

# **Growing Tiny Houses**

Motivations and Opportunities for Expansion Through Niche Markets

**Amelia Mutter**

Supervisor:

Naoko Tojo

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Tel: +46 – 46 222 02 00, Fax: +46 – 46 222 02 10, e-mail: [iiiee@iiiee.lu.se](mailto:iiiee@iiiee.lu.se).

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## **Abstract**

The increase in population and urbanization has led to widespread concern about the resulting volume of consumption. This is especially problematic in the housing market, where home size continues to grow. In the United States the average size of a single-family home has doubled since 1950, leading to a profound environmental impact. This paper will seek to address the problem of overconsumption by considering the benefits of intentionally downsizing in favour of smaller homes that still provide a good quality of life. Tiny houses have a demonstrably reduced impact on the environment as compared to large conventional houses. This paper works to improve understanding of tiny housing motivations and challenges before considering the application of niche markets to the tiny housing sector in hopes of expanding the trend.

Through a popular media review and eleven interviews with members of the North American tiny housing community, this study finds that the primary motivations for involvement include interest in a simpler life, sustainability and environmentalism, cost, freedom and mobility, a sense of community and an interest in design, while the primary challenges are zoning and legal aspects, preconceptions, and occasionally lack of financing. Additionally, several potential niche markets were defined including young adults, students, retirees, seniors, individuals needing extra space, and tiny housing communities. Each of these niche markets was evaluated against a list of niche analysis functions: *improved social support networks, improved knowledge and performance, articulation and adjustment of expectations, legitimization/stabilization, and resource mobilization*. Through this niche function analysis, retirees and tiny housing communities were assessed to have the strongest potential of success. Niche function analysis was then carried out in a case study of student housing in Lund, Sweden, where the local student housing foundation has been working to establish compact housing to meet the high demand for student rooms. Completion of a niche function analysis determined that this project has a strong possibility of success due to the assistance of the student housing foundation in completing the niche functions.

**Keywords:** Tiny houses, compact housing, sustainable consumption, niche markets, technological transition.

## Executive Summary

The increase in population and urbanization has led to widespread concern about the resulting volume of consumption. More people require more food, goods, and space to thrive. When combined with continued economic development, an increased population has led to an unsustainable consumption level (UN, 2011a). This is especially problematic in the housing market, where home size growth endures. In the United States, the average size of a single-family home has doubled since 1950, leading to a profound environmental impact (Wilson & Boehland, 2005). This paper seeks to address the problem of overconsumption by considering the benefits of intentionally downsizing in favour of smaller homes that still provide a good quality of life.

Tiny houses have a demonstrably reduced impact on the environment as compared to large conventional houses. The benefits of reduced consumption, however, only extend to the limited members of the population who have chosen to live in tiny housing. Possibilities to extend permeation have not been explored. This paper considers the application of niche markets to the tiny housing sector in hopes of understanding potential for growth in the trend. By improving understanding of the current tiny housing trend, this paper seeks to help expand upon the positive impact created by individuals who intentionally downscale their consumption and their environmental impact. This paper seeks to achieve three primary objectives:

First, it aims to establish a better understanding of what is currently going on in the tiny housing trend. This objective focuses on gaining an increased understanding of the primary actors involved in the trend, of motivations and challenges behind the shift to tiny housing, and of prominent aspects of the trend.

Secondly, it works to apply a niche analysis framework using aspects from Frank W. Geels' Technological Transition Theory and Anna Bergek's Technological Innovation Systems to this trend. Specifically, this analysis works by utilizing information gathered when interviewing tiny house owners, producers and advocates to determine potential niche markets for the tiny housing trend then evaluating aspects of these niches against the functions set forth in the framework.

Finally, it evaluates a case study to better explain how niche function analysis can be applied. This case study will consider student housing in Lund, Sweden and will look at its potential success as a niche market.

In pursuit of the aforementioned objectives, this paper seeks to answer the following research questions:

*Q1. Why has the intentional downscaling in home size become a trend? What are the primary motivations and challenges for living in/advocating for tiny housing?*

*Q2. What emerging niche markets exist within the trend? What is the potential for success of each of these niche markets?*

*Q3. Is there potential for growth in compact student housing in Lund, Sweden as a niche market? What might this suggest for the future of the niche?*

To answer these research questions, information is gathered through literature and popular media review. In addition, two sets of interviews were performed. The first set addresses *Q1* and *Q2*, and includes phone, Skype, and email interviews with 11 tiny housing advocates,

owners, and developers in the United States. The second, addressing the Lund, Sweden case study, is based on in-person interviews with three stakeholders involved with the case.

Analysis for this paper uses Geels’ Multi-Level Technological Transition Framework along with Bergek’s work on a technological innovation system (TIS) analysis. The combined framework used (referred to as niche function analysis) relies heavily on the multi-level socio-technological hierarchy for technology transfer as presented in Geel’s work. The primary role of this framework, however, is to provide a list of functions, against which potential niche success can be evaluated. These functions are based on both foundation frameworks and include:

1. *Improved Social Support Networks;*
2. *Improved Knowledge and Performance;*
3. *Articulation and Adjustment of Expectations;*
4. *Legitimization/Stabilization; and*
5. *Resource Mobilization.*

The outcome of the popular media review and the interviews with individuals involved in the North American tiny housing movement resulted in an improved understanding of the composition of this current trend. These interviews were structured to provide a special focus on motivations for involvement in tiny housing, as well as some niches where this trend could be expanded. Information gathered through this process is set out in the following table.

*Information Gathered from Actor Interviews and Popular Media Sources*

<b>Motivators</b>	<b>Challenges</b>	<b>Aspects</b>	<b>Niches</b>
Simplicity	Legal Constraints/Zoning	Design Focus	Young Adults
Sustainability and Environmentalism	Perceptions	Do-it-yourself mentality	Students
Cost	Financing	Information Sharing	Transient Populations
Freedom and Mobility		Learning Opportunities	Seniors
Sense of Community			Retirees
Interest in Design			Tiny house communities
			As home additions
			Relief housing

To further explore the potential for growth in the tiny housing movement, the list of niches from interviews and popular media is weeded down to six and evaluated based on the list of functions put forth in the framework. This way, the niches that have the best ability to further success of the trend were established. The niches selected for evaluation were young adults, students, retirees, seniors, those using tiny homes for extra space, and tiny house communities.

It was determined that each of the six evaluated niche markets has the potential to bolster the tiny housing market through its development. Retirees and tiny house communities have the best support due to their unique aspects. Retirees have the advantage of having expendable time and money to devote to the advancement of the tiny housing trend. This creates a

positive niche market because it allows them to adequately fulfill all five functions primarily through their satisfaction of the fifth function of *resource mobilization*. This is not to say that financial resources are the most important, but more that mobilization of time and human capital can also help fulfill other functions including the development of *social support networks* and *improved knowledge and performance* within the technology.

Tiny House Communities were also considered a strong potential niche market because of the benefits that can be drawn from building tiny homes in a concentrated area. The information that is shared in this type of community can lead to exceptional ability to perform the function *improved knowledge and performance*. Tiny house residents in this scenario are likely to share information leading to improved design features. Additionally, this niche provides the function of *bolstering social support networks* simply through the use of already established community networks.

To further understand the evaluation of potential niche markets a case study was taken of student housing in Lund, Sweden. This case study provided a background of AF Böstader (the student housing foundation) and their Bokompakt housing project. This case was also a good example of how a compact housing niche can be developed outside of the North American perspective. The most important dynamics of this case study were considered to be the support of the housing foundation, legal conflicts with the national housing regulations, and student interest in the project. A niche function analysis for this case was conducted although the outcome was mixed. In general, it seems that due to high demand for housing in Lund and support of AFB, the project has the potential to be very successful. There is a strong possibility for all five niche functions to be fulfilled. However, this case is unique because rather than relying solely on residents as in the niches put forth in Chapter 5, many functions will be fulfilled by AFB.

In order to expand the positive environmental impacts from compact housing, niches should be further developed to provide a solid sociotechnological basis for the emergence of the tiny housing trend. In most cases, this task falls on the actors in tiny housing. Without the existence of infrastructure to help bolster the five niche functions, involvement of tiny house advocates and residents can go a long way. By getting involved in compact housing support networks, improving awareness, and developing designs, tiny house people can do a great service to the development of the trend.

In the case of student housing in Lund, there is the increased benefit of the involvement of AFB. This is a great advantage because they are able to provide the initial spark toward compact housing as a reality in Lund. This market is not without challenges, however, and could benefit from improved legitimization. AFB is already working to create a design that fits student needs, now the challenge lies in convincing the public that these apartments are not a compromise for the students living there. This way students will want to live there, the public will support the initiative, and Boverket will be more likely to grant them further exemptions for apartments in the future.

Improve permeation of this trend could be augmented by future research. This could include more in-depth examination of the involvement of individuals from different niches. While this project attempted to understand the motivations, challenges, and aspects of tiny housing in general, all of these factors may differ from niche group to niche group. Better understanding how specific niches act could help dictate future action. Additionally, the niche function analysis framework developed for this paper could be used in other instances where potential success of niche markets is evaluated.

# Table of Contents

<b>LIST OF FIGURES</b> .....	<b>VI</b>
<b>LIST OF TABLES</b> .....	<b>VI</b>
<b>ABBREVIATIONS</b> .....	<b>VII</b>
<b>1 INTRODUCTION</b> .....	<b>1</b>
1.1 PROBLEMATISATION .....	2
1.2 OBJECTIVES AND RESEARCH QUESTIONS.....	2
1.3 LIMITATIONS AND SCOPE .....	3
1.4 DISPOSITION .....	3
<b>2 METHODOLOGY</b> .....	<b>5</b>
2.1 CASE STUDY APPROACH.....	5
2.2 DATA COLLECTION.....	6
2.2.1 <i>Addressing Questions 1 and 2</i> .....	6
2.2.2 <i>Addressng Question 3</i> .....	6
2.2.3 <i>Interview Design</i> .....	7
2.3 ANALYTICAL FRAMEWORK .....	7
2.3.1 <i>Technology Trajectories</i> .....	8
2.3.2 <i>Incorporating Technological Innovation Systems into the Framework</i> .....	10
2.4 MEASURING POTENTIAL FOR SUCCESS—NICHE FUNCTION ANALYSIS.....	10
2.4.1 <i>Foundation Functions</i> .....	10
2.4.2 <i>Niche Functions for Success</i> .....	12
<b>3 TRENDS IN CONSUMPTION</b> .....	<b>14</b>
3.1 HOUSING TRENDS IN THE UNITED STATES .....	14
3.2 COUNTER TRENDS .....	15
3.2.1 <i>Sustainable Consumption</i> .....	15
3.2.2 <i>Slow Living</i> .....	16
<b>4 HOLD ME CLOSER TINY HOUSES – AN EVALUATION OF THEMES IN THE NORTH AMERICAN TREND</b> .....	<b>18</b>
4.1 MOTIVATORS.....	18
4.1.1 <i>A Simpler Life</i> .....	19
4.1.2 <i>Sustainability/Environmentalism</i> .....	20
4.1.3 <i>Cost</i> .....	20
4.1.4 <i>Freedom and Mobility</i> .....	21
4.1.5 <i>Alternative Forms of Community</i> .....	22
4.1.6 <i>Design and Building</i> .....	22
4.2 CHALLENGES.....	23
4.2.1 <i>Legal constraints</i> .....	23
4.2.2 <i>Perceptions</i> .....	24
4.2.3 <i>Financing</i> .....	24
4.3 UNIQUE ASPECTS .....	24
4.3.1 <i>Design</i> .....	25
4.3.2 <i>Do-it-yourself mentality</i> .....	27
4.3.3 <i>Information Sharing/Community</i> .....	27
4.3.4 <i>Learning Opportunities</i> .....	28
4.3.5 <i>Alternate usage</i> .....	28
<b>5 ROOM FOR GROWTH – A NICHE FUNCTION ANALYSIS OF SIX POTENTIAL MARKETS</b> .....	<b>30</b>
5.1 YOUNG ADULTS .....	30

5.1.1	<i>Niche function analysis</i> .....	31
5.2	STUDENTS .....	32
5.2.1	<i>Niche function analysis</i> .....	32
5.3	RETIREEES.....	33
5.3.1	<i>Niche function analysis</i> .....	33
5.4	SENIORS .....	34
5.4.1	<i>Niche function analysis</i> .....	34
5.5	FOR EXTRA SPACE .....	35
5.5.1	<i>Niche Function Analysis</i> .....	35
5.6	TINY HOUSING COMMUNITIES.....	36
5.6.1	<i>Niche function analysis</i> .....	36
5.7	DISCUSSION.....	37
<b>6</b>	<b>CASE STUDY: STUDENT HOUSING IN LUND, SWEDEN .....</b>	<b>39</b>
6.1	LUND, SWEDEN.....	39
6.2	A F BOSTÄDER .....	40
6.3	BOKOMPAKT .....	40
6.4	PROJECT CHALLENGES .....	41
6.4.1	<i>Boverket Regulations</i> .....	41
6.4.2	<i>Consumption evaluations</i> .....	41
6.4.3	<i>Student Acceptance</i> .....	41
6.4.4	<i>Role of evaluations</i> .....	43
6.5	NICHE FUNCTION ANALYSIS .....	43
6.6	DISCUSSION.....	44
<b>7</b>	<b>CONCLUSION .....</b>	<b>46</b>
7.1	SUMMARY OF FINDINGS.....	46
7.1.1	<i>Niche Function Analysis:</i> .....	47
7.1.2	<i>Lund Case Study</i> .....	48
7.1.3	<i>Comparison and Reflections</i> .....	48
7.2	RECOMMENDATIONS FOR NICHE DEVELOPMENT .....	48
	<b>BIBLIOGRAPHY .....</b>	<b>51</b>
	<b>APPENDIX 1 – LIST OF INTERVIEW SUBJECTS.....</b>	<b>55</b>

## List of Figures

Figure 2-1.	The Nested Hierarchy.....	8
Figure 2-2.	A Dynamic Multi-Level Perspective of Technological Transfer.....	9
Figure 4-1.	Tiny Home by Waterfront.....	19
Figure 6-1.	BoKompakt Trial House, Lund, Sweden.....	39
Figure 6-2.	Inside Lund’s Tiny House.....	42

## List of Tables

Information Gathered from Actor Interviews and Popular Media Sources.....	III
Table 2-1. Overview of Interview Themes .....	7
Table 2-2. Niche Succes Functions .....	11
Table 5-1. Breakdown of Niche Function Analysis for Each Category .....	37
Table 7-1: Information Gathered from Actor Interviews and Popular Media Sources.....	47

## **Abbreviations**

AF	Akademiska Föreningen
AFB	AF Bostäder
R & D	Research and Development
SCP	Sustainable Consumption and Production
SNM	Strategic Niche Management
TIS	Technology Innovation Systems
TT	Technological Transition



# 1 Introduction

For the first time in 2011, the global population exceeded seven billion people. Projections conclude that by the year 2050, it is expected to reach 9.3 billion (UN, 2011b). While the population is increasing, it is also becoming more concentrated with people flocking to the cities to find jobs and improve their quality of life. Population living in urban areas surpassed 3.6 billion in 2011 and is expected to reach 6.3 billion in 2050. Urban areas are expected to absorb much of the population growth as well as some of the rural population leading sprawling cities and urban densification (UN, 2011b).

The increase in population and urbanization has led to widespread concern about the resulting volume of consumption. More people require more food, goods, and space to thrive. When combined with continued development, population has led to an unsustainable consumption level (UN, 2011a). Despite the fact that this problem was evident as early as the 1980s, little progress has been made to combat the problem (Tukker, Cohen, Hubacek, & Mont, 2010).

Statistics suggest that mobility, food, and home building and demolition make up a substantial portion of this consumption, composing as much as 80% of environmental impact throughout the lifecycle (Tukker et al., 2010). This is especially problematic in the housing market, where home size continues to grow. In the United States the average size of a single-family home has doubled since 1950, leading to a profound environmental impact (Wilson & Boehland, 2005). In addition to the increased volume of raw materials used in building larger houses, they also require more energy for heating and cooling and lead to more storm-water runoff by decreasing permeable surface area.

In order to combat the trend of increasing resource use, attention has shifted toward implementing policies to encourage Sustainable Consumption and Production (SCP). Implementation of a sustainable system requires approaching all things from a life-cycle perspective. Although there are several methods of implementing SCP, all of them require a shift to reduced raw material consumption, either by convincing consumers they require less goods and services or by increasing the efficiency of these goods and services (Tukker et al., 2010). In general, it seems necessary to change the way we think about our purchases.

One trend that has developed along the lines of SCP is a shift toward minimalistic housing. Although living in spaces with limited square footage is a reality for many people, this trend goes beyond that. The tiny housing trend is centered on individuals who intentionally downsize their living quarters. These people are working to change their own mindsets about what is “necessary” to their life and happiness. Places are sprouting up around the world in sizes that many people consider below the range of comfort. This trend was solidified in the United States in 2002, when the same year saw the establishment of the Tumbleweed Tiny House Company as well as the Small House Society. The former was the first popular company established with the intention of designing only tiny homes (Tumbleweed Tiny House Company, 2012). The latter was founded by four Tiny House advocates: Jay Shafer, Shay Solomon, Nigel Valdez, and Gregory Paul Johnson, as a way to bring together like-minded individuals (Small House Society, 2013). Now Tumbleweed is just one of several companies that build tiny homes to order, and deliver them in the United States (Four Lights Tiny House Company, 2013a; Ideabox, 2013).

While many tiny home owners are encouraged by a desire to reduce their environmental impact, there are numerous drivers behind the interest in tiny homes (Wax, 2012). Tiny homes require fewer resources, but also tend to be cost-efficient and well designed. They can be the perfect size for empty nesters, students, or for elderly parents and they can be used as

home offices or guesthouses (Foreman, 2005). Tiny houses are typically between 65 and 400 square feet (6 and 37 square meters) and the number of people living in them seem to be growing. The trend has even led to the creation of a Small House Society with over 1800 subscribers, all of whom live in tiny homes themselves (Chea, 2010).

## 1.1 Problematisation

This paper will seek to address the problem of overconsumption by considering the benefits of intentionally downsizing in favour of smaller homes that provide a good quality of life. So far, this trend has not been fully assessed in academic literature. There is a lack of information on factors that motivate individuals to make this lifestyle change.

Tiny houses have a demonstrably reduced impact on the environment as compared to large conventional houses. The benefits of reduced consumption, however, only extend to the limited members of the population who have chosen to live in tiny housing. Possibilities to extend permeation have not been explored. This paper will consider the application of niche markets to the tiny housing sector in hopes of expanding the trend. Tiny housing does not fit the typical definition of a new technology, nor does it fulfil the trend of moving to bigger, better housing options. This makes it difficult to understand how trend growth will occur.

## 1.2 Objectives and Research Questions

By improving understanding of the current tiny housing trend, this paper seeks to help expand upon the positive impact created by individuals who intentionally downscale their consumption and their environmental impact. This paper seeks to achieve three primary objectives:

First, it aims to establish a better understanding of what is currently going on in the tiny housing trend. This objective will focus on gaining an increased understanding of the primary actors involved in the trend, of motivations and challenges behind the shift to tiny housing, and of prominent aspects of the trend.

Secondly, it works to apply a niche analysis framework using aspects from Frank W. Geels' Technological Transition Theory and Anna Bergek's Technological Innovation Systems to this trend. Specifically, this analysis works by utilizing information gathered when interviewing actors to determine potential niche markets for the tiny housing trend then evaluating aspects of these niches against the functions set forth in the framework.

Finally, it will evaluate a case study to better explain how niche function analysis can be applied. This case study will consider student housing in Lund, Sweden and will look at its potential success as a niche market.

In pursuit of the aforementioned objectives, this paper will seek to answer the following research questions:

*Q1. Why has the intentional downscaling in homesize become a trend? What are the primary motivations and challenges for living in/ advocating for tiny housing?*

*Q2. What emerging niche markets exist within the trend? What is the potential for success of each of these niche markets?*

*Q3. Is there potential for growth in compact student housing in Lund, Sweden as a niche market? What might this suggest for the future of the niche?*

### 1.3 Limitations and Scope

The tiny housing trend includes individuals and communities all across the world. For the purpose of this research, not all of them can be examined. Instead, this study will focus on surveying some of the biggest voices in the industry, and those that are represented in media (and social media). The focus will not include peoples who have always been living in small housing, but will instead work to understand the trend of intentionally downscaling the size of living establishments regardless of the primary motivation. In general, the majority of the examples come from North America with the exception of those utilized for the case study, which is further discussed in Section 2.1. This choice is because of the nature of the trend there, where a Small House Society has been established and a number of companies specialize in tiny house plans. This area also includes a larger small house network connected by numerous tiny housing blogs and workshops across the region. Additionally, this research will focus on permanent conventional living spaces such as tiny houses/cabins and tiny apartments rather than considering more rudimentary housing types (such as tents or yurts). For the purpose of this study, tiny housing will be defined as any separate establishment of less than 40 square meters (roughly 430 square feet) or any conjoined apartment of less than 20square meters (215 square feet).

Additionally, it is important to understand that the subject of this paper is limited. It focuses on motivations and other trends in tiny housing, as well as potential for success in niche markets that may facilitate the spread of tiny housing. It does not address or evaluate ways of reducing the impact of tiny housing, nor does it make recommendations for those interested in building their own tiny home.

This thesis work includes a case study of student housing in Lund, Sweden. This is somewhat limited by the authors inability to speak Swedish. This case study will serve as a counter point for the North American trend. This case differs because a tiny housing community has not developed in Sweden. Additionally, this case focuses primarily on compact apartments, which pose some differences from tiny houses. The details of these differences are presented in Chapter 6.

The audience for this paper is two-fold. While it seeks to add to the limited academic literature on the tiny housing phenomenon and could be of interest to academics looking into this trend, it also addresses the topic of trend expansion. For this reason it is also written for actors invested in the compact housing trend including but not limited to tiny home owners, adocates, enthusiasts and developers.

### 1.4 Disposition

This paper is structured as follows:

*Chapter 1* presents relevant information on the objectives addressed in this thesis by examining background information and trends related to the paper topic. It also explicitly states the aims and limitations relevant to completion.

*Chapter 2* includes an in depth explanation of methodology of this project including an explanation of the case study, the framework, and the method of analysis.

*Chapter 3* includes a literature review of consumption trends, including the current trends in the U.S. housing market as well as some movements that aim to counteract the rise in consumption.

*Chapter 4* presents the main findings of the data collection surrounding the tiny housing movement in North America. This chapter includes information collected from a popular media review as well as interviews with tiny housing owners, dwellers, builders, and advocates and discusses motivations, challenges, and prominent themes in the trend.

*Chapter 5* utilizes the niche function analysis framework to evaluate the potential success of niches introduced in interviews and popular media review.

*Chapter 6* presents the case study of student housing in Lund, Sweden. It will examine the particulars of this case and will perform a niche function analysis of student housing in Lund as a niche market.

*Chapter 7* summarizes the key points put forth in this paper and discusses the conclusions drawn from this research.

## 2 Methodology

The general methodology for this research will include utilizing primary and secondary data extracted using various techniques including literature and popular media review, two types of interviews, and a case-study of student housing in Lund, Sweden. Information for this paper will be applied in an inductive analysis, meaning that the approach will focus on a “detailed readings of raw data to derive concepts, themes, or a model through interpretations made from the raw data by an evaluator or researcher” (D. R. Thomas, 2006, p. 238). The goal of this analysis will be to establish links between the research objectives and findings determined by gathered data. For the purpose of this paper, findings gathered from raw data are shaped by the evaluators experiences and assumptions (D. R. Thomas, 2006)

Data will be gathered using qualitative methods because the size of the groups evaluated are quite small, making it difficult to gather a statistically significant sample for quantitative purposes. Data will be analysed using a framework for niche function analysis based on Geels Multi-Level Technological Transition framework with additional inputs from Bergek’s System Innovation theory.

### 2.1 Case Study Approach

In order to better understand the application of the niche function analysis framework to the tiny housing trend, a case study approach was used focusing on the introduction of tiny housing to student housing in Lund, Sweden. The purpose of this effort is not to provide any generalizations or conclusions about the tiny housing trend as a whole, but to examine a specific example of its implementation. Student housing in Lund, Sweden was chosen due to the researcher’s familiarity with the dynamics of the situation. As a student resident in Lund, she has become aware of the constant struggle to provide housing for the large volume of students. Lund is also a unique case because it is likely to fit into the framework for successful niches for implementation. This is due to a high demand for housing, an environmentally conscious public, and customers who expect to make some sacrifices within their housing choice. Additionally, the situation in Lund is unique because it is supported by the local student housing foundation, AF Böstader. This company has the support of the greater student union, Akademiska Föreningen (Cederberg, personal communication, March 11, 2013).

For this purpose a “case study” is defined as “an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, policy, institution, program or system in a ‘real life’ context” (G. Thomas, 2011, p. 512). Case studies are important because they contribute to a unique knowledge of an individual, organizational, social, or political phenomena (Yin, 2009). Thomas specifies that a case study is not a method, but a design frame that utilizes many methods. Each study includes both a subject of the case study and an object or form of analysis (G. Thomas, 2011). For the purpose of this case study, the example of student housing in Lund, Sweden will be the subject and the niche function analysis framework will be the form of analysis.

Case studies are a way of producing naturalistic generalizations or conclusions arrived at through personal engagement in life’s affairs or by vicarious experiences (Stake, 1995). Sometimes this leads to criticism, however, because examining a single case does not always stand as a good example of a greater class. Stake refutes this criticism by stating “single cases are not a strong basis for generalizing to a population of cases as other research designs. But people can learn much that is general from a single case” (1995, p. 85). This specific case study can be considered a *disciplined configurative case study* because it is using an established

framework to explain what is happening in the case (G. Thomas, 2011). Data will be collected in the current time frame and will include both primary and secondary data.

## 2.2 Data Collection

### 2.2.1 Addressing Questions 1 and 2

Data collection for the first section of this paper included an extensive literature and popular media review to gather an in-depth understanding of the drivers and trends within the tiny housing movement. As the tiny housing trend is relatively recent, it is not frequently mentioned in academic papers. Instead, this review focused on popular media sources such as newspapers, blogs, radio broadcasts, and small housing community or developer websites. These sources were located by a search of available web databases (including Lund University Ebscohost and Google Scholar) using the key words “Tiny Homes”, “Tiny Housing”, and “Micro Housing”. Additionally, research utilized popular weblogs including “Tiny House Blog”, “The Tiny Life”, “Relax Shacks”, and “Tiny House Family” as first indicators of existing tiny houses. In general, the sources used in this “literature review” will seem unconventional. However, the primary goal of examining the literature was to understand the drivers behind the tiny housing trend. For this reason, an examination of published media provided valuable insights.

Additionally, pursuit of the first two research questions included a series of semi-structured interviews of actors and advocates within the current tiny housing trend. Eleven such stakeholders were interviewed including members of each of the following groups:

- a) tiny home owners;
- b) tiny home builders; and
- c) advocates of tiny housing.

The primary purpose of these interviews was to establish the motivations cited for living in tiny housing, although information on challenges and potential for growth were also covered. Interviewees were chosen because of their high level of visibility in the North American tiny housing trend. Many interviewees appeared consistently in the tiny housing media review and were contacted for this reason. Others were chosen because they had unique insights to offer (such as Hari Barzins of Tiny House Family, and Sarah Myers who built her home as part of her Master’s thesis project). A full list of interviewees is included in Appendix 1. The limited size of the sample means that the qualitative information drawn from interview subjects is not statistically significant.

### 2.2.2 Addressing Question 3

To address question 3, a case study approach was used by applying the niche function analysis framework as developed in section 2.4 to the case of student housing in Lund, Sweden. In order to analyze this example of a niche market, primary data was collected. This included a review of all relevant publications on the Lund trial tiny home. This comprised press releases provided by housing company AF Bostäder’s website ([www.afb.se](http://www.afb.se)) as well as the blog kept by student resident Madeleine Forsberg. A report on Swedish student housing preference was also evaluated to help understand potential interest in compact housing. In addition, this examination incorporated interviews with key stakeholders including the current resident, a representative AF Bostäder, and a Lund Technical School researcher working with the project. More details of these interviews can be found in Appendix 1.

### 2.2.3 Interview Design

In pursuit of this topic, interviews were conducted with numerous actors and objectives. These employed the responsive interviewing style, which emphasizes the relationship formed between the interviewee and interviewer during their exchange (Rubin & Rubin, 2005). This style allowed the interviewer to retain flexible research methods in order to obtain a greater depth of understanding, rather than searching for breadth. This style was chosen because it allows the investigator to alter the specifics of the interview as they see fit. The result was a series of interviews that varied in length and that often included responses from the interviewer leading to a more conversational feel. Additionally, interviews were conducted via various mediums including in person, via phone, via skype, and via email. Preference was given to in person interviews where the subject was accessible. Where this was impossible, most interviews were conducted via phone or skype depending on the subjects’ preference. Finally, where finding a time to talk was complicated by time difference and subject schedules questions were administered via email. Interview medium is also recorded in the table in Appendix 1. Depending on the role of the interviewee in the trend or case study, different interviews addressed different themes. While those addressing research question one and two were fairly uniform, the three interviews addressing research question three varied depending on the role of the interviewee in the case study. Details of the research themes are addressed in Table 2-1.

Table 2-1. Overview of Interview Themes

Actor Group	RQ addressed	Themes Covered
Tiny Housing Residents, Owners, Builders and Advocates	1 & 2	<ul style="list-style-type: none"> <li>• Motivation for involvement</li> <li>• Role of environmentalism</li> <li>• Scope of movement</li> <li>• Growth of movement</li> <li>• Future of movement</li> </ul>
AF Bostäder	3	<ul style="list-style-type: none"> <li>• Goals of BoKompakt apartments</li> <li>• Timeline of Implementation</li> <li>• Legal Challenges</li> <li>• Degree of permeation</li> </ul>
“Smallest Home” Resident	3	<ul style="list-style-type: none"> <li>• Satisfaction with residence</li> <li>• Motivations for living in “smallest home”</li> <li>• Interest of fellow students</li> </ul>
Project Researcher	3	<ul style="list-style-type: none"> <li>• Research design</li> <li>• Findings on student acceptance</li> </ul>

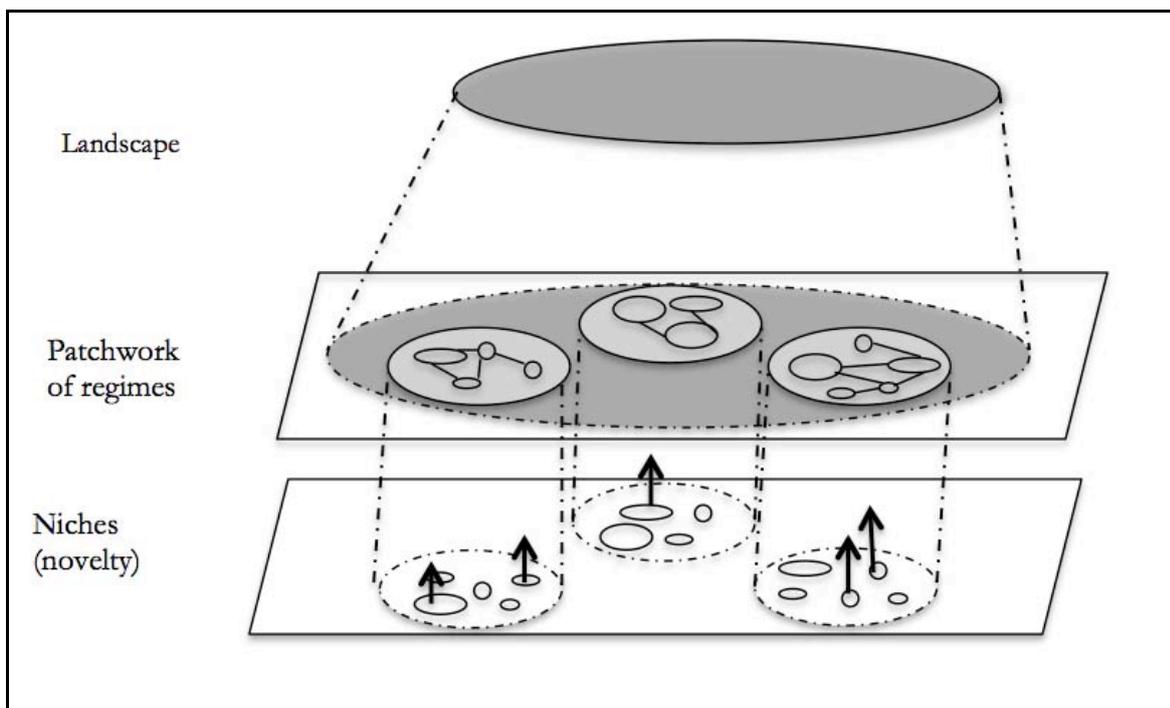
### 2.3 Analytical Framework

Analysis for this paper uses of a Multi-Level Technological Transition Framework as put forth by Frank W. Geels. For the purpose of this analysis, information about the framework has been drawn from a 2001 paper entitled *Technological Transitions as Evolutionary Reconfiguration*

*Processes: A Multi-Level Perspective and a Case-Study* and from a later book *Technological Transitions and Systems Innovations – A Co-Evolutionary and Socio-Technical Analysis*. The framework is based on the concept of Technological Transitions (TT), which are any “major technological transformation in the way a societal functions such as transportation, communication, housing, or feeding, are fulfilled”(Geels, 2001, p. 1257). It is important to point out, however, that TT can also include changes in user practices, regulation, industrial networks, infrastructure, and symbolic meaning. For the purpose of this paper the focus was not on a physical technology as the tiny housing trend includes some very low-tech variations. Instead, the overall trend of intentionally downsizing living space and the change in infrastructure that comes with this trend was evaluated as the subject of transition.

One key aspect of this framework is the use of a sociotechnical landscape, which can be described as a connected web of actors such as the producing firms, suppliers, financial actors, societal groups, and public authorities. This emphasis signifies the interconnectedness within a technological regime. Behavior from any part of the web can alter the course and success of the technological transition (Geels, 2001). In order to support his framework, Geels combines two views of technological evolution. The first is evolution as a process of “variation, selection and retention” while the second view is a process of “unfolding, creating ‘new combinations’, resulting in paths and trajectories”. In order to integrate them both, a multi-level perspective is taken. Geels includes a three-level nested hierarchy containing niches at the lowest level, a patchwork of technological regimes at the mid-level, and a greater sociotechnical landscape at the broadest level. This hierarchy is demonstrated in figure 2-1.

Figure 2-1. The Nested Hierarchy



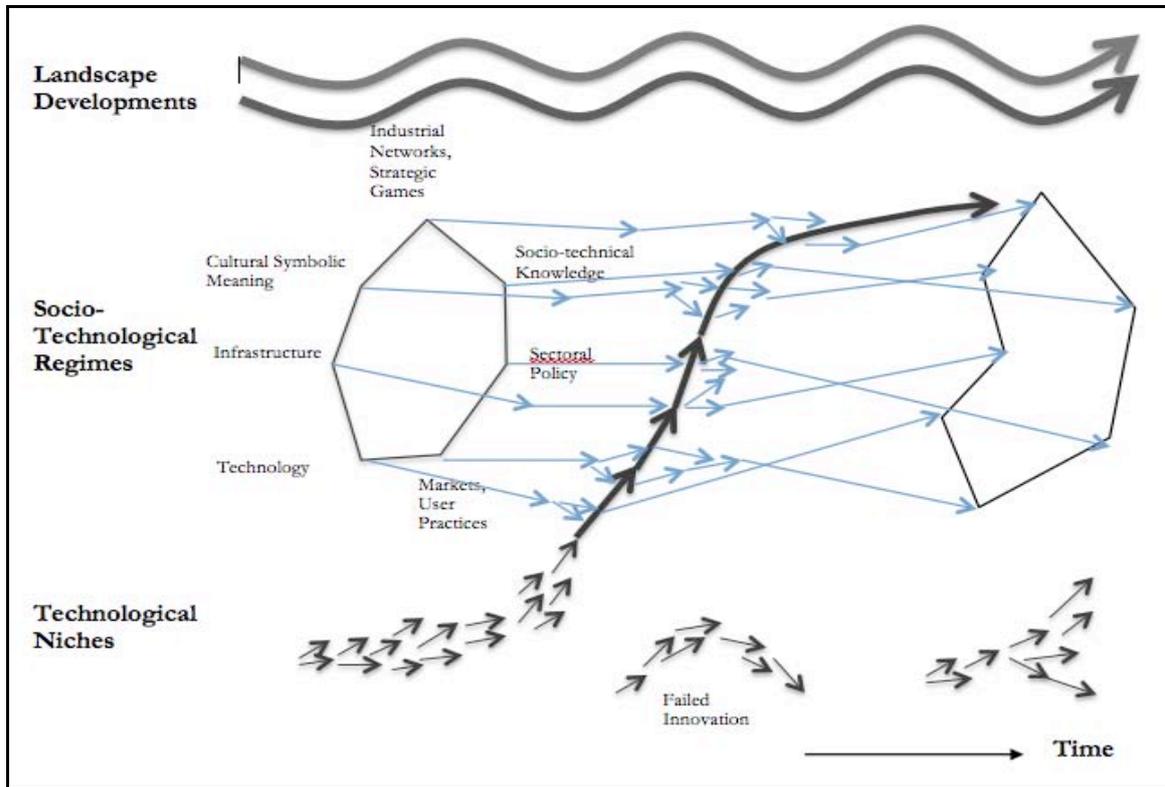
Source: based on Geels 2005

### 2.3.1 Technology Trajectories

The major premise of Geels framework is based on the interaction between the levels. Novelities that emerge in niches can grow and develop and, depending on outside forces, be given the opportunity to emerge into the greater landscape. This is shown in Figure 2-2

through a system of arrows. Once an idea makes it to the meso level, it is the interaction with the regimes that helps to influence its success (Geels, 2005). The pathway a technology takes throughout its lifetime can be labeled a trajectory

Figure 2-2. A Dynamic Multi-Level Perspective of Technological Transfer



Source: based on Geels 2001

For the purpose of this study, focus is placed on the role of niches within the nested hierarchy. Niches are relatively important within the framework because they provide a somewhat insulated starting place for new technologies (Geels, 2005). Once a technology is established within a niche, it provides the role of an ‘incubating room’ for the technology. What this means is that niches provide a venue for the technology to be bolstered before expanding to the regime level. For the purpose of this paper we will focus on what Geels defines as market niches (as opposed to technical niches). This is relevant because it considers the special application of the technology (rather than the strategic investment). Geels cites three processes that are important to the establishment of new niches. First, niches require the *establishment of social support networks*. This is important because actors help to increase interest, spread information, and sometimes even fund the development of the technology. Second, Geels suggests that niches work to improve the overall performance of the technology by carrying out functions to decrease the price and increase the usability of the technology *optimizing the ratio* between the two. Finally, niches act to *articulate and adjust expectations and visions*. This includes widening the actor network, increasing awareness, and facilitating the learning process.

Success at the market niche level leads to a greater level of stabilization of the technology. This works by improving the technology, establishing actors, and improving infrastructure around the technology. Ideally, this leads to technologies that are still considered novelties breaking through into the sociotechnical regime, and possibly eventually altering the overall

landscape. Market niches provide the “seeds for change” needed when a novel technology is introduced (Geels, 2005). It is this process within Technological Transition theory that we are going to focus on. Section 2.4 will discuss more about how this framework will be used to evaluate potential success of niches and will incorporate Bergek’s Systems Innovation theory into the process. By establishing the potential for market niches for tiny houses, it is possible to visualize the future effects on the socio-technical landscape of the overall housing market.

### **2.3.2 Incorporating Technological Innovation Systems into the Framework**

Although this paper relies more heavily on the Geels technological transition framework, it also incorporates aspects of a technological innovation system (TIS) analysis. Information on this theory is drawn from work by Anna Bergek including her PhD dissertation entitled *Shaping and Exploiting Technological Opportunities: The Case of Renewable Energy Technology in Sweden* (2002) and a later paper entitled *Analyzing the Functional Dynamics of Technological Innovation Systems: A Scheme of Analysis* (2008). Bergek’s “innovation systems approach” is based on the concept that rather than focusing on developments within individual firms, innovation and industrial development should be fostered within innovation systems that consist of actors, markets, networks and institutions.

This analytical framework is based on the concept of function, which Bergek (2002) defines as “the contribution of a component or set of components to a goal” (p. 21). She uses common functions as a way of unifying multiple innovation system approaches to create a single framework. One important aspect of functions is their ability to gauge the progress of innovation systems. Successful systems will have strong functions and the waxing and waning of functionality can signify points where the system is growing or failing. It is important to point out, however, that different functions will have different strengths depending on the age of the innovation system (Bergek, 2002). Our use of TIS analysis will utilize the functions of a system as set forth by Bergek’s later works. These include:

1. Knowledge development and diffusion;
2. Influence on the direction of search;
3. Entrepreneurial experimentation;
4. Market formation;
5. Legitimation;
6. Resource mobilization; and
7. Development of positive externalities.

These functions are utilized to measure the strength of niche markets in conjunction with Geels thesis. While he discussed factors that lead to successful market niches, Bergek’s functions are focused more on the overall success of the system.

## **2.4 Measuring Potential for Success—Niche Function Analysis**

In order to recommend potential market niches for tiny housing, a set of functions was created based on the analytical frameworks introduced above. Each framework proposes a separate list of functions for technology growth. These are combined into one list of niche functions in Table 2-2, and further developed in Section 2.4.2.

### **2.4.1 Foundation Functions**

In his Technological Transition framework, Frank Geels proposes a list of three functions based on Strategic Niche Management (SNM). These are:

1. Establishment of Social Networks;
2. Improvement of Performance/Price Ratio; and
3. Adjustment of Technology Expectation/Vision.

Technological Innovation System framework suggests a larger group of functions that the TIS should successfully complete. They are:

1. Knowledge Development and Diffusion;
2. Influence on the Direction of Search;
3. Entrepreneurial Experimentation;
4. Market Formation;
5. Legitimation;
6. Resource Mobilization; and
7. Development of Positive Externalities.

Although the TIS functions are intended to be carried out by a greater innovation system, it seems appropriate that a successful niche would also complete these functions. The aim of a successful niche is to set up the technology for success in a larger sociotechnological regime. If the niche allows these functions, the technology will already be in a strong position leading to growth and success. For simplification purposes, a combined set of functions has been created for niche evaluation and is defined in table 2-2 and discussed in section 2.4.2.

*Table 2-2. Niche Success Functions*

#	Geels Criteria	TIS Criteria	Framework Criteria for This Paper
1	Establishment of social networks	Influence on the direction of search & Development of positive externalities	<i>Improved Social Support Networks</i>
2	Improving performance/price Ratio	Knowledge Development and Diffusion & Entrepreneurial Experimentation	<i>Improved Knowledge and Performance</i>
3	Adjust expectations/vision	Influence on the direction of search	<i>Articulation and Adjustment of Expectations</i>
4		Legitimation & Entrepreneurial Experimentation	<i>Legitimation/ Stabilization</i>
5		Resource mobilization	<i>Resource Mobilization</i>

## 2.4.2 Niche Functions for Success

This combined list of niche functions is based on the two function lists set forth in Section 2.4.1. While these were interpreted as a clear way of combining the two lists, these functions are not fully independent. Rather, there is plenty of room for interaction between the functions, and in many cases there is a slight overlap.

### 1. *Improved Social Support Networks*

This is mentioned in Geels framework as the first goal of niche creation because a strong social support network allows a novelty to grow and be nurtured. Simply, having a supportive group of actors allows for the advocacy and development of the technology (Geels, 2005). This is also mentioned in some regards in the TIS list of functions. When explaining the function “influence on the direction of search” much focus is placed on the role of firms and organizations within the innovation system. Additionally “development of positive externalities” directly references the increased power added by the addition of each new firm or organization. This power can be used to improve advocacy and information (Bergek *et al* 2008). This criterion includes several different factors although the concept is simple. The more actors and the better the connection, the more support a technology has. A good niche market will add these assets and leave room for the technology to grow and break into the regime scene.

### 2. *Improved Knowledge and Performance*

Bergek *et al.* defines this function as two separate categories. The first is to “improve knowledge development and diffusion”. This can include formal knowledge development through R&D programs as well as an improved understanding of design, market, and logistical knowledge. This criterion also includes the third function of “entrepreneurial experimentation”. This category works to “reduce uncertainty” and to improve the understanding of applications and breadth of the technology (Bergek *et al* 2008). In SNM studies, this category would focus on the stimulation of price/performance ratio. This includes reducing the cost of production as well as improving the technology to better fit the needs of the consumer (Geels, 2005). Although these goals/functions are worded differently, they are talking about similar things. This category has been renamed to simplify the function of the niche, to improve knowledge and performance of the technology. This includes improving the understand of what people want out of the technology, understanding ways to produce it for less cost, and improving the performance to a more reliable level before entering the mainstream market.

### 3. *Articulation and Adjustment of Expectations*

TIS theory functions calls this category “influence on the direction of search” and includes a variety of actual functions including development of firms and organizations and altered incentives or regulatory pressure. When applied to niche markets, however, this requires advanced organization. Instead it seems more useful to focus on the sectors of this category that work to articulate the interests of customers, improve belief in growth potential and alter expectations and visions of those involved (Bergek *et al* 2008). This is more similar to Geels factor of articulation and adjustment of expectations and visions. This is intended to both give direction to the knowledge search and to widen the network (Geels, 2005). For our purposes, this category will focus more on the expectations of customers and the perceptions of the public. The tiny housing market is unique because it can be considered a novelty in the

extreme. Many people are drawn to the idea as a curiosity, so it is essential to improve understanding of these individuals about the actual aim of the market.

#### *4. Legitimation/Stabilization*

The TIS strategy sites “Legitimation” as one of the roles of a technological innovation system. This focuses on the role of social acceptance and institutional compliance within the system. A valuable market niche will help to achieve these functions in hopes of allowing the technology to break through to the sociotechnological regime level. Creation of legitimacy allows for greater demand for the technology. This fits closely with one of the goals of the “entrepreneurial experimentation” category. This category hopes to reduce the amount of uncertainty associated with the technology, which can cause greater stabilization (Bergek *et al* 2008). Although this does not fit with the enumerated goals of niche creation discussed by Geels, he does discuss the role of stabilization (2005, p. 80). Stabilization in market niches is incredibly important because without it the technology is never positioned to emerge into larger regimes.

#### *5. Resource Mobilization*

Resource mobilization is not specifically mentioned by Geels, but is a category defined in TIS functions. Bergek *et al* consider this important because success of a technology requires the mobilization of human and financial capital. This includes an increase in education established at the niche level, development of complementary products and services, and financial investments (Bergek *et al* 2008). Although these all play a role in the stabilization of the technology, it seems valuable to keep this category separate because it plays a very important part. In many ways without mobilization of resources during the niche development phase, a technology does not have a chance to succeed.

### 3 Trends in Consumption

In order to understand the basis for the growth in interest in Tiny Housing, first the trends surrounding this movement must be understood. This section explains the trends in the U. S. housing market towards more expansive places. This trend is part of the overall increase in consumption faced by households. The second part of this section describes two movements that have been established to counteract this need for consumption. Although there is no formal grounding of the concept of tiny housing within these trends, the movement is based on similar ideals as is described in each section.

#### 3.1 Housing Trends in the United States

Since the 1950s the average size of single family homes in the United States has grown steadily, despite the fact that family size has decreased (Wilson & Boehland, 2005). This growth could be contributed to the cultural construct that “bigger is better” and that a large home is a symbol of high status. Actual size of homes which was about 100 square meters (1076 square feet) in the 1940s, is now up to 217 square meters (2336 square feet) even though family size has dropped from an average of 3.67 members to 2.62 members. This means that the average square meter/person has gone from 27.25 to 82.82 (Wilson & Boehland, 2005). The end result of this trend is an increased consumption per person where housing is concerned. This is problematic because despite population and consumption growth, the amount of resources available is finite.

Housing remains one of the primary setors of human consumption (Tukker et al., 2010). This fact is complicated because of the long lifespans of buildings. As one pair of authors puts it:

“Buildings and the built environment play a major role in the human impact on the natural environment and on the quality of life. Architecture is normally built and meant to stay in a useful order for at least several decades or even hundreds of years” (Tamer Abdel & Indjy, 2011, p. 229).

This leads to a long-term impact on land cover, but also assumes that the building will be able to live out its natural life cycle rather than being torn down to build larger housing. Additionally, the role of housing in consumption is complicated because consumers act differently in the housing setor than other sectors. One way this is evident is in the difference in consumption over the lifecycle. While consumption of many goods begins to decline as consumers age, the average consumption for housing into later years remains high and flat (Fang, 2009).

Simply put, larger houses consume more resources. In the words of Wilson and Boehland in their article *Small is Beautiful – US Housing, Resource Use, and the Environment*, “As house size increases, resource use in buildings goes up, more land is occupied, increased impermeable surface results in more storm-water runoff, construction costs rise, and energy consumption increases” (2005, p. 227). The implications of this trend can paint an increasingly negative future for our natural world. One aspect where this can be viewed is by the primary resource consumption building larger houses requires. Larger houses require more building materials to create them and in many cases this grows at an inporportional rate. For example a 465 square meters (5000 square feet) house can consume three times the materials of a 193 square meters (2, 082 square feet) house despite being only 2.4 time the size (Wilson & Boehland, 2005). Although some homes strive to be more resource efficient, this type of consumption often occurs because those building large houses also want to incorporate a sense of grandour often achieved by features such as high ceilings and ornamentations.

Larger homes also tend to consume more energy because they provide more space where heating, cooling, and lighting is needed. This is especially evident with heating where by halving the size of a house, heating costs are more than halved (Wilson & Boehland, 2005). This of course is assuming that both homes share a similar insulation system. One reason smaller houses have dramatically reduced heating is that they often have simpler geometry and less divided sections requiring lower energy costs to heat the whole home.

In the United States today, single family homes make up 63% of total housing units (Wilson & Boehland, 2005). In some places this represents as urban sprawl or “the rapid demographic growth of suburbs with a low density pattern” (Rerat, 2012, p. 116). This means that instead of increased density of cities, they are growing in size as more people move to big houses in the suburbs causing a multitude of negative environmental impacts. This type of growth also has negative social and economic impacts as well confining lower income groups to cities while higher income groups flock to the suburbs.

Another negative impact that stems from this shift comes from the increase in transportation emissions (Rerat, 2012). Generally speaking, a decrease in density leads to an increase in individual vehicle miles travelled. This is also effected by numerous other factors including socioeconomic characteristics of residents, availability of public transport, neighborhood access and cost of transport (Burnett, 2010). Density is particularly relevant because it affects the quality of travel experience, the distance required for travel to different areas, and the monetary and time cost of travel. Ultimately, however, this is dependent on consumer preference as they make the ultimate choice of how and where to travel.

## **3.2 Counter Trends**

Despite the rising individual consumption and irresponsible resource use, there is hope yet for our ecological future. Many individuals have begun questioning whether current consumption levels are acceptable and whether quality of life can be maintained without destroying our environment. Several movements have been established in hope of returning to sustainable trends. Our current connection between living a good life and consuming resources and fossil fuels is not good for us or our environment (Simms & Smith, 2008). Within these movements, sustainable housing has not been overlooked. As attention to sustainability has grown, interest has shifted to the implementation of more environmentally friendly housing. Traditionally this means more attention is paid to utilizing recycled and reclaimed materials, choosing more environmentally friendly heating and lighting systems, and improving efficiency of heat and electricity (Rerat, 2012).

### **3.2.1 Sustainable Consumption**

The concept of sustainable consumption was first added to the global agenda at the 1992 Earth Summit in Rio de Janeiro (Robins & Roberts, 2006). At this conference focus was placed on the unsustainability of highly consumptive lifestyles in the North. Although this introduced the idea to national and regional bodies, a sustainable consumption agenda was only established with the Oslo Declaration in 2005. This conference convened a three year project to determine the indicators of Sustainable Development (Tukker et al., 2006). The outcome was the Oslo Declaration which states “sustainable consumption focuses on formulating equitable strategies that foster the highest quality of life, the efficient use of natural resources, and the effective satisfaction of human needs while simultaneously promoting equitable social development, economic competitiveness, and technological innovation” (Oslo Declaration, 2005, p.1).

This definition of sustainable consumption remains relevant, although the topics surrounding it are complex. While many actors can agree that consumption and production should be resource and energy efficient, there is debate about whether individual consumption should be regulated (Tukker et al., 2006). This is important to consider, however, as individual consumption makes up around 30-40% of overall consumption (McDonald, Oates, Alevizou, Young, & Hwang, 2012). This suggests that in order to reduce consumption levels, policies should include individual consumption. As one paper puts it “Our contemporary economic system apparently fulfills consumers needs in a highly inefficient way and there is little rationale to believe that an unalloyed emphasis on efficiency will be sufficient to ensure sustainability in the future”(Tukker et al., 2006).

In general, governments and corporations have not called much attention to the problems of personal choice and consumption and have avoided addressing the patterns underlying the problem (Robins & Roberts, 2006). Instead civil action pushed the issue onto national and international policy agendas. Although this ideology includes government and corporate action to reduce consumption, it is equally important to consider the individual choice involved. Traditionally, consumers are classified by academia based on their commitment to sustainable purchasing. Many consider that consumers can either be ethical and always aim to purchase the products that do the least damage to the environment, or they can be “grey” consumers meaning they don’t consider these impacts at all in their purchase decision making (McDonald et al., 2012). In reality a large portion of consumers fall somewhere between these two extremes, striving to make “greener” decisions but only prioritizing this in some cases. Most consumers make many purchases regularly and prioritize ethical buying in some instances but not all (McDonald et al., 2012). Perhaps what is most important in all of this is the consumers aim to purchase more ethically. If this becomes universal, then society should gradually progress to more sustainable consumption.

In many cases, the choice of tiny housing can be connected to the concept of sustainable consumption. Many tiny housing advocates consider sustainability issues as one of the largest drivers behind their choice. In this case they are acting as green consumers by prioritizing the environmental impact of their living. It is important to consider, however, that with tiny housing this does not stop at the choice of a small house. Tiny home owners can continue green behaviors based on their design choices such as choice of materials, heating, plumbing, and electrical systems.

### **3.2.2 Slow Living**

The slow food movement began in 1986 when a group of left wing Italians formed an organization called Arcigola with the initial goal of publishing a guide on quality Italian wines (Parkins, 2006). A few years later, the group grew into the slow food movement during a 1989 protest of a McDonalds opening in the Piazza di Spagna in Rome. The primary goal was to counter the global trend in fast food with slow food advocacy. Slow food seeks to connect the food on our tables once again with the fields where it was grown. It seeks to return our lives to the pace that nature intended (Petrini, 2003). Many believe that the fast paced life that was growing in the west was not only changing the way we eat, but was also changing our civic and cultural life (G. Andrews, 2008). Slow food works to counteract that trend.

Since its inception, Slow Food has turned into a major movement in 40 countries (Petrini, 2003). Now slow food encompasses a whole range of concerns including the plight of traditional farmers, consumerism in the western world, and our general lack of enjoyment in our eating habits (G. Andrews, 2008). The movement has grown into one of the primary ideologies combatting our fast paced, high consumption lifestyle. Some have worked to

expand this to the concept of “slow living” in other words slow food ideals applied to all aspects of life. This can be defined as:

“Slow living is not a return to the past, the good old days (pre-McDonalds Arcadia), neither is it a form of laziness, nor a slow-motion version of life, nor possible only in romantic locations like Tuscany. Rather, for us, slow living is a process whereby everyday life – in all its pace and complexity, frisson and routing – is approached with care and attention, as subjects attempt to negotiate the different temporalities that they daily experience. It is above all an attempt to live in the present in a meaningful, sustainable, thoughtful and pleasurable way” (Parkins, 2006, p. ix).

Slow living, like slow food, is meant to challenge the fast paced lifestyle that many argue is the cause of problems such as road rage and our economic driven life. Supporters of the “slow” lifestyle advocate changing personal lifestyles by reconsidering the way we think of time in our lives. By changing your life, some proponents believe, you can change society (C. Andrews, 2006).

The slow living movement does not advocate for its followers to alter their physical space. Instead, it advocates for a change in the way space is viewed. In many ways, globalization has led to a deterritorialization of physical space as greater importance is placed on virtual space (Parkins, 2006). Slow living advocates for a return to the traditional way space is considered, leading to intentional choice of living space. Slow living also encourages viewing your home as a space where you can connect with the outside world, rather than escape from it (Parkins, 2006).

Although the slow living movement does not specifically support the tiny housing movement, many of the ideals are similar. Slow living advocates for the advancement of leisure and community, two ideals that also seem to be at the center of the tiny housing trend. It seems, in fact, that living in a tiny house for the most part allows for slow living, because tiny housiers live more affordably allowing for less work and more leisure. Similarly, some advocates suggest that tiny housing is rooted in community because tiny home owners are reliant on their neighbors. In many cases tiny houses are placed on land that belongs to someone else and gain utilities from these friends/family neighbors (Williams, personal communication, March 21, 2013). The next chapter elaborates on themes in the tiny housing trend including common motivations and challenges felt by tiny home owners and advocates.

## **4 Hold Me Closer Tiny Houses – An Evaluation of Themes in the North American Trend**

Out of the growing academic calls for sustainable consumption, a number of physical trends have emerged calling for participants to make the lifestyle changes necessary to create a model for sustainability. The growing fascination with tiny housing is one of these examples, with blogs, articles and physical tiny homes growing exponentially in recent years. Although some people have always lived in small homes, the beginning of the current tiny housing trend in North America can be traced to two specific events. The first of these is the establishment of the Tumbleweed Tiny House Company, the first company aimed specifically at producing designs for tiny houses in 2001. Tumbleweed was the brainchild of Jay Shafer, a tiny house enthusiast who after helping a few others with design plans and implementation of tiny houses decided to branch out to a full-scale business (personal communication, March 26, 2013). The second major event was the formation of the Small House Society by Jay Shafer, Greg Johnson, Shay Solomon, and Nigel Valdez in 2002 (Small House Society, 2013). The mission of the Society is to develop a forum to promote research development and use of smaller living spaces. Now the society serves as a voice for small house issues and releases a free newsletter with information and updates.

The Small House Society focuses less on size, and more on sustainable living. For the purpose of this paper, however, a definition of what we consider as “tiny housing” seems useful. We will consider tiny housing to include homes that are mobile or stationary of less than 40 square meters (430 square feet), as well as minimalist apartments of less than 20 square meters (215 square feet). The majority of homes and apartments taken into consideration, however, are on the smaller end of this spectrum. Additionally, most of the examples used in this section are designed for a single person or a couple to live in. There are some exceptions where these places house entire families.

This section combines a popular media review with personal communication to provide an overview of various themes associated with tiny housing. This includes an examination of motivations for the shift to tiny housing, challenges faced by tiny home residents, and other common aspects of the compact housing movement. Because the trend being considered is relatively new and still somewhat small, academic papers on tiny housing are virtually non-existent. Instead the literature used includes articles from newspapers, magazines, and online blogs as well as some youtube videos. Personal communications include a series of interviews with owners, advocates, and builders of tiny homes. More information on these interviews can be found in Appendix 1.

### **4.1 Motivators**

One of the primary objectives for performing interviews of people involved in the tiny housing trend was to establish motivations behind the shift to a compact lifestyle. This section explores several drivers that emerged frequently in literature and interviews. Those who get involved in the tiny housing movement usually circumvent the expectations of society. This section identifies some of the primary drivers for making this decision and how they are viewed in the eyes of tiny home owners.

*Figure 4-1. Tiny Home by Waterfront*



*Image Source: Paulina Aguilera, April 19, 2013.*

#### **4.1.1 A Simpler Life**

One of the universal themes found across tiny house media is that of a simpler life. As interviewee Jay Shafer puts it, “Of course it always comes back to the human drive for simplicity when the financial retail value stuff gets out of the way. I think it appeals to a lot of people”(personal communication, March 26, 2013). This counteracts societal expectations of consumption as a way of “filling some void in our lives” (Myers, personal communication, May 2, 2013). Another interviewee demonstrates a more dramatic reaction of returning home from living abroad and feeling a sense of panic at the volume of belongings she owned (Anson, personal communication, May 4, 2013). Moving to a tiny place requires a major lifestyle change. Tiny home dwellers have less room and can store fewer objects. Usually this leads to the tiny home dwellers cutting down on the things they own and reconsidering what they really need. One blogger writes about her reaction to this change

“There’s nothing to hide! We have put a lot of thought into how we live, what we use daily, and how to make this small space livable for our family. This intentional lifestyle has grounded me and freed me from the stress of too much stuff” (Berzins, 2012).

Tiny homes have less space and their dwellers are able to own less material possessions and cut down on consumerism. Although this may be a challenge at first, it seems that many living in tiny homes come to embrace this change and appreciate the effect on their lives. One interview subject discusses having the opposite problem. He explains “I actually kind of fell into tiny homes in a backwards way...I began to go on these weekly purges by getting rid of things that I didn’t really feel I needed, and within a month or two my apartment was pretty bare...I felt I needed a smaller space” (Austin, personal communication, March 11, 2013). Although this experience is perhaps uncommon, it demonstrates the philosophical center of this simplicity. Jay Austin was already striving for simplicity by reducing the number of things he owned before he moved into a tiny home. The home was just another means of achieving this goal.

### **4.1.2 Sustainability/Environmentalism**

Sustainability is one of the primary themes surrounding tiny housing, although the level of environmental design varies from case to case. On a basic level, all tiny housing is environmental because of a reduction in resource use of the buildings. Some argue that this allows a greater attention to quality and design (Wilson & Boehland, 2005). As noted above, this often leads to benefits that are more than proportional.

Some tiny home owners and companies take this a step further by integrating recycled and reclaimed materials. Some home owners consider this essential to the message of tiny houses. One company, Tiny Texas Houses, designs homes that are made from 99% recycled materials (Kittel, 2013). Tiny Texas Houses pride themselves on using quality reclaimed materials rather than poor quality factory made new products. Many other tiny house people utilize recycled materials to a lesser extent. Sometimes they can even be used in interesting and creative ways, using reclaimed objects as furniture, storage or décor (Diedricksen, 2013). Any time reclaimed materials are used, this reduces the overall environmental impact of the home. New materials require the extraction of further resources and the treatment of them with chemicals to make them usable. In the case of reclaimed materials, the damage is already done and no additional harm to the environment is necessary. Finally, tiny housing also reduces reliance on fossil fuels because tiny homes require less energy to heat and cool.

In many cases, tiny housing has a positive environmental impact because it allows for reduced consumption in other aspects of life. One article notes “denunciation of conspicuous consumption and a rejection of the idea that more is more” associated with tiny housing (Wax, 2012). This concept plays into the simplicity argument noted above. Tiny home owners often consume less material goods because they have less storage (Williams, 2011). This means they are able to remove themselves from the highly consumeristic behaviors and have a lessened environmental impact because of their purchase of fewer goods.

This concept is difficult, however, because environmental impact is not dependant only on house size. Although smaller homes consume less building materials, when it comes to other aspects such as energy use, large homes can be low-impact and small homes can consumer a great deal. Additionally impact is dependent on where the home is located, for example small homes on large pieces of land still have the footprint of the land as well (Johnson, personal communication, March 13, 2013). One interviewee considered sustainability as one of the main aspects tiny home owners must keep in mind when designing their place (Williams, personal communication, March 21, 2013). She works to help make sure that her clients understand the impact of each of the decisions they make. Although it is important, she notes, to understand that home owners are making these decisions also based on their timelines and budgets. Even if they want to be as environmental as possible, sometimes they must make sacrifices in this area to account for their financial or time constraints. “I try to make sure people understand the consequences or the impacts of the choices they are making” (Williams, personal communication, March 21, 2013).

### **4.1.3 Cost**

The recent housing crisis has lead to an abnormal increase in house price and to extended mortgage financing (Park & Hong, 2012). Owning and mortgaging a home has become a great deal more expensive. The burst of the housing bubble in the United States in 2008 was a direct reason for some tiny home owners to shift to tiny living. This was the motive inspiring one family to downsize to a tiny place (Berzins, personal communication, April 8, 2013). Before the crash Hari Berzins and her husband were working together to run a restaurant and mortgaging a house. When the economy fell, they found this lifestyle

unsustainable and vowed to never live on credit again. Through [tinyhouseblog.com](http://tinyhouseblog.com) they came across the concept of tiny houses and began building their 168 square foot (15.6 square meter) place as a temporary residence. By living here while they gradually saved up and worked on building their larger 1300 square foot (121 square meter) place they were able to avoid the economic reliance on loans that had failed them previously (Berzins, personal communication, April 8, 2013).

The Berzins family was not alone. Other tiny home owners also cited financial stress as a reason for downsizing. One interviewee talks about simplifying his life to make sure his income exceeded his living expenses. As he explains it, “Even if a person is not strapped financially, there are always better things to spend money on” (Johnson, personal communication, March 13, 2013). Tiny homes in general are much cheaper to build and maintain. While many people can barely afford a down payment on a larger home, many tiny homes cost between \$20,000 and \$50,000 (Wax, 2012). Interest in this alternative has only increased post economic-crash as people have less money to spend (Chea, 2010). Many home owners consider the low cost an advantage because spending less on home and maintenance allows them to splurge more on other pleasures in life (Wilkinson, 2011). The only drawback is that tiny homes tend to cost more per square foot than larger houses (Foreman & Lee, 2005).

Another major advantage of the tiny lifestyle is that most tiny home owners do not pay a mortgage or rent once their home is complete. By building a tiny home, you can become a homeowner in about a year. Most people take 30 years to achieve the same (Austin, personal communication, March 11, 2013). This leads to a significantly reduced cost of living, depending on other living costs including food, utilities, and transportation. One tiny home owner is able to live on only \$15,000 a year including luxuries such as a car, eating out and comprehensive insurance (Mitchell, 2013). Another claims to live for only \$12,000 a year, with half of that going to health insurance. Although some of this is due to frugality, some of it can be attributed to low cost of living through reduced monthly house payments and utilities. One tiny home dweller claims to pay only \$8 a month in utilities (Williams, 2011), which can have a dramatic impact in overall monthly costs.

#### **4.1.4 Freedom and Mobility**

Freedom is a common theme cited by many when describing their shift to the tiny lifestyle. One tiny homeowner states this as a primary motivation for moving to a tiny home. As she explained in an interview, “There is a certain cycle of consumerism with owning a home that it is very difficult to get away from” (Williams, personal communication, March 21, 2013). Dee Williams moved into her little house after two major life events. While travelling in Guatemala she became ashamed of how much time and money she was spending on her home (Nelson, 2013). Shifting to tiny living was a way of preserving this time and money to spend on more important things like friends and family. By downsizing to a tiny house, Dee Williams was able to spend more of her time doing what she loved, including volunteering, and to send money back to the people she had met. Around the same time she was diagnosed with congestive heart failure, encouraging her to spend her time in ways she enjoyed (Williams, 2011).

This theme was echoed by many of the tiny house interviewees. By spending less money on their homes, they had more freedom to do what they please. One interview subject uses the opportunity this creates to follow other passions. Because of his low cost of living, Jay Austin is able to spend a few months working then take time off to travel (personal communication, March 11, 2013). The mobility of tiny homes allows this to be achieved quite easily. Instead of packing up things and finding someone to care for your home, you can just hitch your

home to a trailer and go. Although not all tiny homes are on wheels, this seems to be the trend and many tiny home owners find this a major benefit. In some cases, this leads to a connection between tiny houses and campers or RVs. One source of skepticism comes from critics who do not see the purpose of spending more money on building a customized tiny home when other mobile vehicles are more inexpensive (Myers, personal communication, May 2, 2013). Tiny homes, however, tend to be better built and insulated, and can be designed to fit the individuals needs.

For the Berzins family, this was a crucial factor in their building a tiny house. They were looking for a place of temporary shelter while building a bigger place. They bought land in Virginia, but were living in Florida when they made the decision to sever reliance on mortgages and loans. The tiny house made this more feasible because they were able to build their tiny place at home in Florida while they started looking for jobs for their move to Virginia (personal communication, April 8, 2013). Even without direct plans, tiny home owners value the flexibility that comes with owning a home on wheels. As one interviewee puts it, “If you want to move, you don’t have to abandon or sell your house that you spent so much time and money and effort on”(Austin, personal communication, March 11, 2013). Another interview subject discusses this as a great option for students. Instead of buying a home that ties them down, they can become homeowners and still have the freedom to move easily.

#### **4.1.5 Alternative Forms of Community**

Despite the isolation that can come from living in a tiny place, many advocates cite community as one of their motivations behind switching to tiny housing. Although this seems contrary to the motivation of freedom, some interviewees felt the appeal of both of these aspects of tiny housing. As one interviewee puts it, “I think it has actually continued throughout the movement, because there is a lack of community in our suburban culture”(Shafer, personal communication, March 26, 2013). This comment was in reference to receiving help during the building process, but other tiny home owners find greater community in their every day lives.

This is the case for Dee Williams, who moved into a tiny house to maintain a close relationship with her former neighbors. She parked her tiny house in the shadow of her friends so she could be in a place of support if her health got worse (Williams, personal communication, March 21, 2013). By setting herself up close to supportive friends, Williams was dependent on them but also found closer relationships. In another scenario, one interviewee discusses the sense of community he has found in his tiny house community. In this community three tiny home owners have built their homes together on one plot of land. This allowed them to work together to build their homes and will continue due to their common greenspace. Even in cases where tiny homes are built individually, many interviewees relied upon their friends and family to help them build their homes. One interviewee received some form of help from 30 different members of her friends and family (Ansen, personal communication, May 4, 2013). This help was instrumental to the success and completion of her home.

#### **4.1.6 Design and Building**

Sometimes interest in Tiny Houses stems primarily from an interest in design. One enthusiast remembers building cabins and playhouses as a kid. When he turned ten he received Lester Walkers, *Tiny Housing* for his birthday (Diedricksen, Personal Communication, 6 March 2013). This sparked an interest in tiny houses that carried into adulthood, and now he has several tiny house and cabin projects going at all times. Jay Shafer speaks of similar motivations, he

simply wanted to make pretty houses and combined this interest with a desire to live in less space (personal communication, March, 26 2013). As an architect, Macy Miler also considered design as an important aspect of her decision. She talks about her interest in implementing green designs she came across in her work as an architect. She was recommending certain technologies to clients and felt it would be beneficial to get more experience with the designs she was recommending. She also hoped to gain a better understanding of construction as she had designed places but had no practical building experience (personal communication, April, 11 2013).

## **4.2 Challenges**

Aside from sharing similar motivations, the sources reviewed for this section faced similar motivations as well. These are important to understand because addressing these could make tiny housing more accessible to a wider sector of the population. Although these challenges continue to be better defined as the movement grows, one interviewee also believes that the expansion of involvement will help to overcome many of these including “more networking of resources, more open sourcing of plans, more accessibility and transparency of building codes, and more honesty about the difficulties of tiny house living” (Ansen, personal communication, May 4, 2013).

### **4.2.1 Legal constraints**

Tiny housing is still a new concept in most places, and is not always compatible with local laws. For example, in many municipalities there are minimum size limits for habitability. In some cases this is to protect lower income groups from exploitation. This poses a problem for tiny home owners, however, because they are subject to the same laws. “Zoning regulations, restrictive covenants (i.e. provisions in the deed for the property that restrict the way the property may be used by the owners) and design standards for specific subdivisions, and even mortgage banking requirements can significantly limit options for creating small, space-efficient, single-family houses” (Wilson & Boehland, 2005). One interviewee cites this as one reason why she gave up her tiny home all together. After building it as part of her Master’s thesis, Sarah Myers found that she couldn’t park it legally in the town where she wanted to live (personal communication, May 2, 2013).

In many cases municipalities have minimum sizes limitations for houses of between 850 and 1,800 square feet (roughly 79 to 167 square meters). Some neighborhoods have additional restrictions. This is one of the primary motivations behind building tiny homes on trailers. This allows them to be subject to different restrictions than stationary homes. This practice can pose other problems, however. One interviewee points out that in some areas this means that they are only intended to be part time residences (Austin, personal communication, March 11, 2013). In some places, if tiny homes are not parked on land designated for trailers they cannot be lived in full time. In general, it is complicated because as one interviewee puts it, “it is difficult because it seems like a lot of cities do not know how to classify these structures” (Strobel, personal communication, April 16, 2013). Either way, building tiny homes on trailers is often a smart financial move. Then the owner needs to pay only the license fee and not the property tax to live there (Corley, 2006). For this reason, tiny home design firms focus on portable options (Tumbleweed Tiny House Company, 2012).

In the case of Washington, DC there are additional restrictions because the municipality does not want building on small lots (Wax, 2012). While tiny home enthusiasts are looking to build their homes on deserted alleyways in the city, this is not legal unless the section is at least 30 feet (9.1meters) wide. In this case, laws can also be overcome by building tiny homes on wheels so that they are treated as mobile homes.

One interviewee discusses facing her worst fears by being told her dwelling was illegal (Berzins, personal communication, April 8, 2013). Despite being built on wheels and having a license plate, she was told that her families home needed to comply with local building regulations. In the end, the place was approved safe by a certified engineer and they were granted a Certificate of Occupancy (Berzins, 2013). Although the outcome was fine, this kind of challenge occurs in tiny housing because the legal measures needed are not always well documented.

Despite these universal challenges, several interviewees think these laws can change. Macy Miller talks about how rules and regulations exist for a reason, and in many cases have been voted in by the community (Miller, personal communication, April 11, 2013). In order to change them tiny housing advocates need to get involved. She worked to achieve this in her hometown of Boise, Idaho by joining the planning and zoning commission.

### **4.2.2 Perceptions**

Another challenge frequently faced by tiny home owners is the perception of greater society. Tiny housing is still a relatively new movement, and those not involved can be very critical. As one interviewee puts it, “That is part of what is interesting about the movement, the semantics of it. If you describe an apartment as 10 by 12, that sounds liveable but if it is a house that is 10 by 12 that just sounds outrageous” (Johnson, personal communication, March 13, 2013).

Another interviewee discusses the role that social norms and perceptions directly play on her family (Berzins, personal communication, April 8, 2013). She feels that this is especially challenging for her school age children. She also mentions some negative feedback she has received from mainstream media exposure. On the other hand, she also references being able to turn to the tiny house community for support. As one tiny homeowner puts it “I think the hardest part is that it is not normal, people do not think of it as a viable living situation sometimes...you are kind of challenging societal norms in some ways” (Strobel, personal communication, April 16, 2013). She elaborates that usually after some explanation people come around, but it can still be a challenge if people are unable to understand where you are coming from.

### **4.2.3 Financing**

As described above, tiny housing has numerous financial benefits, but usually requires a decent sum of startup cash. As one interviewee describes, “if someone does not have 30,000 [\$] in their account to build a tiny house, it is going to be hard for them to get financing” (Strobel, personal communication, April 16, 2013). Generally, it is not even possible to mortgage any house less than 400 square feet (Wilkinson, 2011). For some tiny home owners this is the beauty of the arrangement. You pay for everything out of pocket to avoid owing money, but this does not work for everyone. There are some alternatives for example, “they could do a personal loan but typically those have higher interest rates” (Strobel, personal communication, April 16, 2013). In a way, this limits access to those with a big enough savings to build a tiny home.

## **4.3 Unique Aspects**

Aside from identifying common motivations and challenges faced when shifting to tiny housing, this review also came across a number of themes and unique traits frequently discussed by tiny home owners. It is hoped that this section will give some insight into the tiny housing trend. By better understanding what the primary issues in tiny housing are, it is

easier to understand the growth of the trend and the lifestyles of those involved. It is hoped that these aspects will help inform the analysis performed in Chapter 5.

### **4.3.1 Design**

In order for tiny homes to remain appealing, there is often a significant design element required. Building a normal home on a tiny lot would make the whole space feel overcrowded (Craft, 2010). Instead, design alterations are necessary. One common way of influencing the home design is by abolishing transition spaces such as entryways and hallways. Also reducing the number of inner walls by creating open kitchen/dining/living areas (Wilson & Boehland, 2005). Other designs use furniture that folds into walls allowing spaces to have multiple uses (Craft, 2010). Also popular, is the concept of lofting the sleeping area to cut down on square footage (Tumbleweed Tiny House Company, 2013a). This seems to be the dominant design in tiny homes with most sleeping areas lofted. Another concept is to foster efficiency such as saving plumbing materials by building the kitchen and bathroom back to back or saving on energy cost through light and heat retention (Kahn, 2012). To make the space more livable, small spaces can be improved visually by utilizing a variety of ceiling heights, including colors and textures and making the most of the natural light (Wilson & Boehland, 2005)

One key aspect of tiny houses is the ability for homeowners to build places that fit their needs. As one tiny home designer explains it, “The next logical step in tiny houses is to make them more flexible so that they meet peoples needs more easily, because everybody who has bought my plans has customized them to make them their own” (Shafer, personal communication, March 26, 2013). Each tiny home owner must decide what they can manage to sacrifice. While one tiny homeowner may be able to sacrifice a shower to save space, this might be very important to another tiny homeowner that does not have other facilities to use. Another example is in the kitchen. While some tiny home owners may be able to get by with a one-burner stove and a cooler, others may want a full size oven and a small refrigerator. This is an interesting concept because it requires each tiny homeowner to evaluate their needs and build accordingly. For this reason, many tiny home owners are involved in the process of designing their own places.

This trend was evident in several interviews. One homeowner discusses the decision to downsize to a 10 by 7ft (roughly 3 by 2.1 m) home without a fullsize kitchen or bathroom. While many people would consider this too small it all depends on the needs of the person living there (Johnson, personal communication, March 13, 2013). Johnson, however, chose such a minimal place on purpose because he wanted to “push the envelope of smallness”. Another homeowner interviewed incorporated her personal style and usage into her design (Miller, personal communication, April 11, 2013). She preferred the look of drywall to wood and a general clean modern design. She also mentions designing a greater indoor/outdoor space into the floor plan.

#### **4.3.1.1 Plumbing**

Many tiny home owners consider sustainability a priority and implement greener alternatives in their designs. Although some of this is due to a sustainability ideology, part of this is a matter of practicality. Tiny homes are often built on trailers altering their potential for connection to the energy and water grids. As one interview subject put it, “In many cases you do not have the option of hooking up a flush toilet because the city will not allow it” (Mitchell, personal communication, March 13, 2013). Some tiny homes are designed to be connected to municipal water and sewage systems like traditional mobile homes (Tumbleweed Tiny House Company, 2013b). Others have alternative systems to collect and utilize rainwater for shower and hygiene purposes. This type of system must be incorporated into home design with collection coming from the gutters (Northwestern Tiny House Project, 2013). In some

cases (as with the Northwestern project house) the coverage area of the home is increased using awnings to improve rain catchment. This kind of rainwater collection system usually includes a filtration mechanism, a storage tank, and a pump to move the filtered water.

Some tiny home owners take this farther for reasons of simplicity. Rather than installing a plumbing system in her home, one homeowner forgoes running water altogether (Williams, 2011). Instead she showers at work or at her neighbors. This system is not inherently good for the environment, because water use in the home is replaced with water use elsewhere. It is likely, however, that this results in reduced usage as the homeowner is more aware of water usage when it requires an increased effort.

In addition to water use, many tiny homes have alternative toilet systems to remove the need for connection to local sewage systems. It seems the most popular alternative is the composting toilet. These can be purchased from toilet manufacturers or built by the homeowners themselves using simple materials. Many of them include ability to separate urine or fans to improve air circulation. Composting toilets work by allowing the natural bacteria in excrement to break down the solid waste (Biolet, 2013). They work just like regular toilets, but rather than flushing, a compost additive is thrown in after use. Electric manufactured designs look very similar to flush toilets and are set up with fans to reduce odor and covers to hide the waste. These also have waste mixers that work similarly to large-scale treatment facilities to expedite the breakdown of solid waste. Self designed systems can be much simpler with toilet seats fastened over plastic waste collection bins (Barrett, 2010). Both models require emptying the waste periodically. Many manufactured varieties break the waste all the way down to humus so this can be disposed of as garden mulch (Biolet, 2013). Self-made varieties usually have waste that requires further breakdown in composting piles to get rid of extra bacteria (Learn, 2011).

#### **4.3.1.2 Electricity and Heating.**

Although some tiny houses are hooked up to the energy grid, others utilize alternative energy solutions to reduce reliance (Wilkinson, 2011). One popular alternative is the use of solar panels to generate electricity. This can be done through the use of portable solar generators, or by utilizing more permanent options (Mueller, 2012). Different systems provide different wattage based on the tiny homeowner needs. Another option is to utilize wind power to create electricity, although specific examples of this technology are limited (Nellemann, 2010).

Although tiny houses require less heating, they are often built in places where heating systems are required. Rather than relying on electricity for heating, most seem to utilize passive heating where possible and otherwise rely on freestanding heaters. These fit into two categories, wood-burning heaters and gas/propane heaters (Griswold, 2008). In order to find compact models, sometimes boat heaters are used.

#### **4.3.1.3 Living off the grid**

In some cases, tiny homes are designed to be entirely off the grid. One interviewee discusses implementing systems to obtain the lowest level of input and output in his home. This included implementing solar power, rain catchment and grey-water systems so he was not reliant on the external grid (Austin, personal communication, March 11, 2013). This way he can collect and reuse his water and can create his own energy. Another interviewee is also building her home to be off-grid compatible (Miller, personal communication, April 11, 2013). She has incorporated a solar battery closet, radiant floor heat system, green roof and composting toilet into the home design, although for the time being it is still on the grid. Energy is relatively cheap in Boise, Idaho where she lives, allowing her to get energy from the

grid now. In the future if she moves or takes the home on the road she will have the opportunity to switch to a completely off the grid system.

### **4.3.2 Do-it-yourself mentality**

One large component of the tiny housing movement is the do-it-yourself culture associated with it. According to an interviewee who runs a tiny house company, about 75% of her clients were working to build their own home (Williams, personal communication, March 21, 2013). In contrast to traditional forms of housing, where homeowners hire contractors to complete work, many tiny home owners build their homes themselves with help from friends and family. This has several benefits. By doing the labor yourself, you can save up to 50-60% of the cost of building the house (Mitchell, personal communication, March 13, 2013). Additionally, they have the benefit of someone who truly cares about the result building their home, rather than a construction company who views it as another line item.

In cases where they do not feel like they have the skills to build themselves, there are a few options for aspiring tiny home owners. One is to hire a contractor to do the work. One interviewee suggests that even in this case, the home owners ended up “swinging a hammer side-by-side” with the contractors. The other popular option is to attend the growing number of workshops to share home building skills. Many of these learning workshops are hosted by tiny house companies. Tumbleweed hosts weekend workshops all across the country (Tumbleweed Tiny House Company, 2013c). These workshops are designed to give tiny home enthusiasts the knowledge and skills to build their own homes. Portland Alternative Dwellings also hosts workshops where participants learn skills by building actual tiny homes (Portland Alternative Dwellings, 2013). Other workshops are hosted by tiny house websites (Diedricksen, 2012). In general the workshops allow for networking among people hoping to build tiny homes.

One interviewee pointed out there is a downside to this aspect of the trend. Most tiny home owners do not have construction experience, leading to the possibility of mistakes. Additionally, because of confusing laws they often go uninspected. Unfortunately this has the possibility of leading to unsafe dwellings and possible tragedy (Miller, personal communication, April 11, 2013).

### **4.3.3 Information Sharing/Community**

Because of the counter culture associated with the tiny housing movement, a unique community has popped up amongst tiny home owners. As described in section 4.1 this is one of the drivers behind some residents choice of tiny housing. In other cases this is a unique way to gain information and support. There is a lot of interest in sharing information through blogging. One blogger considers his site as a way to share his progress and help other tiny home owners to follow along. He says that “one of the things I try to do is to connect people with the information to empower them to build their own home” (Mitchell, personal communication, March 13, 2013).

Other homeowners talk about being on the other side of this information sharing. Because tiny houses are still kind of a niche interest “it is very difficult to find comprehensive resources that are in any way helpful” (Austin, personal communication, March 11, 2013). As one interviewee puts it, “I think I would feel a lot crazier if there were not tiny house people across the country and in other countries” (Miller, personal communication, April 11, 2013). There is not a lot going on locally, so it helps to find other people via the internet and social media to help answer some of your questions. “So you do not have to explain yourself to the guy at home depot again for the fifth time”. In this way, the internet presence of the tiny

housing community is practical. It provides information that is otherwise difficult to find in consolidated spaces. It also provides the lessons of experience for others.

The tiny housing community can also provide positive moral to isolated home owners. As one interviewee puts it, “When you are going against the mainstream culture like us, it is nice to know that there are other people who are interested in what your doing and support you and do not think you are crazy” (Berzins, personal communication, April 8, 2013). Mainstream media exposure often leads to extremely negative commentary from critics of tiny housing. In these situations it is helpful to have positive feedback and support from others in the community.

The small house society was formed with this kind of support in mind. Although when it first began instances of individuals living in tiny houses were limited. Jay Shafer explains, “with the small house society and with Dee out here on the west coast we started to try to basically form a support group for people who were trying to live small because it was kind of unheard of at the time” (Personal Communication, March 26, 2013). This is also some of the idea behind small house companies that work to provide information to clients.

Despite the apparent trend of involvement in the online tiny housing community, many homeowners are not involved in this trend. While many tiny home owners find this valuable and want to share or gain information, others prefer tiny houses because they can be quite isolated. They are able to live off the grid in their self-built tiny homes, and are unlikely to be interested in sharing their experiences (Diedricksen, personal communication, March 6, 2013).

#### **4.3.4 Learning Opportunities**

Interestingly enough, the majority of tiny house residents and advocates interviewed did not think tiny housing was a viable alternative for everyone. Rather, many people prefer more conventional housing with larger spaces. Several interviewees, however, mentioned ways in which they thought tiny housing could benefit greater sections of the population. As one interviewee explained it, “What it will do is provide a lot of lessons and systems and approaches to different things in terms of living and housing that could be generalized to other homes in the future” (Mitchell, personal communication, March 13, 2013). In this way the practices and systems being developed by tiny home owners could help the greater population.

In some cases, tiny house advocates utilize their homes directly for this type of outreach. One example comes from interviewee Dee Williams. After building her home she spent a great deal of time on education opportunities for elementary school and college programs. She founded Portland Alternative Dwellings as a way to write off the expenses of these ventures (personal communication, March 21, 2013). Another example of this type of outreach can be found in the Boneyard community in Washington, DC where homeowners hold openhouses, build days, and other gatherings to demonstrate how well designed urban communities can be successful (Austin, personal communication, March 11, 2013)

#### **4.3.5 Alternate usage**

Tiny homes are considered especially interesting to certain generations and groups of people (Wax, 2012). The literature seems to be full of recommendations for alternate niches for tiny homes. They provide a good housing alternative, either as a way to avoid long-term mortgages for young people or as a smaller place to retire for older generations. In many cases tiny houses can replace mobile homes by being built to the same specifications but with better materials and more charm (Chea, 2010). They can also be used as additions for workspaces or living spaces for aging parents (Chea, 2010). One source elaborates on alternative uses for tiny

homes, including empty nesters, newlyweds, student housing, vacation homes, and a source for rental income (Foreman & Lee, 2005).

One advocate of tiny houses even marketed them to survivors of Hurricane Katrina as alternatives to federal aid (Corley, 2006). These Katrina Cottages are usually more charming alternatives to the FEMA trailer, with ability to easily hook up to the electrical and power grid and a front porch. This is generally economically feasible because tiny homes can be built for as low as \$10,000 or \$15,000. In contrast, a group of designers created another disaster relief tiny home option that is transported more easily and can be shipped off immediately. The AbleNook design ships flat and can be put together in a few hours without the use of powertools (Borgobello, 2013). Although these models are small they can be combined to create larger dwellings.

In one case, tiny housing is being introduced as an alternative to slum dwellings in Mumbai, India. The “Housing Development & Infrastructure” company is financing the project in exchange for rights to the land where the Gaodevi slum is currently located (Bahree, 2010). Land is in such high demand in Mumbai that they have agreed to finance 85,000 apartments for current slum dwellers to gain 65 acres of land. The family apartments are 269 square feet (about 25 square meters) and include a kitchen and bathroom. Current slum dwellers can rent the apartments free of charge in exchange for approving the project and will be able to sell them after 10 years. In general, these places are a major upgrade for families living in slums.

## **5 Room for Growth – A Niche Function Analysis of Six Potential Markets**

If we hope to counteract environmental degradation and raw material consumption, much benefit could come from expansion of the tiny housing trend. Although the impact of these homes varies greatly from one to the next, and is highly dependent on lifestyle choices, small homes intuitively consume less in some ways than larger homes. When interviewed, subjects universally believed that tiny housing could work for a larger sector of the population. They also universally agreed that it was not a good choice for everyone and should not be advocated as so. As one interviewee puts it, “In the end we are purposing or suggesting that people consider the space they live in and the impact it has” (Mitchell, personal communication, March 13, 2013). It is this aspect that can be applied more universally than the practice of living in compact spaces.

This section will discuss a handful of niche markets put forth during interviews and literature. The analysis of the potential these niche markets hold is based on the framework introduced in Chapter 2. As Geels Technological Transition Theory proposes, niche markets are key for the proliferation of a technology (in this case compact housing) at higher levels in the socio-technological fabric. The goal of this growth is not necessarily replacing the incumbent technology, but instead is to increase social acceptance of this kind of housing, as well as mindfulness of the impact of housing choices.

In order to evaluate the success of each proposed niche, the markets will be compared to a set of niche functions as established in the framework in Chapter 2. These are formed by integrating niche functions from Geels Technological Transition Theory with a list of functions established by Anna Bergek’s TIS theory. These functions include: social support networks, improved knowledge and improved performance, articulation and adjustment of expectations, legitimization/stabilization, and resource mobilization. Each niche is first explained and reasons for interest are established, then the ability to fulfill the functions is analyzed.

### **5.1 Young Adults**

One of the most obvious niche markets for tiny housing is young people new to the career world. Because they have not lived on their own for as long, younger people often own less stuff. As one interviewee puts it, “they have not had the house with the two car garage yet so they do not have all that clutter” (Johnson, personal communication, March 13, 2013). Tiny housing has limited storage space causing problems if dwellers own too many belongings.

Another important factor that makes younger people a possible niche market is that they typically have a smaller family size. Younger people who are single or want to move into a tiny house as a couple are in many cases a better alternative because they only require one sleeping space. Additionally, tiny housing can be difficult with children because they need space to play, although this can be overcome by compensating with more outdoor play spaces. In general, younger people are more likely to accept tiny housing because they are freer from preconceptions (Diedricksen, personal communication, March 6, 2013). They are more open-minded than their older counterparts allowing them to accept this alternative housing.

Choosing tiny housing as an alternative can be beneficial to young people. In most cases they have less savings and can prevent years of paying rent by owning their own place at a younger age. This will lead to extended savings over their lifetime and will provide an opportunity for ownership. Additionally, as many tiny homes are built on trailers it eliminates the geographical

restrictions of buying most places. Young people can purchase or build a place and still have the opportunity to move as their career and lives change.

It is important to note, however, that tiny housing does not provide a realistic opportunity for all young people. This is highly reliant on their upbringing and priorities. One obstacle can be the lifestyle established as teens. If they were raised in larger households with more material goods it can restrict willingness to make sacrifices in these areas. Additionally, young people are often divided on the issue of environmental preservation. While some members of this group think this is especially valuable and find sustainability a priority in their lifestyle, others are not particularly invested in the impact their actions have on the environment. Even in this case, however, they may still be interested in tiny housing for alternative motivations such as cost efficiency or improved mobility.

### **5.1.1 Niche function analysis**

As a niche, young adults perform all five functions set forth in the analysis framework. As a technology, tiny housing has already established *social support networks* as described in chapter 4. Young people have a great ability to bolster these networks because they are highly reliant on the use of the internet. Statistically, young adults along with teens have the highest percentage using online media, with 72% of adults between the age of 18 and 29 using social media and 15% regularly maintaining blogs (Lenhart et al., 2010). Young adults often have strong experience using the internet and social media and are likely to get involved in the existing tiny housing presence there. This involvement would lead to improved advocacy and awareness about tiny housing and would increase approval.

The second function of *improved knowledge and performance* can be fulfilled by increased involvement in general. Although young adults do not necessarily have any advantages over any other group, they are capable of improving the performance by implementing innovations while building their homes. They may have a unique role, however, as young adults are often more mentally flexible leading to a greater sense of acceptance and possible solutions that might not be seen by other groups. They can also fulfill the third function of *articulation and adjustment of expectations* as they tailor their homes to fit their needs. This function can be augmented if they work together with tiny housing companies. By collaborating to build compact homes that fit their needs, the expectations of the technology can be better defined. It is important to understand, however, that this does not necessarily work in the same way as with traditional technologies as there is no formal research and development. Instead it is likely to occur from alterations to meet individual need.

The growth of tiny housing among a younger generation works to fulfill the function of *legitimization/stabilization* by improving social acceptance of the compact housing trend. If a wider sector of the young population shifts to tiny housing, it will become a more established concept as they age. As pointed out in interviews, young people are free from preconceptions when compared with older generations. As more young people move to tiny homes, the acceptability of this type of dwelling will improve allowing greater attraction for more conservative populations afraid of otherwise taking the risk.

In terms of the final function, *resource mobilization*, the younger generation may contribute less than other niches. Young adults have less savings and less financial resources to mobilize into the technology. Simply by purchasing the compact homes and their complementary products, however, they will contribute to this function.

## 5.2 Students

University students as a niche market provide many of the same benefits as with young people in general. Students are also typically childless and unburdened by belongings. They can benefit just as much from early home ownership, and from avoiding rent during their education. They also tend to be very openminded as they are at the age where they are encouraged to question things. Tiny homes are also beneficial because once they graduate they can move their home to where they want to work, assuming they can find a place to put it. This is of course contingent on students having enough financial capital to invest in tiny homes. Generally, this is more expensive than the average housing rent paid over four years of school. However, the investment would be more rewarding because they would own their home at the end of their studies. Additionally, in some cases students are required to live on campus or their housing arrangements are dependent on the type of loans they get.

Aside from these similarities, there are other supporting factors behind student housing as a niche for tiny houses. Part of this draws from the dynamics that are found in most college towns. It is already common for students to have a shared bathroom and kitchen, making compact housing less of a stress. Gregory Johnson found that living a college town made his transition to tiny housing much easier (personal communication, March 13, 2013). There are already thousands of students riding bicycles and taking buses everywhere, making his goal of foot and bicycle transportation realistic. He also found that in college towns there are many coffee houses and communal meeting spaces because most students do not have space for this at home. There was easy availability of exercise facilities geared towards students. Not all students live in student towns, however, which can alter the viability of tiny homes. Some universities are integrated into large cities producing a different dynamic that is not as hospitable to tiny housing.

### 5.2.1 Niche function analysis

In terms of analysis, students fulfill the niche functions in a similar manner to young adults. They are able to fulfill the first function because like young adults they are also adept with the internet and social media allowing a *contribution to social support networks*. In addition, students are often connected by their own social support networks to provide a sense of community in universities. If a student community is taken as a single niche and developed as such, this network can be used to foster the growth of the tiny housing movement.

The student community would fulfill the second function of *improved knowledge and performance* in the same way as young adults. As they build their homes they would help to improve the ability of the homes to fit their individual needs. They would also advance the third function by altering expectations. If tiny housing becomes widespread enough in the student community it could alter the way this entire group of people views their housing needs. If tiny housing for students gains popularity then it will become a more acceptable alternative, allowing fulfillment of the fourth function of *legitimization* at the same time.

In certain cases, student housing as a niche market could have a negative effect on the fulfillment of the functions of *articulation and adjustment of expectations* and *legitimization/stabilization*. This would happen if tiny housing becomes viewed as a student movement and living in tiny homes gains negative ground for the average person. If tiny housing became viewed as a student only dwelling (as with dorm rooms in North America) this could limit the growth of the movement in other sectors.

There is also the question of student's ability to perform the fifth function of *resource mobilization*. Students (as young people) have limited savings. They often must work or take

loans to pay for their tuition and expenses. This limits their ability to invest in the movement. This is especially problematic as tiny houses are often paid for up front eliminating the possibility to fund them in the same way as traditional rents. If the student is using a traditional loan packet, this may be problematic as they may get the years funds in monthly installments.

### **5.3 Retirees**

Retirees and older adults already play a large role in the tiny housing movement. According to a survey of around 2600 tiny home dwellers, 38% of the tiny housing population is over the age of 50. This is significantly higher than other age brackets with 21% of the population under 30 and another 21% between the ages of 30 and 40. In a way it makes sense for this lifestyle to appeal to people over 50 and into retirement. People in their 60s or 70s often have a similar return to freedom to young people because they no longer have children depending on them. In some cases it may appeal to them to downsize their dwellings in order to save money and simplify their lives. This lifestyle is quite similar to the snowbird phenomenon in the US (Johnson, personal communication, March 13, 2013). This includes groups of people who leave their primary residence for warmer climates during the winter in what is known as temporary migration (Smith & House, 2006). Tiny homes can fit well within this trend because if they are built on trailers the entire home can be packed up and moved south for the winter.

Additionally, after the 2008 market crash retirees are facing retirement with reduced savings. (Mitchell, personal communication, March 13, 2013). This puts many people in a position of having to work longer and retire on less. This makes tiny housing appealing because investing in building a small home and changing lifestyle can allow retirees to limit their monthly expenses. This way they can retire on time and still have freedom with their money by reducing their housing costs.

#### **5.3.1 Niche function analysis**

As a niche group, retirees are able to perform all five functions. Although they are typically less proficient when it comes to internet usage, they are still able to take part in online discussions contributing to the *establishment of social support networks*. In cases where they are uncomfortable taking part in blogs or online discussions they may consider branching out to in-person networks as with the tiny housing workshops provided by many tiny housing companies. Through these networks they will grow and nurture the technology.

As with other niches, retirees can contribute to the second function of *improved knowledge and performance* by adding numbers to the tiny houses built. By creating designs to fit their needs, retirees can improve the overall performance of the technology. This can in a way be amplified as niches are combined because different groups of people will have different needs for a tiny home resulting in a triangulation of the best designs and features.

Retirees are likely to be very successful at completing the third niche function of *articulation and adjustment of expectations*. Because many of these people will have owned homes before, they are more likely to have an in-depth understanding of what type of features are desirable. Perhaps this will help shift expectations toward the norm rather than viewing tiny housing as a market fad leading to better niche *stabilization*. As with young people, better permeation helps the public to understand the goals of the market. In many cases direct contact is the best way to convert people into better understanding of the goals of the trend (Myers, personal communication, May 2, 2013).

Finally, retirees are better positioned to perform the function of *resource mobilization* than other groups. In terms of financial resources this can go either way. While some retirees may be most interested in tiny housing for financial reasons and may have limited resources (particularly those who have been hit by the recent market crash), this can also go the other way. While these retirees will not have substantial financial capital to invest into tiny housing, retirees that are interested for ideological reasons are more likely to have a savings and to be willing to invest this in their housing. Retirees also have the benefit of having a great deal of human resources to contribute to tiny housing. Because they are no longer working they are more likely to have free time to commit to development of the technology and especially better community education about tiny housing.

## 5.4 Seniors

Tiny housing for the elderly has also gained some attention as a potential niche market for development. For the purpose of this paper, this category is differentiated from the previous category of Retirees. Although seniors are already retired, this category focuses on individuals who have reached an age where their lifestyle changes again. These people often want to be closer to family and sometimes need more medical attention than those considered in the “retirees” category. Tiny housing can provide an ideal set up for them. As one interviewee explains, by placing tiny homes in the backyards of family, elderly individuals or couples can be well outfitted (Berzins, personal communications, April 8, 2013). Tiny homes are often tailored to the needs of their residents, which can benefit the older dweller. Some homes are just smaller options that can be placed close to friends and family. This way the resident can be close to those they love while still maintaining their independence. One company, Elder Cottages, designs homes specifically for this purpose (Elder Cottages, 2013). They are somewhat different from the typical tiny home, however, and are designed to be more accessible with sleeping rooms that are not lofted and larger entryways. Some of these homes can also be furnished to provide medical support closer to home. One company, MEDcottage, provides designs precisely for this purpose (Kunkle, 2010). These homes come with technology to improve care and are considered an alternative to nursing homes.

### 5.4.1 Niche function analysis

Seniors are less likely to be able to perform all five niche functions than other niches considered. The type of tiny homes considered for this group requires less dweller involvement in the development process. This means that fulfillment of the second and third functions of *improved knowledge and performance* and *articulation and adjustment of expectations* will not develop due to their involvement, as much of this comes from individual design. The involvement of seniors will have some impact on these functions, however, through an increase in the volume of tiny homes produced. Seniors will also have opinions on what features should be included in their homes. Even though they are less likely to build the homes themselves, they can still vocalize their preferences to the company or family members that are more involved with the creative process.

Seniors are less likely to complete the function of *improved social support networks* because they tend to have low internet involvement. Seniors are the group with the lowest computer literacy, limiting their ability to be involved in the online social networks associated with the tiny housing movement. There is, however, some room for involvement with seniors who have high computer capabilities or for those interested in taking part in in-person networking events.

Seniors are also capable of fulfilling the fourth and fifth functions, *legitimization/stabilization* and *resource mobilization*. Seniors are typically one of the most conservative groups when it

comes to acceptance of new trends. By choosing tiny housing, they can improve stabilization for the trend by increasing visibility and social acceptance. Many seniors also have the ability to dedicate financial resources for the trend as many of them have savings or gain savings by selling their previous dwelling. As with retirees, however, this does not go for all seniors.

## 5.5 For Extra Space

In some cases little houses can be used in ways other than primary dwellings. They can be placed in backyards and used as spare bedrooms, guesthouses, or tiny offices. One interviewee suggests this as an option for families that are stuck paying off their mortgage (Williams, personal communication, March 21, 2013). They can use tiny houses to add on space rather than moving to a bigger place. In other cases tiny homes can be used as spare rooms. This is considered a viable option for people who want their own home office (Chea, 2010). In this scenario, tiny housing can provide an alternative for the traditional addition process. Rather than knocking down walls and forgoing months of construction, families can simply place a tiny home in their backyard to fulfill the same needs. Tiny homes can also be used as guesthouses, sometimes even for tiny houses. This can be seen in the Boneyard community, in Washington, DC (Austin, personal communication, March 11, 2013). This community includes a handful of tiny houses, including one for guest occupancy.

In these cases, motivations are likely to be different from those who use their tiny home as a primary dwelling. It also means that these owners can maintain their previous lifestyle more easily and will not have to purge their things. This niche proves quite different from the others discussed because it includes individuals that do not use compact housing as their primary residence. This leads to a different dynamic because these individuals have different needs. This could be valuable, however, because these people can legitimize a more mainstream acceptable form of tiny housing. This type of use does create some questions for environmental impact. These users would still maintain another home with all of the consumption this entails. Instead, the impact for this type of use should be compared to that of construction of a home addition. In these cases, it is difficult to determine if the environmental benefits remain.

### 5.5.1 Niche Function Analysis

It is debatable whether or not this niche is able to fulfill all of the niche functions. This group is perfectly capable of fulfilling the first function by bolstering *social support networks*. It is likely to contain many people who are active in social networking and can take part in this aspect of the tiny housing support network. It is also possible that many may be interested in attending workshops to foster the social support network, especially if they choose to build the addition home themselves. This could go the other way, however, as people who choose tiny homes as additions are less likely to want to invest their time and energy than those who are living there full time.

The ability of this niche to carry out the function of *improving knowledge and performance* is dependent on how this niche acts. For example, this is more likely to happen if actors in this niche end up building their own additions or working more closely with designers. If they buy standards made houses they are less likely to fulfill this function. This would also affect the ability of the niche to perform the function of *articulation and adjustment of expectations*. When customers are more involved in the design process they have more impact on the expectations of tiny housing. It is also likely that this niche will alter expectations differently than others because the use of the houses will be singular. Rather than leading the technology towards the most complete house package, it may lead to houses that only contain a bedroom or an office.

It is difficult to determine whether this niche can carry out the function of *legitimization/stabilization*. Using tiny houses as accessories to larger houses is a more mainstream application because there is less skepticism about this lifestyle. This could lead to a larger sector of the population accepting the concept of tiny houses. This could also have the adverse effect by allowing many people to view tiny housing as a great way to add an extra room without changing the opinion of tiny houses as a whole. People who come to terms with the idea of separate extra rooms may be highly skeptical of tiny housing as primary residences. *Resource mobilization* is another function that can go either way. On one hand, those who buy tiny housing as accessory buildings may have a greater disposable income to input into the trend. On the other hand, this may act differently with these people wanting to invest less money into the venture because it is not their primary residence.

## 5.6 Tiny Housing Communities

Although most tiny houses are built in isolation, there is a great interest in tiny house neighborhoods among the tiny housing movement. Many see this as an ideal where information can be shared and community fostered. One interviewee suggested these communities be built using the concept of pocket neighborhoods. These are defined as “clustered groups of neighboring houses or apartments gathered around a shared open space — a garden courtyard, a pedestrian street, a series of joined backyards, or a reclaimed alley — all of which have a clear sense of territory and shared stewardship.” (“What is a Pocket Neighborhood”, 2013). Tiny housing can benefit from this type of set up because these common spaces can add to the leisure possibilities of small homes. In a few areas, these tiny housing communities already exist (Austin, personal communication, March 11, 2013). One example is the Boneyard Community in Washington, DC, which is composed of four tiny houses with a common space, including a community garden and communal storage. A similar case exists in Toronto where an entire street is lined with houses under 500 square feet (46 square meters) (Dyas, 2013). A larger community is in the works for Sonoma, California designed by Four Lights Tiny House Company. This community will include 40-70 homes and will be zoned like a Recreational Vehicle Park (Four Lights Tiny House Company, 2013b). These communities could provide a valuable niche to tiny houses because they are able to provide extra benefits including design and building support and community spaces.

### 5.6.1 Niche function analysis

This niche is capable of fulfilling all five niche functions. These neighborhoods are likely to innately fulfill the function of *social support networks*, as creation of social networks is one of the goals of tiny housing neighborhoods. These communities foster relationships among those who live there. People who reside in tiny house neighborhoods are also expected to take part in social media creating awareness and advocacy of the trend.

Tiny housing neighborhoods are also liable to fulfill the second function of *improved knowledge and performance* by developing designs of homes in a cooperative setting. These people will help to develop tiny housing designs through their own homes and especially if they allow home owners to work together to share ideas. This was the case in the Boneyard development, where the residents often worked together to build their individual homes (Austin, personal communication, March 11, 2013). This can also support the third function of *articulation and adjustment of expectations* by improving understanding of what is needed in a tiny home through conversation.

In some areas, tiny home neighborhoods may hold community workshops and gatherings to improve the perception of the community as a whole. This practice will also help achieve the fourth function of *legitimization/stabilization* by allowing greater acceptance of the technology.

Finally, this niche will achieve the goal of *resource mobilization* because tiny housing communities will require the financial input of multiple homeowners to fund the homes and compatible technologies. These neighborhoods are also likely to input human capital by investing time and dedication to the trend.

## 5.7 Discussion

The niche functional analysis of each of the six niche markets suggests that they have the possibility of successfully bolstering the tiny housing trend. Possibilities for success, however, are not uniform among each of the niche markets. While some niche markets are very likely to perform all five niche functions, others are more questionable. There is still a degree of uncertainty as to how each niche will perform. Table 5-1 breaks down the niche function analysis based on three levels of ability to fulfill each niche functions. While *strong* ability suggests that it is highly possible for the niche to perform the function, *weak* ability suggests that it is less able than other niches. *Average* is reserved for niches that fall toward the middle of the pack or their ability to perform the function may be unknown.

Table 5-1. Breakdown of Niche Function Analysis for Each Category

	<b>Social Support Networks</b>	<b>Improved Knowledge and Performance</b>	<b>Articulation and Adjustment of Expectations</b>	<b>Legitimization /Stabilization</b>	<b>Resource Mobilization</b>
<b>Young Adults</b>	Strong	Average	Strong	Strong	Weak
<b>Students</b>	Strong	Average	Strong	Strong	Weak
<b>Retirees</b>	Average	Average	Strong	Strong	Strong
<b>Seniors</b>	Weak	Weak	Average	Strong	Average
<b>As Extra Room</b>	Average	Average	Weak	Strong	Strong
<b>Communities</b>	Strong	Strong	Strong	Average	Average

Based on the niche function analysis and niche characteristics, it seems that retirees and tiny house communities have potential to be the most successful. Retirees offer a unique role because they typically have more time and money to commit to the success of tiny housing as a technology. Retirees are capable of using their free time for networking and advocacy leading to *improved social support networks* and *legitimization/stabilization*. They also probably have some form of savings to devote to building their tiny homes fulfilling the function of *resource mobilization*.

Communities are likely to be successful because they provide a venue of trend concentration. As discussed in chapter 4, tiny house people tend to be scattered, reducing the ability to bounce ideas off of each other. By building tiny homes in a community, this niche intrinsically provides the function of *social support mechanisms*. Additionally, the concentration and cooperation among the community could lead to outstanding fulfillment of the functions of *articulation of expectations* and *improved knowledge and performance*.

Although some niches are less strong, this does not mean that they are not capable of success. Out of the niche markets evaluated here it seems that seniors and those using tiny houses as additions are somewhat lacking in support. The way tiny homes are designed and recommended for seniors requires less involvement and commitment on the part of the residents. Seniors are less likely to build or design their own homes reducing the ability of fulfilling the function of *improved knowledge and performance*. Additionally, seniors are often less computer literate reducing the possibility for involvement in online *social support networks*. It is important to point out, however, that for the purpose of this niche, the research considers seniors as individuals of advanced age who are beginning to suffer from medical problems or reduced mobility. This niche also discusses the habits of many seniors, while others may be very internet savvy and interested in the process of their home design and production.

Those using tiny houses for extra space are capable of fulfilling all five functions, but are less liable than other groups due to their level of commitment. The tiny housing trend is based on the involvement of tiny home owners by developing their own designs and taking part in social networks. Those who are using them as extra space are less likely to be strong advocates because for them this is a solution to a problem, rather than a lifestyle choice. Ultimately possibilities for success could be better determined in each of these cases by carrying out research on the way the markets behave. This, however, is a question for future research.

As niches, seniors and those using tiny homes as additions have an interesting role because they have different needs in compact housing. While the dominant design caters to younger more mobile people, who use tiny homes as their primary residences, these two niches want something a bit different. Seniors are more likely to be interested in tiny homes that are on one level (while the dominant design often includes lofted bedrooms) and may even desire a level of medical support. Those using tiny homes as additions may be interested in single function designs that eliminate the need for other functions such as kitchens and showers. Rather, these homes may be designed to include only a sleeping or working area depending on the desire of the owner. This creates a fragmentation in tiny housing design, which could be beneficial to the overall success of the trend.

## **6 Case Study: Student Housing in Lund, Sweden**

This section will explore the implementation of compact housing more carefully by examining the development of compact student housing in Lund, Sweden. This section will elaborate on the trend in this town before performing a more in-depth niche function analysis for this specific niche and location. It is important to understand, however, that motivations and trends in this location will vary from those examined in chapter 4 of this paper because of the subtle differences in Swedish attitudes versus those of North Americans.

*Figure 6-1. BoKompakt Trial House, Lund, Sweden*



*Image Source: Amelia Mutter, April 10, 2013*

### **6.1 Lund, Sweden**

Lund Municipality is located in South Sweden in the region of Skåne. The town has a population of 83,000, half of whom are students (Juskalian, 2011). Lund was founded in 990, and its centerpiece Cathedral dates back to 1145 (Grindlay, 2013). This landmark along with the cobblestoned streets in the center give the town an old world feel. In contrast, the dominance of Lund University within the town combines with several innovative companies providing an atmosphere of research and development.

Student life plays an important role in Lund, as the students are a large section of the population. This gives the town a young and lively vibe as seen in the many college towns in North America. Lund students, however, celebrate different traditions including the prominent Nation scene, the celebration of Valborg in the spring, and the attention to student Proms and “Spex” or comedy shows.

Like many student towns, housing in Lund struggles to meet market demand. There are more students than places available to them. Costs of construction in the town are high, making it difficult for students to afford rent on newly built apartments (Cederberg, personal communication, March 11, 2013). In many cases, this results in students looking for housing elsewhere (such as in the neighboring city of Malmö) or cramming into shared places.

## **6.2 A F Bostäder**

Akademiska Föreningen (The Academic Society) was founded in Lund in 1830 with the goal of uniting students, faculty, and staff. Since then it has fostered many aspects of student life including working to provide affordable accommodations for students (“Organisation”, 2013). Although this task originally fell under the jurisdiction of Akademiska Föreningen, it became too much of a burden and a new branch of AF was established in the 1980s (Cederberg, personal communication, March 11, 2013). AF Bostäder was established for this task and now acts as a stand-alone foundation with the goal of providing affordable student housing. AFB is now the largest student housing company in Sweden and owns 5785 student residences including corridor rooms and apartments with one-to-four rooms (“History”, 2013)

## **6.3 BoKompakt**

Due to the high volume of students at Lund University, it is a challenge for AFB to meet student-housing needs. The BoKompakt project was established as an attempt to overcome this challenge by offering more compact living at an affordable price. Building costs in Lund are often quite high leading to higher rent which is problematic when students often only have 7,000-8,000 SEK (roughly 1,060-1,210 USD) to live off of each month (Cederberg, personal communication, March 11, 2013). The project works to lower the cost of rent by reducing the living area of apartments (AF Bostäder, 2013).

The BoKompakt project is considered a trial to better understand how quality of student apartments is affected by reduced size. The project has several goals. On top of providing cheaper student accommodation (rent limits for project units are set at 30,000 SEK/year or approximately 4,540 USD/year), the project also seeks to build units that have a reduced CO<sub>2</sub> load per unit (AF Bostäder, 2013). The first stage of the project was the opening of a 8.8 square meter (95 square foot) cottage as an experiment. AFB already had access to the cottage from an earlier exposition and converted it to a student residence. Student Madelene Forsberg earned the right to live there through a student contest and has resided in the small cottage since March 2012 (Cederberg, personal communication, March 11, 2013). The cottage has a lofted bed, study space, kitchen, bathroom and yard.

The next stage of the project will involve building 22 compact apartments with a variety of different designs. Each apartment will be evaluated through resident interviews to determine the success of the individual designs (Dalholm Hornyánszky, personal communication, April 4, 2013). Each apartment established through the project will have a maximum of 15 square meters (161 square foot) usable space. These apartments will also have a reduced environmental impact, consuming only 50% of the energy and 30% of the CO<sub>2</sub> of regular AFB apartments. Construction is expected to be completed by the spring of 2014 (AF Bostäder, 2012). The current designs include options for studios, and options where two or three students are sharing a kitchen (Cederberg, personal communication, March 11, 2013). The success of these apartments will dictate whether or not AF Bostäder will seek approval to build a larger section of compact apartments.

It is important to note that although compact apartments have many of the same attributes as tiny homes, there are also some differences in use. Both types of housing require smart design

and storage, both are intrinsically environmentally preferable, and both require the dweller to downsize their belongings. In contrast, however, tiny housing allows the dweller more privacy because it does not include shared walls and more space with the use of outdoor lawns or patios. This benefit is limited, however, as outdoor areas are not often used in the winter, and many students leave Lund during the summer (Forsberg, personal communication, April 10, 2013). These apartments will also be rented rather than owned, and will not be mobile like many tiny houses in North America. This, however, is probably not necessary as they are only for use of students while they are living in Lund.

## **6.4 Project Challenges**

The BoKompakt project challenges the preconceived norms of student housing. The compact size of the accommodations established by the project poses some challenges for this reason. This section examines these challenges as well as the struggles to overcome them.

### **6.4.1 Boverket Regulations**

One example is the Swedish housing authority, Boverket, who challenged the acceptance of the project in court. Previously, the standard size of apartments for students was around 24 or 26 square meters (258 or 280 square feet). The BoKompakt apartments pose a problem for housing regulations because they do not comply with all accessibility requirements put forth by Boverket. Specifically, the apartment designs would not have wheelchair accessible bathrooms or long enough kitchens.

AF Bostäder requested an exemption for the purpose of the BoKompakt trials, but were denied (Cederberg, personal communication, March 11, 2013). The exact reason for Boverket's rejection is unknown, although they may have been trying to avoid precedence for this kind of exemption. AFB filed for an appeal, and were eventually granted permission to carry out the trial apartments.

### **6.4.2 Consumption evaluations**

Another challenge faced by the BoKompakt project is the dominant unit language used on consumption evaluations. Although the BoKompakt project has ambitious goals to reduce the impact of student accommodations, this can be lost in evaluations due to language. For example, CO<sub>2</sub> consumption is often evaluated per square meter in the literature. Using this language, however, makes the compact accommodations seem less environmental. With more residents and usage per square meter, this is often higher than in conventional apartments (Cederberg, personal communication, March 11, 2013). For the purpose of this project, it makes much more sense to record CO<sub>2</sub> consumption per person or per accommodation. This is ultimately what the project literature uses aiming for accommodations to have 30% of the CO<sub>2</sub> load per accommodation compared with other AFB housing (AF Bostäder, 2013). The same problem occurs when considering energy or hot water consumption. If there are twice as many apartments in the same area, they are likely to use more hot water or energy per square meter because the residents will have similar behavior. Instead, the program aims to reduce the energy costs to 50% per accommodation when compared with other AFB accommodations.

### **6.4.3 Student Acceptance**

In order for this project to be successful, student renters must accept the compact apartments as a viable alternative. This is one of the most difficult factors to determine in the project. The evidence of this seems to be divided. On one hand, student housing is in such high demand in Lund that it is likely students will apply to live anywhere available (Cederberg, personal communication, March 11, 2013). On the other hand, the proposed apartments are

smaller than the 18 square meters (194 square feet) that some research suggests is the minimum size students are comfortable with (Dalholm Hornyánszky, personal communication, April 4, 2013).

Figure 6-2. Inside Lund's Tiny House



Image Source: Amelia Mutter, April 10, 2013

The idea of compact housing has gained some attention from Lund students through a competition to choose the resident of the trial cottage. This competition drew 50 students in to view the place and 15 eventually applied for the chance to live there (AF Bostäder, 2012). Current resident Madeleine Forsberg was one of these applicants. When first applying, her main motivation was finding a decent place to live but she was won over once she saw the home (Forsberg, personal communication, April 10, 2013). She found the atmosphere very light and comfortable and knew she would be happy living there. Although the volume of students applying for the cottage is not very high it shows that some Lund students would consider compact housing as a valuable housing option. Additionally, Madeleine has received primarily positive feedback from friends visiting the place. She feels that many students could live happily in a compact place, although this type of housing is not for everyone. One aspect she noted is that some students may have interests or hobbies that take up more space (ex. if they own multiple bikes or guitars) and these students may not be able to fit comfortably into a compact place (Forsberg, personal communication, April 10, 2013).

#### 6.4.4 Role of evaluations

To help evaluate the qualitative factors of the compact apartments, AF Bostäder has involved Elisabeth Dalholm Hornyánszky<sup>1</sup> to carry out qualitative research on the project. Her role in the project is to evaluate the dwellers' reaction to the apartments and make recommendations (Dalholm Hornyánszky, personal communication, April 6, 2013). This has worked out to a certain extent with the demonstration cottage. Dalholm Hornyánszky has interviewed Madeline in preliminary stages, but AFB withdrew their request for further follow up interviews. Research for the second stage of the project is intended to be more intensive, with interviews before move in and several times during the rental period. The aim of these interviews is to determine how well compact apartments can fit the needs of students as well as to determine which designs fit the needs of students best.

### 6.5 Niche Function Analysis

Student housing in Sweden is likely to fulfill the niche functions in a similar manner to student housing in general as discussed in Section 5.2. Lund students would be capable of contributing to *social support networks* through social media outlets and community events within future compact apartment complexes. This is already being fostered by AFB, who required the current tiny cottage tenant to maintain a blog as part of the conditions of winning the contest. It is difficult to tell how this will occur if compact housing becomes a larger part of student housing in Lund. It is possible this will lead to a converse effect with compact housing becoming a natural part of the housing landscape. In this case students are unlikely to reach out to each other limiting the possibility for fulfillment of the function of *bolstering social support networks*.

The Bokompakt project involves students renting existing compact apartments rather than building their own compact houses. This limits the ability of students to fulfill the second function of *improved knowledge and performance*. AFB, rather than the students themselves, will develop the designs of the compact dwellings. However, the use of a research scheme in developing the project will allow students to improve the knowledge and performance of compact student apartments by giving feedback about the trial places built.

If the Bokompakt project advances to a stage where more compact apartments are being built, then designs for compact student housing will be improved. This will help to fulfill the third function of *articulation and adjustment of expectations* because it will create a standardized design for compact apartments. It will also help fulfill the function of *legitimization/stabilization* of the trend by establishing a standard for compact student housing. This is furthered by the involvement of AFB, who by providing financial and institutional support improve the acceptability of compact dwellings.

In terms of the fifth function of *resource mobilization*, student housing in Lund proves promising. Students in Lund need a place to rent while completing their studies. The Bokompakt project intends to provide a cheaper option of housing and is likely to gain support from students. Additionally, AFB is providing the initial capital for the development of the project and has also mobilized human resources already toward the projects success. This was cited during one interview as a driver in the project. Project enthusiasm within the project is likely to help its future success (Cederberg, personal communication, March 11, 2013).

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<sup>1</sup> Elisabeth Dalholm Hornyánszky is a researcher at the Institutionen för designvetenskaper in the Lunds Tekniska Högskola. In addition to her work with the BoKompakt project she has also carried out additional research on student housing needs. This work is discussed in Section 6.6

## 6.6 Discussion

This case study provides an interesting counterpoint to the North American tiny housing community that was the subject of the bulk of research. The Bokompakt project had very different beginnings because of the support of AF Bostäder. While most instances of tiny housing in North America are built to fulfill the interest of the dwellers, the Bokompakt project involves housing designed for renting and was motivated by the housing company. In the case of North American tiny houses, the homeowners are often very invested in the outcome of their design and often even build the place themselves. This leads to a type of housing that is closer to the dwellers heart and interests. The Bokompakt project, in contrast, is motivated by the need for more student housing, and dwellers are only likely to get involved after the fact. While AFB is working to make sure the housing fits student needs, the residents are less likely to be as invested in the tiny housing trend. It is also important to note that the Bokompakt project is focused primarily on compact apartments, which lack the mobility and privacy of individual tiny houses.

This project also differs as a result of its geographical location. Sweden offers a different atmosphere than North America in many respects. One aspect of this comes from the greater centralization of housing regulations in the Swedish Boverket or housing authority that makes regulations for the whole country (rather than in the U. S. where regulations vary greatly from city to city). Additionally, the role of AFB creates a different dynamic by providing a housing company with the goal of providing the best housing possible to students rather than making an income. It is unique to find that the housing provider is working to reduce living costs of tenants. Although this could be similar to the housing departments at some North American Universities, there are also some differences as students typically have the choice of using student housing or not. Although students in Lund can choose not to live at AFB properties there are not as many competing options as in other locations.

The role of student housing in Sweden is also different than in North America. While students can be required to live in small dorm rooms and have meal plans in North American universities, this is not the case in Lund. All student housing must include kitchen facilities as residents do not have the option of a student meal plan. Additionally, Swedish Universities tend to cater to a more diverse population than North American ones. It is much more common for Swedes to stay in school until a later age, and to even live with a partner or family in student accommodations. Many North American schools cater primarily to single students, usually under the age of 25. Typically Swedish housing is not as extravagant as American, but higher expectations of student. Swedes do not have the long tradition of compact apartments that exists in Denmark or the Netherlands. For a long time bedrooms had to be at least 7 square meters (75 square feet) due to regulations (Dalholm Hornyánszky, Personal Communication, April 4, 2013).

Another major factor impacting the potential success of this project is student preference in apartment type. Although it is difficult to determine exactly how students will react to the option of compact housing, some information about Swedish student housing preferences is available. Research suggests that there is no uniform expectation for housing size but that students prefer apartments that feel light and airy (Dalholm Hornyánszky, 2012). Some students interviewed for a study on this topic suggested that their place was bigger than it needed to be and others felt it was smaller. It is important to note, however, that all lived in places that are bigger than the 15 square meters intended for the Bokompakt project. In the case of Madeleine Forsberg, she initially expected to find the 8.8 square meters (94 square feet) a challenge. However, once she addressed a few problems including discovering where to store things she has really enjoyed living in the compact house. Additionally, she feels that

many students could live comfortably in a compact space if they are given the chance (Forsberg, personal communication, April 10, 2013).

Most students seem to prefer private apartments to corridor style (dormitory) living because they appreciate the privacy, quiet, and cleanliness this can provide (Dalholm Hornyánszky, personal communication, April 4, 2013). It is unclear how this differs between corridor rooms that share a kitchen with many other students and smaller apartments with kitchens shared among two or three students as proposed in the Bokompakt project. It is possible that students could enjoy this type of apartment if they are capable of picking their co-tenants so they start out with a relationship with the individuals they share a kitchen with.

Ultimately, it is possible that high demand for student housing in Lund will overcome any student preference in accommodation. This was already cited in the cases of students studying in Stockholm and Göteborg, where interviewees felt that they would take whatever apartment was available regardless of other preferences (Dalholm Hornyánszky, 2012). This is likely to be the case in Lund as many students struggle to find housing (Cederberg, personal communication, March 11, 2013). This may also be augmented by the inexpensive nature of the compact apartments being built. AF Bostäder intends to rent the places for 30,000 SEK/year (4,541 USD/year), which sits well below the 50,000SEK/year (7,574USD/year) charged for larger studio apartments (AF Bostäder, 2012).

Finally, the niche function analysis performed in Section 6.5 suggests that student housing in Lund is capable of performing the functions of a successful niche market. It is important to consider this analysis in context, however, due to the unique situation of Lund student housing. The role of AFB puts this in a different context because unlike in the North American context residents are not required to fulfill all of the functions on their own. In this scenario several functions, especially *legitimization/stabilization* and *resource mobilization*, will be performed by the company providing an additional chance of success.

## 7 Conclusion

If the housing market in North America continues to favor large extravagant homes and expansion into the suburbs, the outcome for the environment will be devastating. The larger homes are, the more raw materials they consume and the greater impact they have on the environment (Wilson & Boehland, 2005). Furthermore, larger homes typically require more energy to heat and cool, and more stuff to fill them creating a cycle of unsustainable consumption. The tiny housing movement counteracts these effects by building smaller and smarter, and by requiring residents to think more actively about what they really need.

At this stage, tiny houses are still somewhat of a novelty in most parts of North America. This is one aspect that influences the high volume of readers on tiny house blogs and websites. By choosing to intentionally downsize their dwelling and to simplify their life, residents of compact housing can reduce their environmental impact. Although this is not the motivation behind every tiny home owner's choice, the effect is the same. At this stage, however, that impact is quite limited due to the small number of individuals living in tiny housing. By expanding the scope of the trend, the positive ramifications for the environment expand as well.

This chapter includes a summary of findings discovered in pursuit of this paper. It also incorporates personal reflections and recommendations for different actors in the tiny housing community, including future research opportunities.

### 7.1 Summary of Findings

This paper sought to address three research questions:

*Q1. Why has the intentional downscaling in homesize become a trend? What are the primary motivations and challenges for living in/advocating for tiny housing?*

*Q2. What emerging niche markets exist within the trend? What is the potential for success of each of these niche markets?*

*Q3. Is there potential for growth in compact student housing in Lund, Sweden as a niche market? What might this suggest for the future of the niche?*

Information to address these questions was gathered primarily from two different sets of semi-structured interviews with supplementary information from literature and popular media review. The first set of interviews sought to address questions one and two. This included eleven interviews of different actors in the tiny housing trend in North America. The objective of these interviews was to establish the components of the North American trend including motivations for getting involved and challenges faced. These interviews also gathered information on interesting commonalities of the trend and potential niche markets for tiny housing expansion. The information gathered in these interviews is laid out in table 7-1.

Table 7-1. Information Gathered from Actor Interviews and Popular Media Sources

Motivators	Challenges	Aspects	Niches
Simplicity	Legal constraints/Zoning	Design Focus	Young Adults
Sustainability and Environmentalism	Perceptions	Do-it-yourself mentality	Students
Cost	Financing	Information Sharing	Transient Populations
Freedom and Mobility		Learning Opportunities	Seniors
Sense of Community			Retirees
Interest in Design			Tiny house communities
			As home additions
			Relief housing

### 7.1.1 Niche Function Analysis:

To further address Question 2, the recommended niches were evaluated against the niche function analysis framework outlined in Chapter 2. This framework was stitched together based on Frank W. Geel’s Technological Transition framework and Anna Bergek’s Technological Innovation Systems framework. Drawing from these two works, the following list of functions was established:

1. *improved social support networks;*
2. *improved knowledge and performance;*
3. *articulation and adjustment of expectations;*
4. *legitimization/ stabilization; and*
5. *resource mobilization.*

The list of niches from the research was then weeded down to six based on their perceived ability to fulfill these functions and a niche function analysis was carried out in depth in Chapter 5 of the following niches: young adults, students, retirees, seniors, those using tiny housing as additions, and tiny house communities. Although it is difficult to determine exactly how each of these potential niche markets behaves, they were evaluated against the niche functions to measure their opportunities for growth.

It was discovered that each of the six evaluated niche markets has the potential to bolster the tiny housing market through their development. Retirees and tiny house communities have the best support due to their unique aspects. Retirees have the advantage of having expendable time and money to devote to the advancement of the tiny housing trend. This creates a positive niche market because it allows them to adequately fulfill all five functions primarily through their fulfillment of the fifth function of *resource mobilization*. This is not to say that financial resources are the most important, but more that mobilization of time and human capital can also help fulfill other functions including the development of *social support networks* and *improved knowledge and performance* within the technology.

Tiny House Communities were also considered a strong potential niche market because of the benefits that can be drawn from building tiny homes in a concentrated area. The information that is shared in this type of community can lead to exceptional ability to perform the function *improved knowledge and performance*. Tiny house residents in this scenario are likely to share information leading to high performance houses. Additionally this niche provides the function of *bolstering social support networks* simply through the use of the community, which can act in this manner.

Although finding a strong niche in the categories of seniors and those using tiny homes as extra space is not improbable, it seems less likely than the other potential markets evaluated. This is simply because the time and energy investment of these two groups is limited when compared with other groups.

### 7.1.2 Lund Case Study

To further understand the evaluation of potential niche markets a case study was taken of student housing in Lund, Sweden. Information on this case was assessed using interviews with actors including a representative of AF Bostäder (the student housing foundation), a researcher working with the Bokompakt project, and the student resident of the first trial home. This case study provided a background of AFB and their Bokompakt housing project. This case was also a good example of how a niche can be developed outside of the North American perspective.

The most important factors of this example were considered to be the support of the housing foundation, legal conflicts with the national housing regulations, and student interest in the project. A niche function analysis for this case was conducted although the outcome was mixed. In general, it seems that due to high demand for housing in Lund and support of AFB the project has a potential to be very successful. There is a strong possibility for all five niche functions to be fulfilled. However, this case is unique because rather than relying solely on residents as in the niches put forth in Chapter 5, many functions will be fulfilled by AFB.

### 7.1.3 Comparison and Reflections

Some parallels can be drawn between the niches examined in Chapter 5 and the case study presented in Chapter 6. In each case, some instances of compact housing have already arisen. One of the niches examined in Chapter 5, in fact, was compact housing for students. Yet this niche performed only averagely when compared with retirees and tiny housing communities. Student housing was suggested to work well as a tiny housing niche because student towns often provide alternative spaces for study and entertainment. The niche function analysis of student housing in general, however, found that the lack of funds to mobilize resources could be a major weakness.

In contrast, the niche function analysis of the BoKompakt project suggested a large potential for success. In theory, these niches should behave similarly because they are addressing similar groups. However, the role of AFB in the Lund, Sweden case could be a game changer. In this case study, several niche functions including *resource mobilization*, are carried out by the housing foundation rather than the students. This provides a greater sense of stability and more promising chance of success. Furthermore, the need for affordable student housing is likely to overrule challenges in this case.

## 7.2 Recommendations for Niche Development

In order to expand the positive environmental impacts from compact housing, niches should be further developed to provide a solid sociotechnological basis for the emergence of the tiny

housing trend. In most cases, this task falls on the actors in tiny housing. Without the existence of infrastructure to help bolster the five niche functions, involvement of tiny house advocates and residents can go a long way. By getting involved in compact housing support networks, improving awareness, and developing designs, tiny house people can do a great service to the development of the trend. In general, tiny home owners tend to be doing a good job of this already through a strong internet presence and nation-wide workshops. It seems that interest in tiny housing already exists. The general public is curious about tiny housing, now it is up to builders, home owners, and advocates to help improve understanding of the benefits of this lifestyle. By increasing awareness of the realities of the trend it is likely that legitimacy will be improved. Additionally, tiny home owners could benefit greatly from working together with municipalities to alleviate the challenge of zoning. As one interviewee explains, municipal zoning and coding laws are developed for a reason and can possibly be altered through the involvement of tiny house residents (Miller, Personal Communication, 11 April 2013).

Based on the framework, the success of the niche markets dictates the future emergence of the tiny housing trend into the greater socio-technological landscape. By developing niche markets with a stronger chance of success (in this case, those deemed most likely to fulfill the five niche functions), the compact housing trend in general has a greater chance of success and mainstream permeation.

In the case of student housing in Lund, there is the increased benefit of the involvement of AFB. This is a great benefit because they are able to provide the initial spark toward compact housing as a reality in Lund. This market is not without challenges, however, and could benefit from improved legitimization. AFB is already working to create a design that fits student needs, now the challenge lies in convincing the public that these apartments are not a compromise for the students living there. This way students will want to live there, the public will support the initiative, and Boverket will be more likely to grant them further exemptions for apartments in the future. The involvement of students in the development process is one way of achieving this task, but AFB could also profit from improving awareness about the benefits of compact housing. This could be done through an awareness campaign that compares all of the amenities offered to Bokompakt residents against the financial and environmental benefits of the problem.

Improved permeation of this trend could be augmented by future research. This could include more in-depth examination of the involvement of individuals from different niches. While this project attempted to understand the motivations, challenges, and aspects of tiny housing in general, all of these factors may differ from niche group to niche group. Better understanding how specific niches act could help dictate future action. Additionally, this research could include data gathering on the ability of these tiny housing residents and advocates to perform the five niche functions put forth in the framework. This way a more accurate niche function analysis could be performed. Another option for future research would be to involve different actors to evaluate the perceptions of tiny housing held by municipal authorities or the general public. This research could also help to inform compact housing advocates on ways to expand the trend.

As the developed framework is an important foundation of this work, it seems important to consider what has been learned in this process. This work shows the flexibility of the foundation frameworks used. The Geels' Technological Transition and Bergek's Technological Innovation System framework are each designed to address the emergence of new dominant technologies. In this instance, however, the application was somewhat different. Instead, the combined framework selected the relevant sections from the

contributing works (those areas related to niche markets, or market functions) to create a method of determining future success of potential niche markets. Furthermore, now that this framework has been developed, Niche Function Analysis can be used in future cases where the potential success of different niche markets is of interest.

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## Appendix 1 – List of Interview Subjects

RQ 1 + 2	Name	Role in Movement	Date of Interview	Interview Medium
	Derek Diedricksen	Tiny home advocate/DIY blogger	March 6, 2013	Phone
	Jay Austin	Tiny homeowner, Blogger	March 11, 2013	Phone
	Greg Johnson	Founder Small House Society, Blogger	March 13, 2013	Phone
	Ryan Mitchell	Tiny homeowner, Blogger	March 13, 2013	Skype
	Dee Williams	Tiny homeowner, Portland Alternative Dwellings	March 21, 2013	Phone
	Jay Shafer	Founder of Tumbleweed, Four Lights, and Small House Society	March 26, 2013	Phone
	Hari Berzins	Tiny homeowner, blogger	April 8, 2013	Phone
	Macy Miller	Tiny homeowner, blogger	April 11, 2013	Phone
	Tammy Strobel	Tiny homeowner, blogger	April 16, 2013	Skype
	Sarah Myers	Masters project on tiny houses, former tiny home owner	May 2, 2013	Phone
	April Ansen	Tiny homeowner	May 4, 2012	Email
<b>RQ 3</b>				
	Magnus Cederberg	Representative of AF Böstader	March 11, 2013	In Person
	Elisabeth Dalholm Hornyánszky	Researcher with LTH	April 4, 2013	In Person
	Madeleine Forsberg	Lund Tiny House Resident	April 10, 2013	In Person