | | | |
|--|------------------------------|----------------------------------|--|
| How many rooms are there in your house? | | | |
| Living room <input type="text"/> | Bedroom <input type="text"/> | Dining room <input type="text"/> | Other <input type="text"/> Please, describe <input type="text"/> |
| Bathroom <input type="text"/> | Kitchen <input type="text"/> | | |

| | | | | |
|--|---|--|--|---|
| Monthly Income (Canadian dollars) | | | | |
| Less than \$140 <input type="radio"/> | From \$141 to \$680 <input type="radio"/> | From \$681 to \$1405 <input type="radio"/> | More than \$1405 <input type="radio"/> | I'd rather not answer <input type="radio"/> |

| | |
|--|----------------------|
| In a weekday. How many people live in your home? | <input type="text"/> |
| During the weekend. How many people live in your home? | <input type="text"/> |
| During the weekend. How many people dine in your home? | <input type="text"/> |
| In which room of your house do you spend the most amount of time? | <input type="text"/> |

| |
|--|
| In your home, Which is the most comfortable piece of furniture? Please describe <input type="text"/> |
|--|

| |
|--|
| In your home, Which is the most uncomfortable piece of furniture? Please describe <input type="text"/> |
|--|

| When you are looking for furniture, how important is that it be: | Not important | Little important | Neither very important nor not important | Important | Very important |
|--|----------------------|----------------------|--|----------------------|----------------------|
| Stain Resistant | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Inexpensive | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Modern | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Appropriate for the size of your home | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Made in Mexico | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Easy to wash | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Credit options for purchase | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Contemporary design | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Fits with the room | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Imported | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Easy to replace components | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Easy to fix | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Assembled by you | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Coherent with the rest of the furniture | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Durable, (more than 20 years life span) | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Who is responsible for purchasing furniture in your home?

Where do you usually purchase furniture?

Please explain

On a scale of 1 to 5 where 1 is the least important and 5 the most important, please rate the following options when deciding on a furniture purchase

Functionality (how it performs)

Aesthetics (how it looks)

Sustainability (for environment)

Longevity

Inexpensive

Have you purchased furniture that requires some assembly?

YES ☐

NO ☐

Please explain why?

When do you decide to change a piece

of furniture in your home? Please explain why?

Have you inherited a piece of furniture?

YES ☐

NO ☐

If yes, please describe the piece of furniture

Can you list 5 local materials that are used to make your furniture?

1.-

2.-

3.-

4.-

5.-

Would you like to participate in an additional activity for this project? Max. duration 2 hours

YES ☐

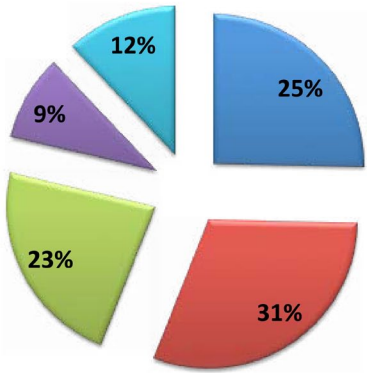
NO ☐

Name:

Phone number:

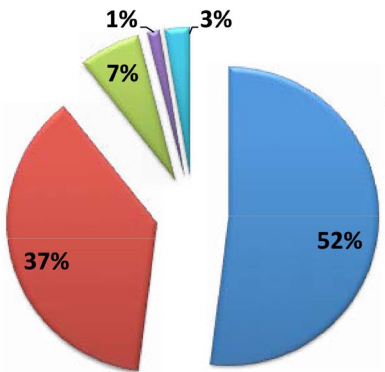
E-mail:

@



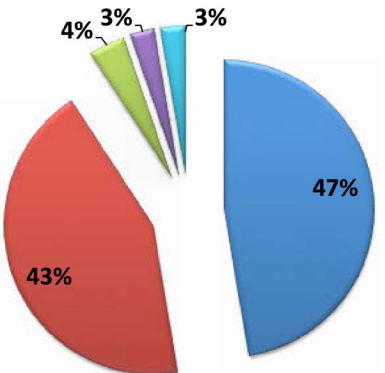
Easy to fix

- Very Important
- Important
- More or less Important
- Less Important
- Not Important



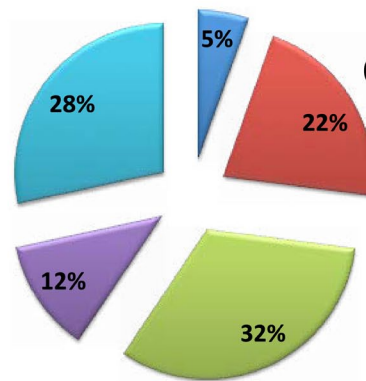
Adequate to the size

- Very Important
- Important
- More or less Important
- Less Important
- Not Important



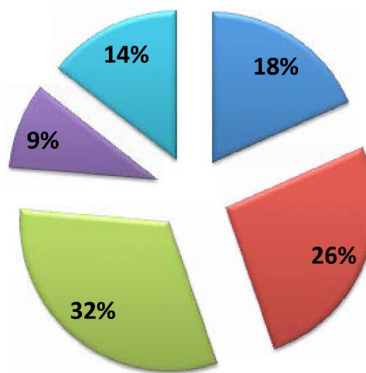
Resistant

- Very Important
- Important
- More or less Important
- Less Important
- Not Important



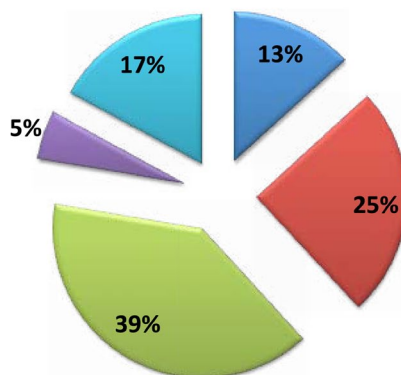
Contemporary Design

- Very Important
- Important
- More or less Important
- Less Important
- Not Important



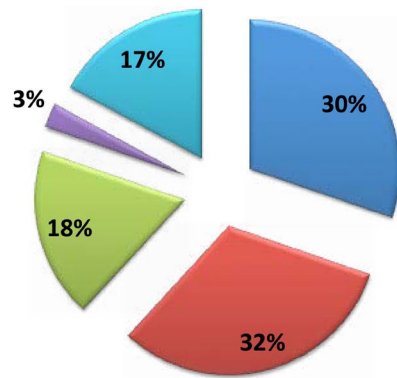
Made in Mexico

- Very Important
- Important
- More or less Important
- Less Important
- Not Important



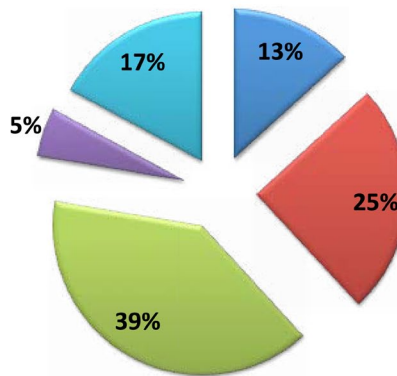
Modern

- Very Important
- Important
- More or less Important
- Less Important
- Not Important



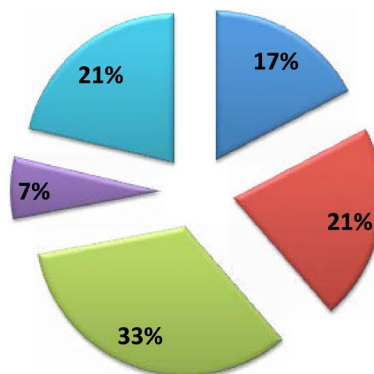
Easy to clean

- Very Important
- Important
- More or less Important
- Less Important
- Not Important



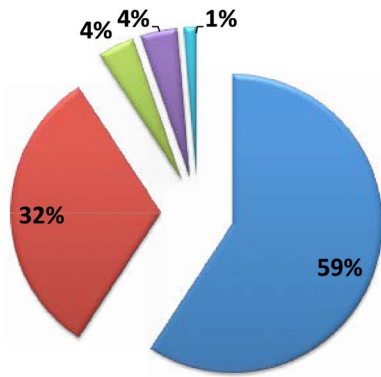
Modern

- Very Important
- Important
- More or less Important
- Less Important
- Not Important



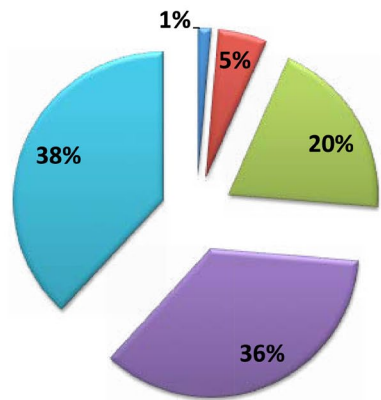
Credit Facilities

- Very Important
- Important
- More or less Important
- Less Important
- Not Important



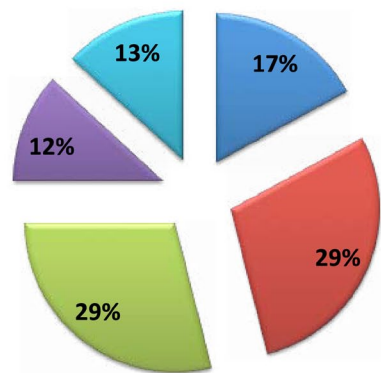
Fits the place

- Very Important
- Important
- More or less Important
- Less Important
- Not Important



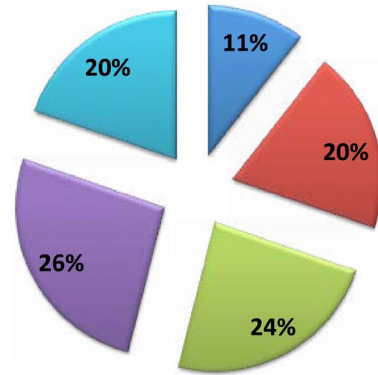
Imported

- Very Important
- Important
- More or less Important
- Less Important
- Not Important



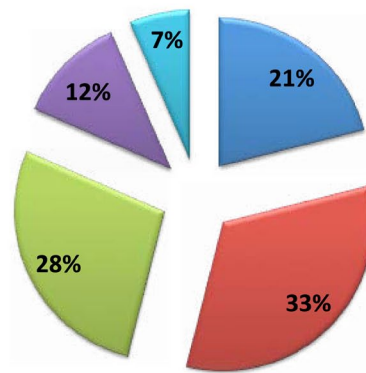
Easy to replace

- Very Important
- Important
- More or less Important
- Less Important
- Not Important



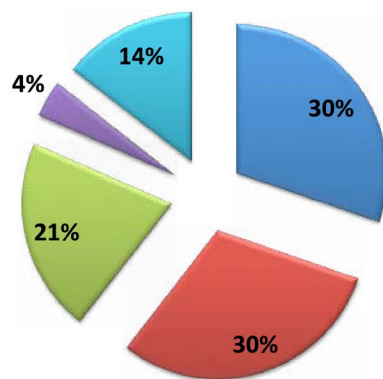
Do it yourself

- Very Important
- Important
- More or less Important
- Less Important
- Not Important



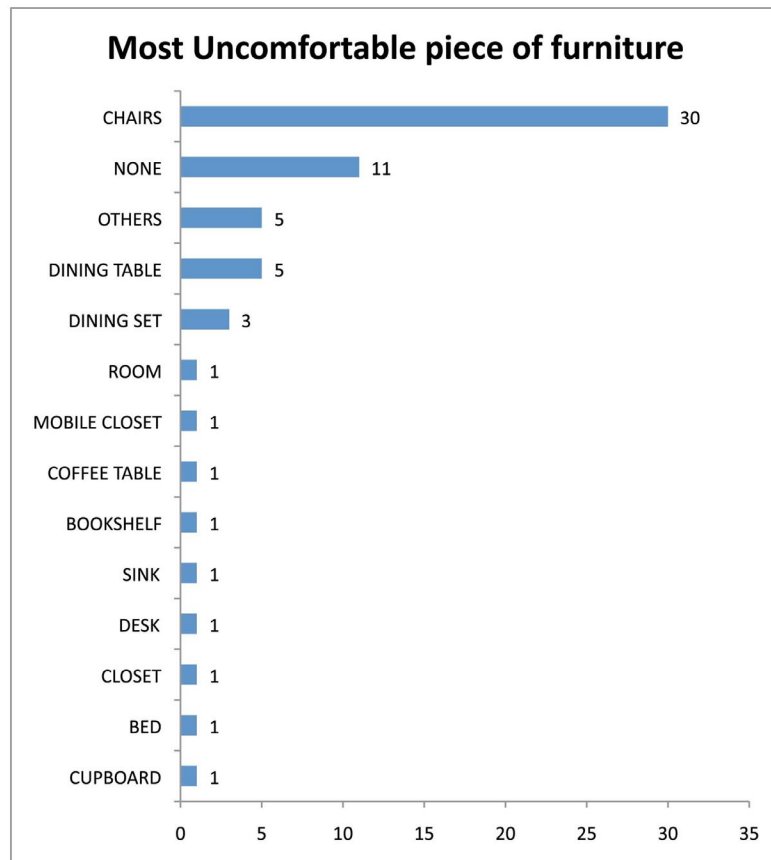
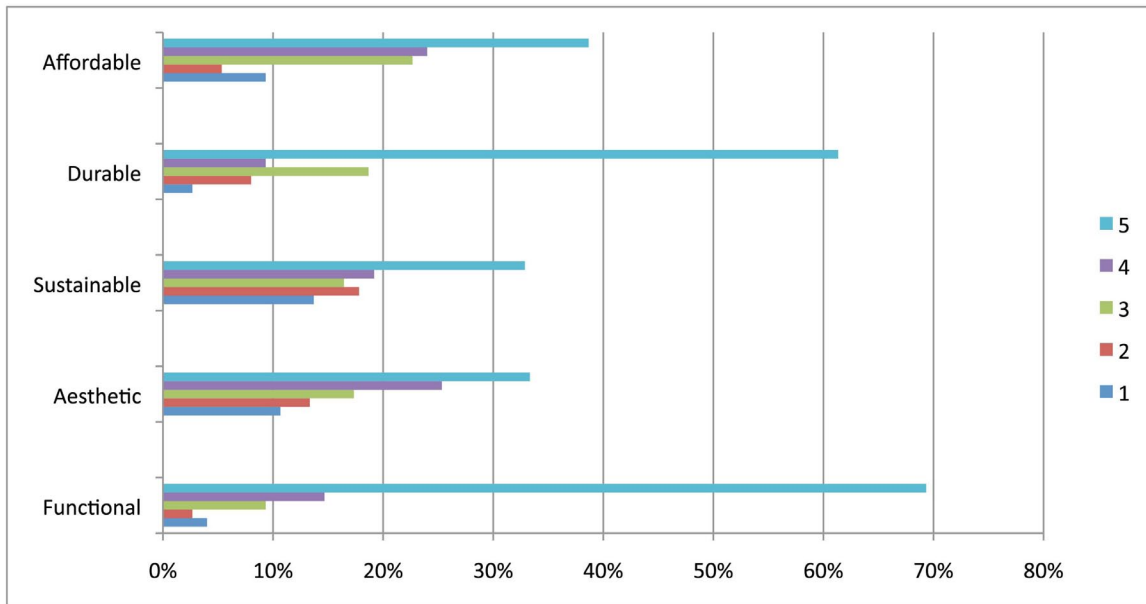
Coherent with Current Style

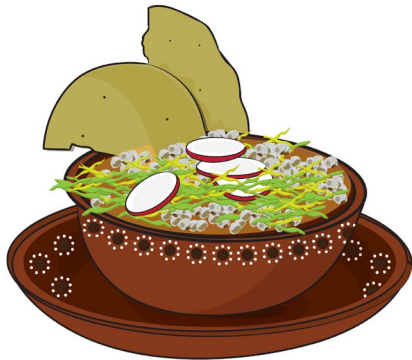
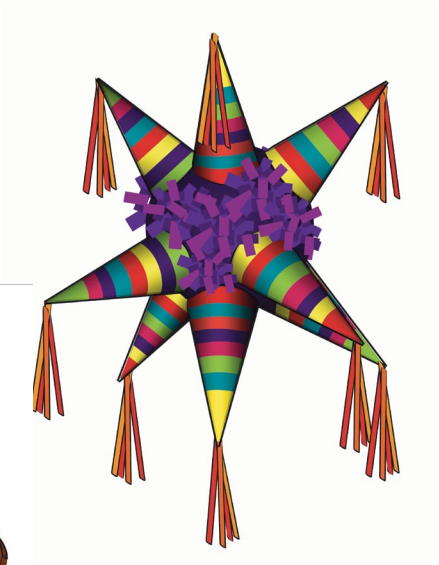
- Very Important
- Important
- More or less Important
- Less Important
- Not Important



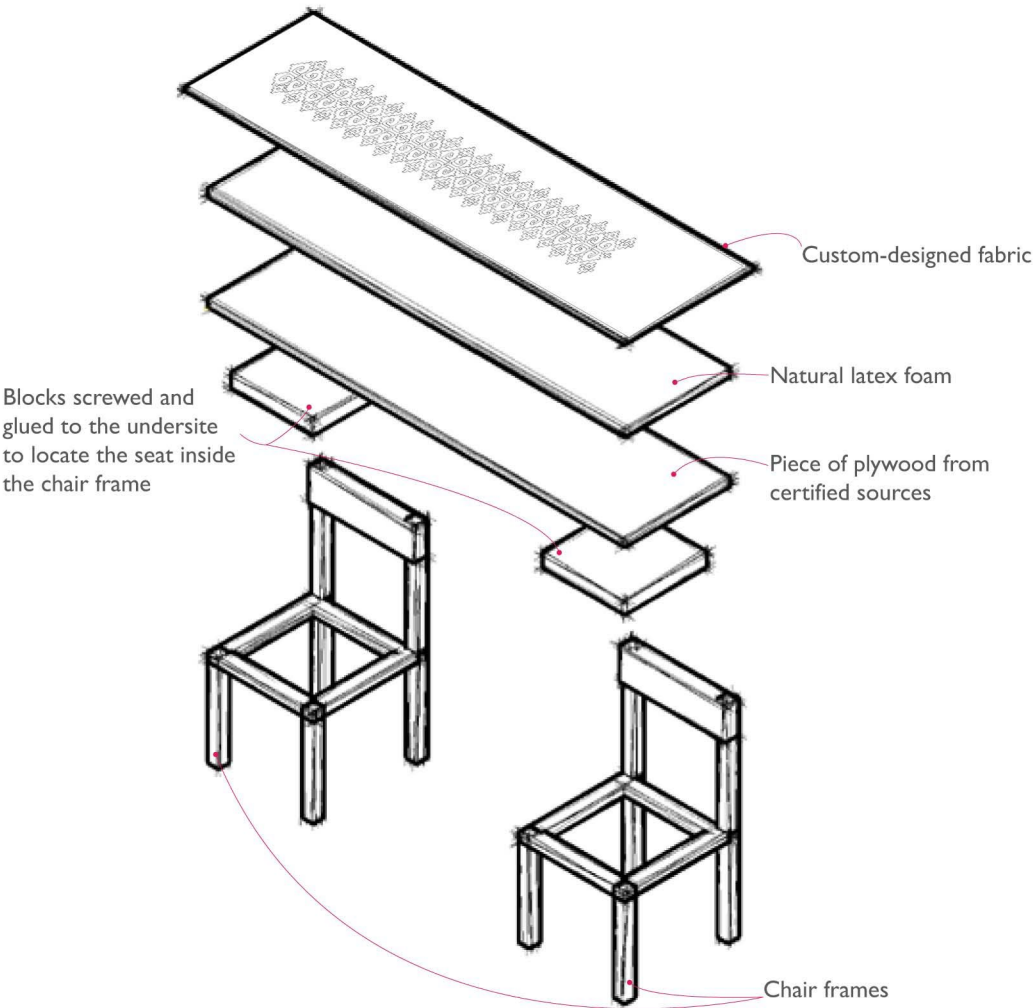
Durable

- Very Important
- Important
- More or less Important
- Less Important
- Not Important

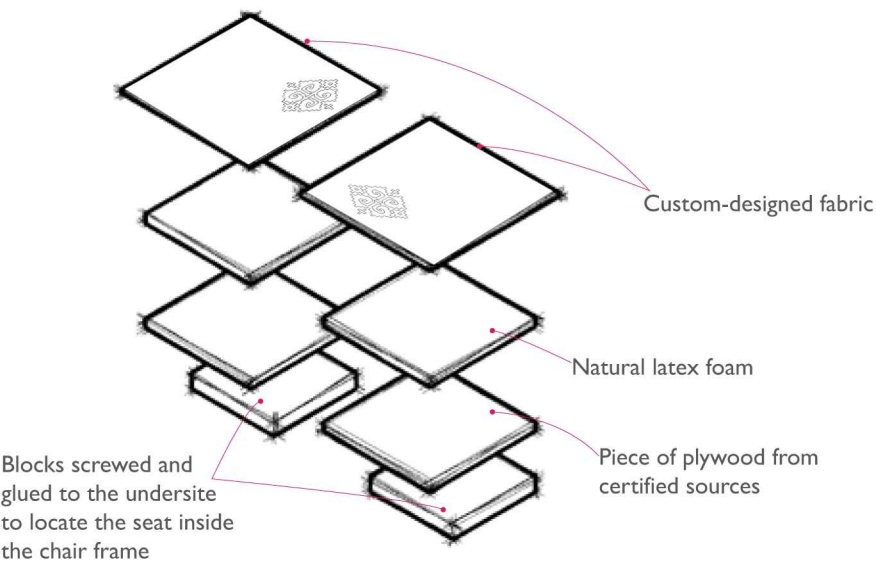




Cuca Bench



Single seats





Office of the Associate Vice-President Research and Industry Liaison

**Emily Carr University of Art and Design
Research Ethics Board**

October 24, 2011

MEMORANDUM TO: Louise St. Pierre, Associate Professor

Re: Application for Ethics Approval (2011051204)

With the revisions that have been discussed and submitted, there is now full Research Ethics Board approval to proceed with participant research in Ana Luz Mejia Guerra's MAA Graduate Studies research project, **Sustainable Furniture for Social Housing in Mexico**.

This approval is valid as of October 24 2011 and will last until the proposed completion date of June 1 2012.

Please note, the following:

- As I discussed with Ana, the Emily Carr University Research Ethics Board requires that there is agreement in writing from each of the organizations who have jurisdiction (ownership or management) of the sites in which the research will take place. For instance, the church, community centre, zoo and housing development need to understand the research and demonstrate in writing their consent with the process.
- If you need to make any changes to this research project please write to the ECU-REB giving full details including any revised documentation.
- Once the project is complete, please sign the attached completion form and return it to the ECU-REB mailbox.

Please, contact me at ethics@ecuaad.ca if you have any further queries relating to this application. The Chair and members of the Board would also be happy to discuss general matters relating to ethics provisions if you wish to do so.

Sincerely,

Lois Klassen
REB Assistant
Emily Carr University of Art and Design

CC: Ana Luz Mejia Guerra, Master Applied Art Candidate
Dr. Cameron Cartiere, Dean Faculty of Graduate Studies
Dr. David Bogen, V. P. Academic and Provost
Dr. Rob Inkster, Associate V. P. Research and Industry Liaison

