

CHANGE BY DESIGN:

**A STUDY IN THE POTENTIAL FOR ARCHITECTURE AND DESIGN TO ENCOURAGE
HEALTHY, CONSCIOUS BEHAVIORS AND ENDURING SUSTAINABLE CHANGE**

A Thesis Presented for the
Master of Architecture
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Kathleen Michelle Lewis
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To those who have supported me, encouraged me, inspired me:
thank you.

ABSTRACT

Sustainability is more than a technologically based, financially motivated option for living. Instead, it is an invigorating opportunity for creating healthier environments on a mental, physical, and deeply personal scale. The intent of the following study is to inspire long-term sustainable solutions. The foundation for this course of inquiry will be an exploration, analysis, and synthesis into the potential for architecture to engender quality experiences by satisfying basic human needs, instilling environmentally responsible values, and promoting sustainable behavior.

PREFACE

I am drawn to architecture. I am drawn to the field as a professional practice, as a creative outlet, and as a tool for social change. In particular, it is the way architecture awakens the soul through the creation of quality experiences that I find most provoking.

I truly began my architectural education as an undergraduate student at the University of Tennessee, Knoxville, College of Architecture and Design. As I progressed into my graduate career, I developed a concern for the general disregard contemporary practice has shown in maintaining this focus on creating qualitative environments. Additionally, I developed a concern for the general direction architecture has taken in regard to addressing our global climate crisis and increasingly dire state of environmental degradation. Therefore I pursued the following course of inquiry in particular because I wanted to attempt to understand the potential for architecture to promote sustainable behavior by addressing basic human needs over energy and technological advances alone.

I see true sustainable design as the future of my profession and it is my hope in writing this thesis to return architecture to an accessible state focused on the creation of creating powerful, evocative, quality experiences.

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CHAPTER 01 | FRAMING

Sustainable architecture is currently a practice of misconceptions and incomplete thoughts. It is an architecture largely dependent on technological advances that has failed to become embedded in vernacular design throughout a majority of the United States. It is an architecture so removed from the general population that it has failed to acknowledge the significant influence of human behavior in its quest to slow environmental degradation on a global scale.

Composed of four chapters, the following course of inquiry begins by studying trends and developments in sustainability and environmental responsibility throughout much of the last century. These trends indicate that sustainable behavior is often driven by the inflation of oil prices and occurrence of energy crises. Such dependence poses a serious problem for development and growth in regard to achieving healthy futures for environments and people alike—a problem that has the potential to be ameliorated through a refocusing of our priorities and criteria in architectural design. Architecture has the potential to fulfill fundamental human needs and values in such a way as to promote sustainable behaviors. A dissection of these human elements and their relationship between one another begins in Chapter 02. Additionally, a means of implementing the findings of this inquiry is provided and a precedent analysis of existing structures is performed. It is necessary in moving forward to “pay attention to what is important, not just what is quantifiable,” (Kellert 75).

A HISTORY OF OIL CRISES AND SUSTAINABLE BEHAVIORS

The oil industry saw huge growth and innovation at the start of the 20th century. Within a year of 1901, “more than 1,500 oil companies had been chartered,” and oil became the “dominant fuel” of the United States (History Staff). It became an “integral part of the American

economy,” (History Staff). By the onset of the Great Depression in 1929, however, this era of development and expansion had ended. Oil prices were plummeting and the country was in a state of chaos.

Although often regarded as one of the darkest economic times in American history, the Great Depression saw an end with the Japanese bombing of Pearl Harbor in 1941 (PBS). The attack secured the United States’ involvement in World War II. Consequently, it also “made the oil industry a key American resource” through increased needs for production and industrialization (History Staff).

When the war ended in 1945, the U.S. “faced the problem of stabilizing the peace,” (History Staff). Over the following decades “numerous major crises occurred,” in many of which “oil played a key role,” (History Staff). By 1970, U.S. oil production peaked and oil prices saw a substantial upward rise. This point in history was not only shadowed by a recession, but also soon saw an imposed embargo by Arab members of the Organization of the Petroleum Exporting Countries (OPEC) against the United States (Office of the Historian). The imposed ban on petroleum exports and oil production acutely strained a nation that “had grown increasingly dependent on foreign oil,” (Office of the Historian).

By this point in time, public concern for the environment was also on the rise. Much of this newfound awareness was aroused by Rachel Carson’s book, *Silent Spring* (Natural Resources Defense Council). Originally published in 1962, her book documented the detrimental effects of pesticides on the environment. It is even credited for aiding in the creation of the Environmental Protection Agency in 1970 (Lewis).

Although the Iranian Revolution in 1979 brought a second substantial spike in oil prices for the decade, prices began falling in the 1980’s (BP). As the foreign area stabilized and oil production resumed, this era became known as the “Oil Glut,” (OPEC). But it wouldn’t last.

The Stock Market Crash of 1987, also known as “Black Monday,” certified the turbulent nature of the U.S. economy and oil rose once more (Carlson). The following year marked a significant milestone for sustainable development though with the publication of “Our Common Future” by the World Commission on Environment and Development, also known as the Brundtland Commission. “Our Common Future,” or the Brundtland Report, defines sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their

own needs,” (WCED 43). Today, this remains the most frequently quoted definition of sustainability.

The inflation of oil prices in the United States continued though into the start of the succeeding decade with the invasion of Kuwait by Iraq, also known as the Gulf War. Following this point in history, the U.S. Green Building Council was established for the purpose of “promoting sustainability in the building and construction industry,” (USGBC). In 2000, the U.S. Green Building Council unveiled the LEED (Leadership in Energy and Environmental Design) green building certification system. It is a rating system intending to “single out commercial, institutional, and residential projects noteworthy for their stellar environmental and health performance,” (USGBC). In 2002, Architecture 2030 was founded. Its mission is to “rapidly transform the built environment from the major contributor of greenhouse gas emissions to a central part of the solution to the climate and energy crises,” (Architecture 2030).

Needless to say, the start of the new millenium marked significant progress in regard to sustainability. This is especially the case for sustainable architecture and development. However, public focus soon averted with the Iraq War in 2003.

The Iraq War led to one of the most substantial spikes in history for U.S. oil prices. Some even argue that oil was a motivating factor in our military’s foreign invasion (Jhaveri 02). Although the United States did not withdraw from Iraq until 2011, oil prices did briefly decline in late 2008 (BP).

This was surprising as America’s dependence on oil was at an all-time high. Additionally, the United States was impacted by a global economic recession. The decline of oil prices at this time is believed to result from lower industrial activity, a trend which follows M. King Hubbert’s theory on peak oil (Whipple 05).

As per the erratic nature of oil prices and the economy, U.S. oil prices increased following the end of the “Great Recession” in 2009 (BP). Our dependence on foreign oil attributed to this rise in price, as Arab nations experienced conflict and revolution. Although the United States Energy Information Administration says that “U.S. dependence on imported oil has declined since peaking in 2005,” our dependence still remained at 40% as of 2012 (EIA).

Strong “gains in domestic production of crude oil and natural gas” have “expanded domestic supplies and reduced the need for imports,” (EIA). However, much like the rest of the world, our resources are

depleting rapidly and we are going to increasingly dangerous and harmful means of extraction. For the general public though, domestic oil signifies lower consumer prices. Quite frankly, this oil evolution and public association are problematic. It creates a “business as usual” mentality and does nothing to promote alternative, sustainable development.

The information and events discussed frame and support the theory that environmentally responsible behaviors largely occur and grow at points of economic strain relating to oil and energy crises throughout history. The correlation between oil and societal behavior patterns regarding sustainability is illustrated in **FIGURE 01.00**. It can also be said that such trends and volatile relationships will continue into the future if we do not instill a change in the way we approach design, sustainability, and environmental outlooks.

TECHNOLOGICAL SUSTAINABILITY

Even some of the aforementioned developments in sustainability are

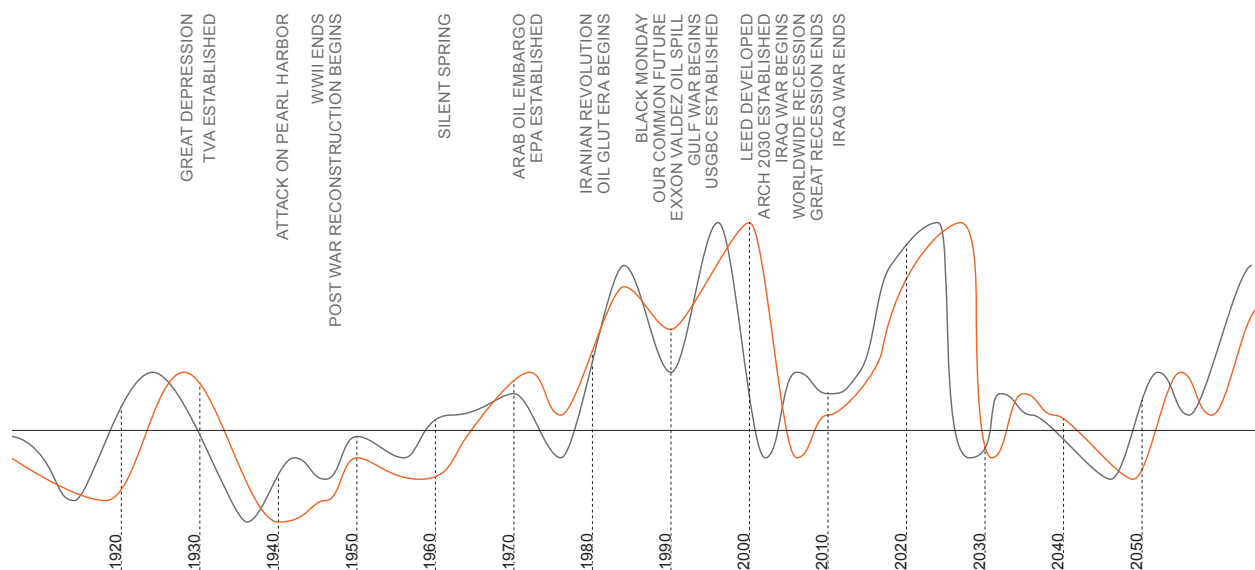


FIGURE 01.00 | Timeline of Volatility

Source: Author

problematic. The Brundtland Report, for instance, presents a flawed path for the future. Although it has the most commonly used definition for sustainability, when placed in its written context, sustainability becomes a technological solution to our environmental crisis (Van der Ryn, Cowan 20).

An approach to sustainability that solely depends on technology is limited. It often “neglects details of culture and community while displaying a rather naive optimism concerning our ability to manage planetary systems,” (20). This approach, like the Brundtland Report, becomes embodied in the USGBC’s LEED system.

The LEED system in no way accounts for the experience of the building occupant. Its primary issue is that “technology is driving design,” (Weir 53). The process for certification also happens to be cumbersome and expensive for applicants to pursue. The cost largely leaves LEED to be pursued by major corporations with infinite funds at their disposal. The certification rating (silver, gold, platinum) becomes a status symbol for these corporations to better their public image.

This furthers the disconnect sustainability has with vernacular design. Furthermore, LEED caters to the financial motivations driving “big business.” Major corporations often pursue LEED for the perceived reduction in operating costs and energy savings high technology design brings. However, that can be a misconception or false promise.

For all of the LEED system’s problems though, it does try to set a standard for sustainable design. That is a worthy goal. And LEED has largely become a symbol for sustainability in the public eye, despite its inaccessibility and “[insurance to remain] technically rigorous,” (USGBC).

So while the establishment of these systems, publications, and organizations has proven beneficial to the advancement of energy-saving building technologies, a major component of the building, and consequentially its energy use has been neglected in discourse, practice, and development. This component is the building occupant. In focusing on a larger context of environmental degradation and climate crises, the influence of individual behaviors in creating sustainable societies has largely been disregarded. It is the action of the individual and how he reacts with his environment, built or un-built, that is crucial to creating an enduring solution to the crisis being sought to relieve.

Furthermore, a study by the University of California at Berkeley found that “highlighting [the] financial benefits [of sustainability] can instigate behavioral change,” (James 13). However, decisions “based on economic motives alone can be problematic. This is “primarily due to the volatility of the economy, but also because it encourages people

to view themselves as driven by money,” rather than environmental concerns or personal health and well-being (13).

Truly, it is the latter of these points, being health and well-being, that should take greater standing and consideration in the practice of sustainable design and architecture. For in addition to this field’s technological dependence, financial motivation, and disregard for human behavior, a majority of the “smart buildings” being constructed in the name of sustainability actually increase occupant stress over time (Weir 51). Every problem does not “[have] a technological answer or market solution,” (Van der Ryn, Cowan 20).

Therefore, it can be said that “conventional design is failing because its epistemology is flawed,” (29). As design practitioners, building occupants, and a general society, we must change. We must awaken to see the true potential quality sustainable design offers. Such quality is not found in the shallow depths valuing oil, money, or technology. Instead, it is design that “minimizes environmentally destructive impacts by integrating itself with living processes,” (33). This integration implies that the design not only respects ecosystem health, but also attends to human health, well-being, and action (34).

HYPOTHESIS

Essentially, human behavior and attitudes must evolve with the improvement of building quality and sustainable design. This is of course a shift away from the aforementioned consequential relationship sustainable development has shown to oil. Enduring patterns of culture, health, and architecture should force the transition to sustainability, instead of depleting oil reserves and superficial monetary aims (Bender 318). The “falseness that was the economic heart of our culture” should be exposed and our lives restructured “based on deeper and more rewarding goals,” (318).

In order to facilitate this change in human behavior, we must broaden our definition of sustainability to include individual wellbeing along with environmental. To reiterate, it is the integration of design with living processes that we are seeking (Van der Ryn, Cowan 33). It is the intention of this study to propose a means for achieving an equilibrium state of sustainable behavior on a societal level. In order to achieve such a societal change, however, we must first focus on the individual. After surveying 10,000 people, a study in the United Kingdom found that “societal change occurs first on a personal level and individual basis,” (White, Benedict, Depledge 926). It is “individual change at the grassroots level that makes it possible for broader social and policy progress to occur,” (Manning 05). The contrast of

the volatile economy and inflating oil prices against the proposed, new, balanced behavior state is illustrated in **FIGURE 01.01**.

Furthermore, a stronger consideration of human behavior is a necessary component in designing for the valuable, qualitative, personal spaces likely to create a positive experience. A positive experience is likely to elicit repeat behavior from an individual (Krasner 43). By fulfilling needs and instilling values in design on a personal level, human behavior has the potential to reach become increasingly sustainable over time.

Consequently, “as growing numbers of individuals adopt sustainable behaviors, the behaviors become more ‘normal,’” (Manning 05).

Even if people are not themselves living the lifestyles that society is attempting to bring about with policy changes, they are more accepting of change in that direction when they see more and more people around them taking those steps. Though most people are loath to admit that social acceptability plays any role in their actions, in fact it plays an extremely strong role. The more that people see other people living a

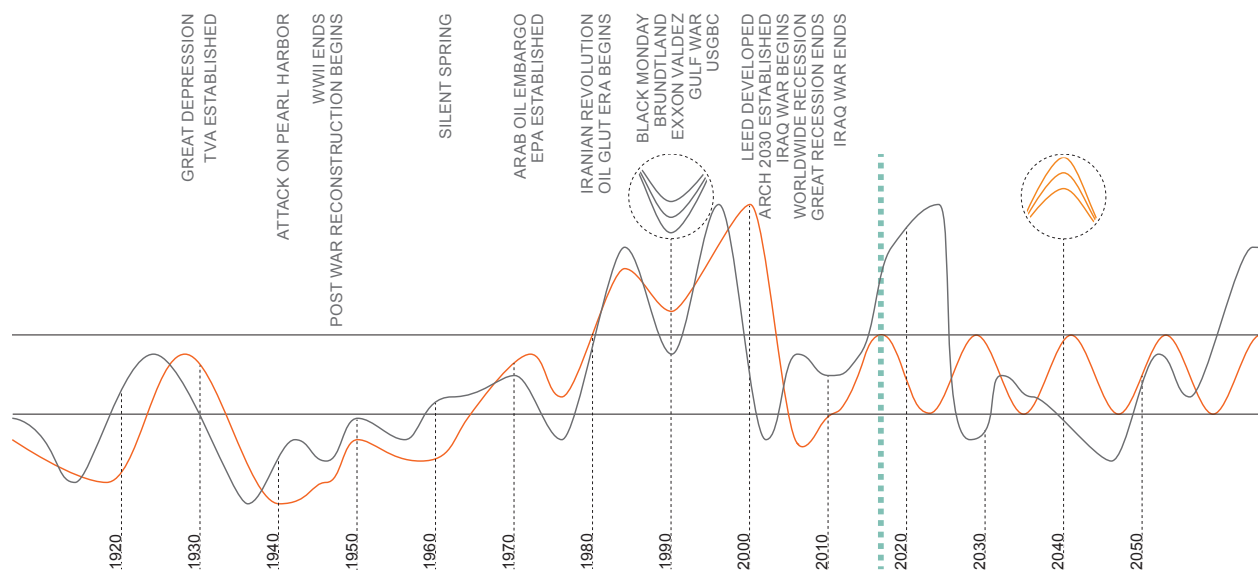


FIGURE 01.01 | Timeline of Stability

Source: Author

certain way and talking about things a certain way, the more they come to accept it as a normal way to be and to live. (05)

So given that societal change begins with the individual, what influences an individual's behavior? The answer is neither simple nor

entirely quantifiable, as one's behavioral influences can be numerous and diverse. However, it can be said that at the core of an individual is a desire to fulfill basic human needs, an argument which will be fully supported, explored, and explained in Chapter 02. Additionally, there are innate values that influence our actions as well; values that this course of inquiry will highlight in hopes they become more motivating and powerful than those discussed previously.

True sustainable architecture has the potential to "create places that move our hearts, that give us peace and nurture, and that continue to unfold and enrich our lives the more we are part of them," (Bender 318). Therefore it is the hypothesis of this study that allowing for fundamental human needs, values, and behaviors to be adequately addressed as a part of architecture and design will allow for human behaviors to ultimately change and reside in a state of environmental consciousness over time. This change will allow for sustainable architecture to achieve its true potential as an effective, enduring solution against environmental degradation.

CHAPTER 02 | DISSECTING

As discussed in the previous chapter, by fostering positive change “on a micro or personal level, we may begin to then foster change on a societal one as well,” (Beeck, Smith, Lommerse, Metcalfe 16). However, when it comes to issues of ecological stability and sustainability, those who have “valiantly tried to get the message out have largely failed at making it personally relevant,” (Manning 12).

The American public does not necessarily see environmental issues as something that they are likely to experience or be affected by. This is particularly true in the case of global climate change: despite a great deal of sound scientific evidence and great media attention, only a small number of Americans (35%) believe that climate change will harm them or their families, whereas 61% believe it will harm future generations and plant and animal species. (12)

Furthermore, promoting change in response to “environmental” problems “reinforce[s] the artificial division that we have created between ourselves and the ecological systems we rely upon,” (12). Considering the environment as a separate entity is entirely incorrect. Humans are an “integral part of the environment” and “significant damage to the environment will ultimately affect human life,” (12).

Therefore, for the transition to a balanced sustainable society to occur, the notion of “personal relevance” is vital.

We human are hard-wired to take special interest in anything that is related to our own selves. Our very survival has historically depended on it. Messages that people perceive to be personally relevant receive significantly more attention and are thus more likely to prompt deeper, deliberate processing. (12)

It can be said that such relevance is found in personal needs and values. As a change in individual behavior is being sought, it is necessary to analyze human needs and values in this context. It is necessary to ask the following questions:

- What is the potential for architecture to promote sustainable behaviors by seeking to fulfill basic human needs?
- How does architecture, space, and the built environment instill values within us?
- How does architecture, space, and the built environment influence our behavior?

The following sections will seek to answer these questions.

TRANSFORMING MASLOW'S HIERARCHY OF HUMAN NEEDS

Over time, architects and designers have used a variety of models of human needs for the purpose of exploring spatial requirements and functions. Despite its limitations, however, the model most widely used in practice and theory today is Maslow's Hierarchy of Human Needs (Lang, Moleski 55). The Hierarchy of Needs was first introduced by Abraham Maslow in his 1943 paper "A Theory of Human Motivation," (Cherry). As a humanist psychologist, he theorized that our behaviors are motivated by a desire to fulfill certain needs. Maslow's hierarchy also suggests that people are motivated to fulfill basic needs before moving on to other, more advanced needs (Cherry).

Within the pyramidal structure, Maslow presented five needs, all considered to be sought on an individual yet universal basis; and they are divided into two categories for motivation. The first category for motivation involved those needs considered necessary for basic functioning, such as physiological needs and security. The second category for motivation involved those needs believed necessary to fulfill cognitive and aesthetic desires. Social needs, esteem needs, and a drive for self-actualization formed the remaining structure of Maslow's Hierarchy. The structure is illustrated in **FIGURE 02.00**.

In a study published in 2011, researchers from the University of Illinois tested the validity of Maslow's theory (Cherry). What the researchers discovered is that the fulfillment of the needs is strongly correlated with personal happiness and satisfaction (Cherry). However, people from cultures all over the world reported that self-actualization

and social needs were important even when many of the most basic needs, such as physiological needs, were unfulfilled (Cherry).

Essentially, we as humans share fundamental needs; Maslow was correct in this regard. It is the hierarchical pyramid that ranks the importance of the needs that draws criticism. Given such information, it is the intent of this study to “reformat” Maslow’s Hierarchy of Needs to represent a more uniform, unilateral structure that honors modern evidence. Such a transformation is illustrated in **FIGURE 02.01**.

The notion of architecture as a facilitator of fundamental needs “has the potential to make real changes in the lives of the people with whom it engages,” (Beeck, Smith, Lommerse, Metcalfe 13). In order for all people to have an authentic existence, their ability to have access to resources and practices to facilitate their needs and requirements, while maintaining their dignity and identity in an equitable way, is fundamental (15). The cost to a society of these needs



FIGURE 02.00 | Maslow's Hierarchy of Human Needs
Source: Author

not being met is often high because it can result in people feeling stressed, isolated, and alienated. This is the society we have built.

HUMAN NEEDS

In exploring the potential for architecture to encourage behaviors by fulfilling needs, it is necessary to dissect the needs themselves. It is necessary to understand the essence of each need. It is necessary to understand how each need becomes translated and perceived in architecture and design. Doing so is vital to creating the kind of positive occupant experiences that foster individual behavioral changes and societal change by extension.

Physiological Needs

A physiological need is one considered vital for survival. It is a human need characterized by the healthy, normal functioning of the body and human metabolic needs of food, air, and water. Physiological needs are sought for their ability to also provide prospect and refuge

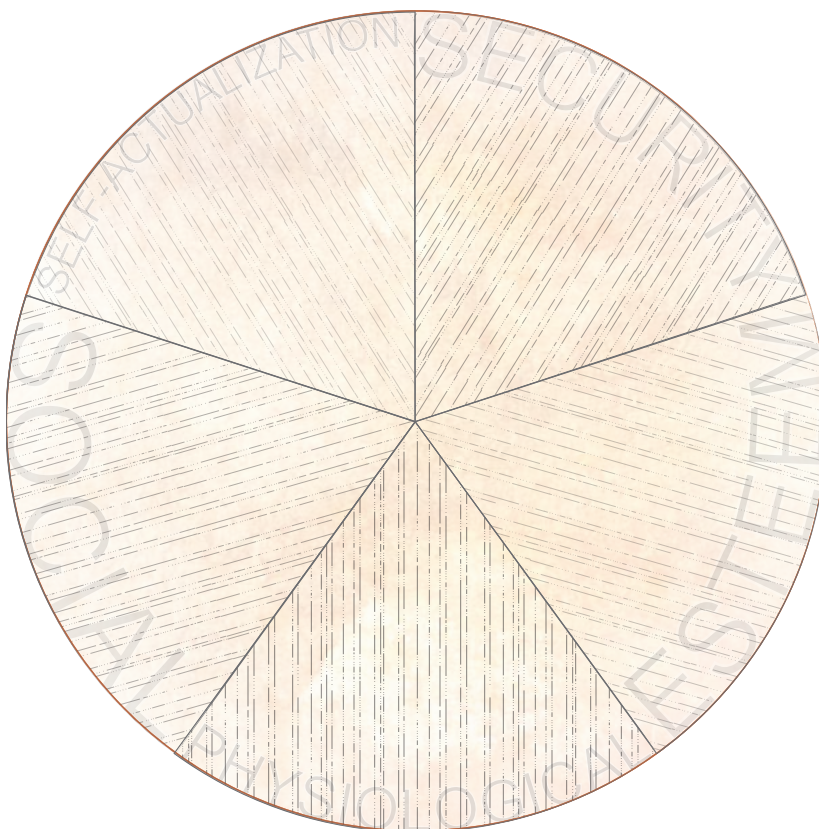


FIGURE 02.01 | Transformation of the Hierarchy
Source: Author

within an environment. There is a need for sheltering, stability, and safety from the elements. Additionally, providing shelter may be the basic function of built form, but “it is shelter for the activities of life,” (Lang, Moleski 79).

Additionally, physiological needs address our ability to understand our surroundings through sensory messages. Our surroundings influence our moods, thoughts, and behaviors. Wherever we go, sensory elements such as light, color, texture, and scent mingle with our cultural associations and personal beliefs, allowing us to make sense of our surroundings (Weir, 51).

Comfort and health are physiological needs as well as psychological states. As noted by authors Lang and Moleski, people need to be healthy and, ideally, to be comfortable (64). Comfort marks freedom from distress—a characteristic not foreign to the experience of the “smart buildings” created by technological sustainability.

The components comprising the physiological needs of an individual are illustrated in **FIGURE 02.02**. The Eames House, illustrated in



FIGURE 02.02 | Detail of Physiological Needs
Source: Author



Figure 02.03 | Eames House
Source: Architectenwerk.nl, 2010

Physiological needs,...[when] gratified, cease to exist as active determinants or organizers of behavior. They now exist only in a potential fashion in the sense that they may emerge again to dominate the organism if they are thwarted. (Maslow)

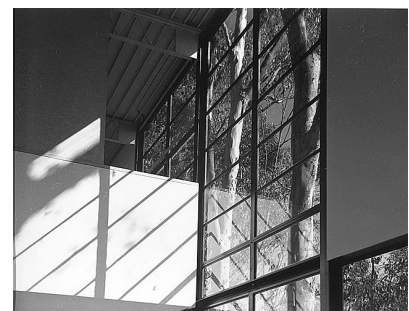


Figure 02.04 | Eames House
Source: Library of Congress, 2010 15

FIGURE 02.03 and FIGURE 02.04, shows the successful translation of physiological needs in architectural space. Associations of comfort, home, and sheltering become illuminated by the natural light beautifully penetrating the glass facade.

Safety and Security Needs

The need for security and safety is characterized by a sense of reliability. It requires a stable and consistent performance from the building and the building occupant. And within architecture, security needs not only address sheltering, but also foster a feeling of place, order, and predictability.

Security needs can often be fulfilled by an understanding of structure, repetition, and clarity. The work of Donald Judd, as illustrated in FIGURE 02.06 and FIGURE 02.07, shows the successful formation of these characteristics in design. Additional components comprising

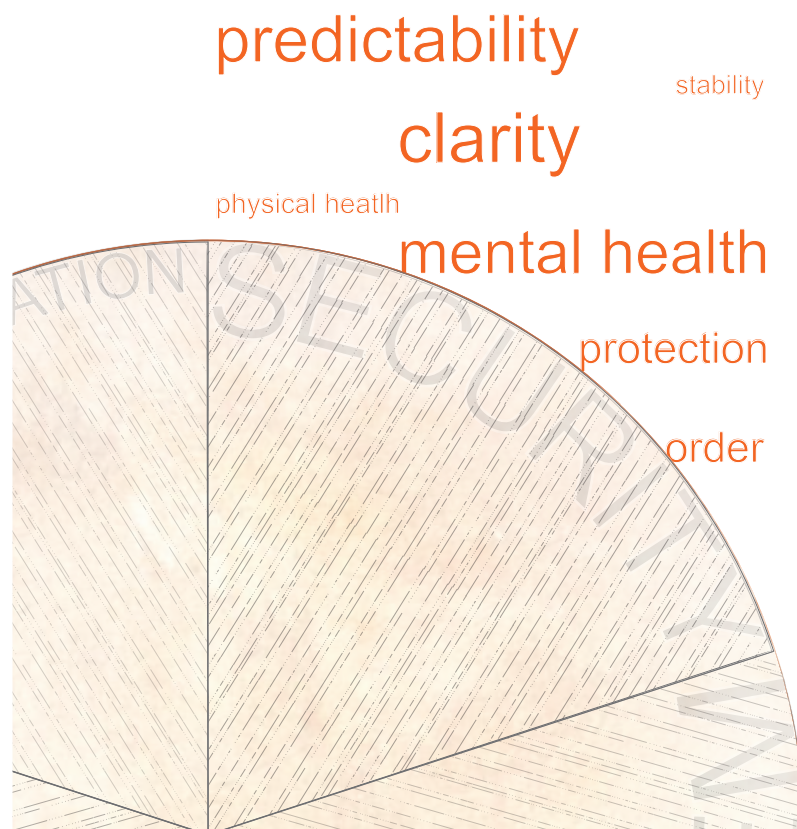


Figure 02.05 | Detail of Security Needs
Source: Author

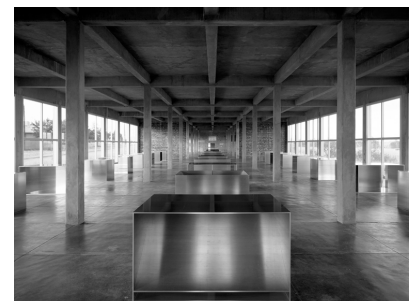


Figure 02.06 | Works in Mill Aluminum
Source: Todd Eberle, 1993

Security needs, which attempt to seek [personal] safety and stability in the world, are seen in the very common preference for familiar rather than unfamiliar things, or for the known rather than the unknown. (Maslow)



Figure 02.07 | Donald Judd
Source: Frank Bensen

the security needs of an individual are further illustrated in **FIGURE 02.05**.

It can be said that security of body and mind yields health. Privacy, for example, is a sense with ties to both physical and psychological states that also has direct correlations to safety and security. For the need of security to be fulfilled in these terms, we “need to have control over our [built] environment,” (65). In relation to health specifically, fulfillment of this need can relate to a lack of stress caused by the built environment. To ensure individual health, we often need to “know where we are in space and time—to not be socially or spatially lost, and to have privacy for the behavior in which we are engaged,” (65).

Social Needs and Belonging

The third need addressed by Maslow pertains to social requirements.



Figure 02.08 | Detail of Social Needs
Source: Author



Figure 02.09 | Jystrup Savaaerk
Source: Seier+Seier

He will hunger for affectionate relations with people,... namely, for a place in his group, and he will strive with great intensity to achieve this goal. (Maslow)



Figure 02.10 | Vandkunsten
Source: Seier+Seier

Social needs are inherently twofold. We each have a desire to understand our relationships both within the community and independently. From the communal aspect, there is a need to identify with a group, to establish culture, and clarify social roles. As this pertains to architecture and design, social needs can often be symbolized in civic buildings, public spaces, neighborhoods, or parks.

There is also a connection to something larger than ourselves found when design and nature meet harmoniously. This too fulfills a social need—a need for belonging. Nature has the power to make us feel humble, alive, and “ever in our modern, urban society [there] remains an indispensable, irreplaceable basis for human fulfillment,” (Kellert 03).

Components comprising the social needs of an individual are illustrated in [FIGURE 02.08](#). The images found in [FIGURE 02.09](#) and [FIGURE 02.10](#) show the successful translation of these characteristics in space and design. These examples depict a cohousing project, where community interaction is encouraged within the centrally located gardens and courtyards. Individual identity amongst the tenants is maintained simultaneously through the personalization of entryways into private residences.

Esteem Needs

Needs pertaining to esteem deal largely with personal status, responsibility, and proficiency. To fulfill a need for esteem, one should feel a sense of achievement. One “needs to be able to master tasks, and to be able to manipulate, organize, and own objects, ideas, and time,” (Lang, Moleski 64-66). This need results in a high level of functioning and often promotes the active engagement of the user within a space.

Within architecture, formal languages conveying hierarchy and programmatic functions also address esteem. The University of Tennessee, Knoxville, Art and Architecture Building in [FIGURE 02.12](#) and [FIGURE 02.13](#) shows the successful translation of such need characteristics in a space. The two schools (one being Art, one being Architecture and Design) become united by a shared, grand, central staircase. The staircase resides in an atrium that spans the height and length of the university building—a design strategy which further denotes the hierarchy and symbolic importance of the stairs.

Additional components comprising an individual's need for esteem are illustrated in **FIGURE 02.11**.

Self-Actualization Needs

For Maslow, the ultimate need was that of self-actualization. The need for self-actualization promotes proficiency, learning, and personal growth. It inspires creativity in both the building occupant and designer. And as previously noted, this need can be sought even when certain basic necessities have not been met.

To be fully self-actualized a person needs to “be continuously motivated to understand, to organize, to analyze, to look for relationships and meanings, and to construct a system of values,” (67). In essence, self-actualized individuals are “motivated to seek self-fulfillment and realize their full potential,” (67). It is through an architecture that creates significant experiences, innovation, and personalization, we



Figure 02.11 | Detail of Esteem Needs
Source: Author



Figure 02.12 | Connecting Pathways
Source: Author

Esteem needs are, first, the desire for strength, for achievement...for independence and freedom. Secondly, we may have what we call the desire for reputation or prestige...recognition, attention, importance, or appreciation...Satisfaction of the self-esteem need leads to feelings of self-confidence, worth, strength, capability and adequacy, of being useful and necessary in the world. (Maslow)



Figure 02.13 | Atrium
Source: Author

may be able to become more than what we are now and achieve our full potential.

The components comprising the need for self-actualization are illustrated in **FIGURE 02.14**. The successful translation of this need is exemplified in the design of Exeter Library by Louis Kahn. The library, as shown in **FIGURE 02.15** and **FIGURE 02.16**, provides users with significant experiences created by a simple, honest formal language that inspires individual and collective learning.

HUMAN VALUES

Now that human needs have been defined, evaluated, and explored, we can return to our driving question:

- How does architecture, space, and the built environment instill values within us?

The answer in regard to the ability of architecture to fulfill human needs is clear; the precedents presented with the description of

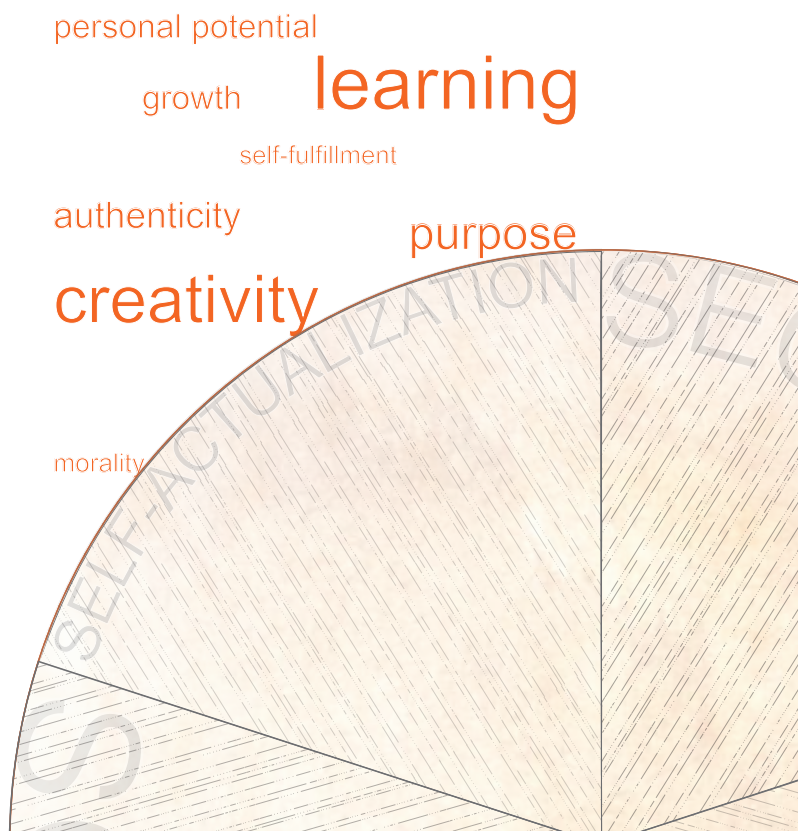


Figure 02.14 | Detail of Self-Actualization Needs
Source: Author



Figure 02.15 | Room with a View
Source: Caprilemon, 2007

Self-actualization is the desire to become more and more what one is. It is the desire to become everything that one is capable of becoming. What a man can be, he must be. (Maslow)

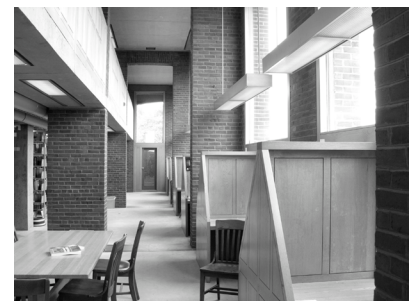


Figure 02.16 | DSCN5164
Source: Leonel Ponce, 2010

each need provided evidence of that. However, the fulfillment of individual needs through design for the encouragement of sustainable behaviors is not obvious at this time. Perhaps the sequential study of human values in relation to behaviors will assist in formulating the answer. Societal, sustainable development through individual behavioral changes is still the goal and basis of this study.

Human values in relation to behavior become harder to define than basic human needs. The reason is that they are largely influenced by cultural contexts and past personal experiences. Design based in technological sustainability or development motivated primarily by finances often ignores this context.

As previously stated, this is largely the approach to current architectural practice and sustainability; this is the design that becomes so isolated from personal experience and quality that it fails to instill human values deeper than any superficial, monetary aim. Generally speaking, current approach to design and sustainability void the necessary values required to promote personal relevance and create long-term behavioral change.

In contrast to the aforementioned technological sustainability, there exists (or the opportunity exists) for true sustainable design to correct this oversight. This alternative approach to sustainability is based in ecology and succeeds in promoting general human values such as personal health, well-being, reduced stress, and a connection to natural environments; values that can also be deemed as personally relevant. In essence, values are defined here as “desirable goals, varying in importance, that serve as guiding principles in people’s lives,” (Steg, de Groot 82).

Before moving forward, it is important to note that the intent of this study is not to discuss every type of human value. The intent is not to discuss every design and spatial context for human behavior. The intent is not to discuss every possible means of fulfilling human needs. The complexity of human nature and the unlimited possibilities will simply not allow this at this time. Instead, it is a generalized introduction into theories of human motivation and behavioral tendencies. It is a study created to test the validity of an alternative approach to sustainable design and development for the intent of promoting positive, enduring change.

Therefore, values serve as a guiding principle for the selection or evaluation of behavior, people, and events.

Values determine what people attend to, what knowledge becomes cognitively most accessible, how people evaluate

various aspects of the situation, and what alternatives are being considered. Also, values function as criteria or frameworks against which present experience can be tested. (82)

As previously discussed, change can happen, in part, through the building of values incrementally on a personal basis. Although “world-views and environmental concerns may be rooted in values, they do not necessarily fully mediate the effects of values,” they generally fail to be personally relevant and result in enduring sustainable behavior changes (89). Personal values, in contrast, are “generally more predictive of...behavior than are ecological world-views and environmental concern,” (89). In other words, a strong inclination and motivation to behave sustainably is important, though it is usually “not enough by itself to empower sustainable behavior,” over time (Manning 04).

The failure of design and environmental discourse to instill personally relevant values often leads to the formation of hypocritical behavior in relation to sustainability. This behavioral typology is illustrated in **FIGURE 02.17**. The voids in the diagram represent the disconnect

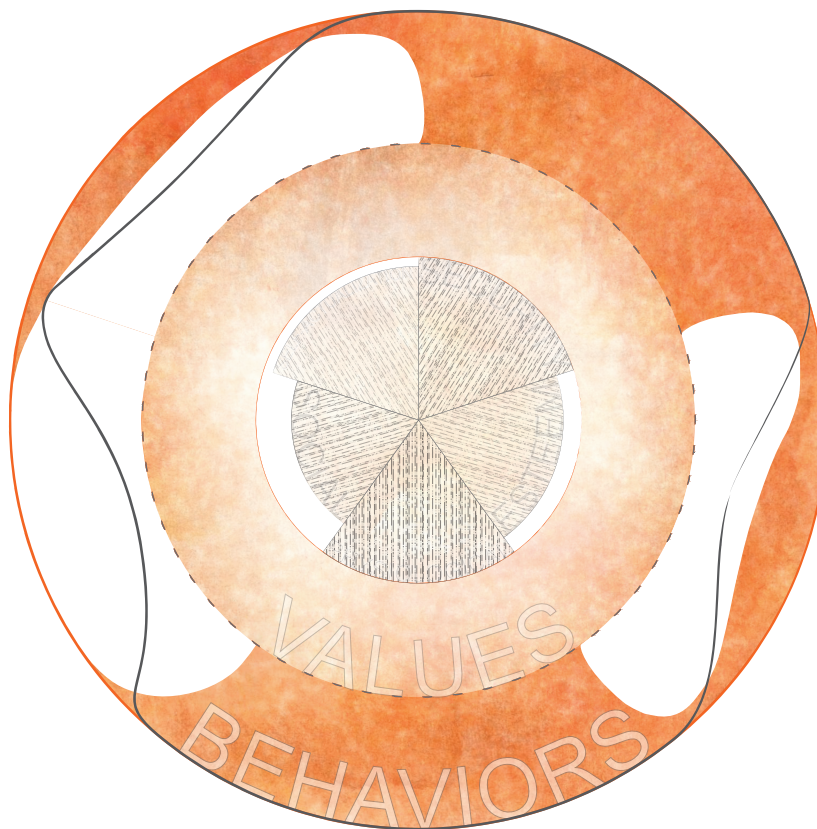


Figure 02.17 | The Hypocrite
Source: Author

that occurs when an individual fails to properly act in accordance with said environmentally conscious values.

A study conducted by the University of California at Berkeley determined that 94% of individuals claimed they “had a responsibility to pick up litter, but only 02% picked up litter that was ‘planted’ by the researcher,” (James 02). A similar study also found that “people who attended energy efficiency workshops reported knowing and caring more about energy conservation, but only one of the 40 participants changed their behavior,” (02). Essentially, “environmental consciousness does not indicate environmental behavior,” (Brand 206). Therefore, such findings call for a more significant human dimension to be captured in sustainable development if it is to endure over time.

The Hypocrite is not the only behavioral typology relevant to this cultural and architectural failure for sustainability, however. There is also the issue of ignorance, as illustrated in **FIGURE 02.18**. The voids in this diagram represent a vital, yet missing link between values and action.

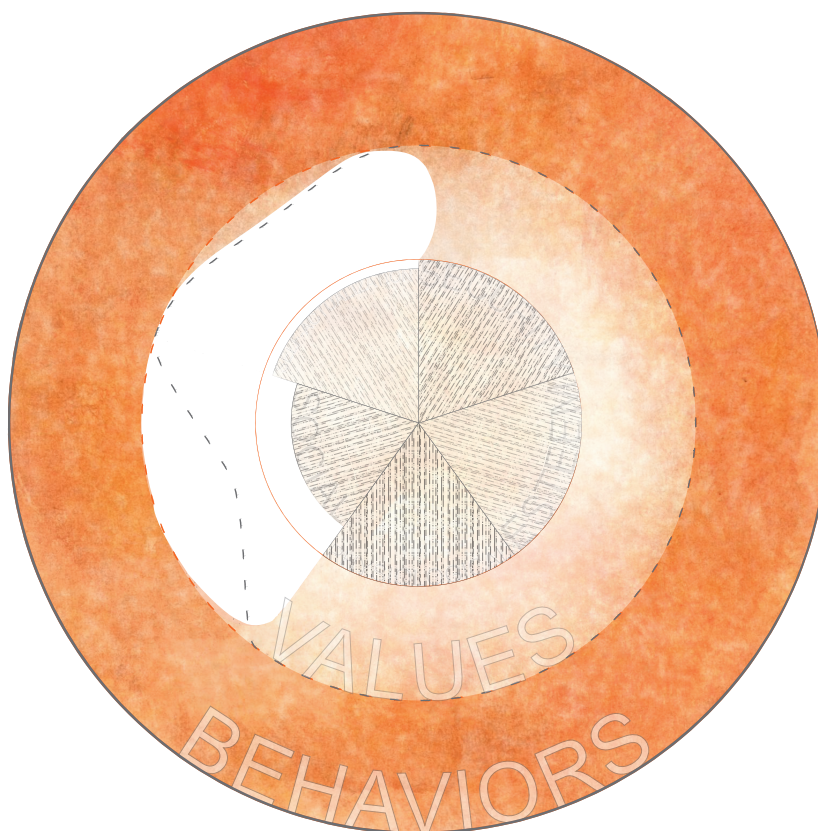


Figure 02.18 | The Ignoramus
Source: Author

Such a disconnect can occur with even the small task of adjusting a thermostat. For example, this behavior, this action fulfills a personal physiological need for comfort. However, it also thwarts vital, positive values from being instilled, as it actually increases occupant stress over time.

The Ignoramus is a person that acts without reason or knowing why. The Ignoramus simply performs learned behaviors and fails to question the values, or lack thereof, behind them. The Ignoramus is essentially “a bit of nature struggling to be conscious of itself,” (Clayton, Myers 88).

Based on the evidence provided, it is imperative that we “use methods that change attitude and behavior,” (James 02). But how does this change come about? How can the voids between behavior and values be filled?

To begin, psychologists suggest that we all have a rational side and an emotional side. If we only target the rational side—as elements like money, technology, and quantified climate temperatures do—then there will be no motivation for change (James 05).

Emotional cues are more likely to elicit action. People have more empathy for the story of one suffering child than statistics about 10,000 suffering children. The personal testimony of an island dweller affected by flooding will be much more effective than the projections of 21st century sea level rise. (05)

Sustainable architecture can no longer afford to only address global climate change through impersonal, technologically opaque means. It must do more than that by engendering human well-being as well. This sense of well-being can occur through proper design and the fulfillment of human needs.

Within each generalized, behavioral typology, there were fundamental needs not being satisfied. The disconnect between behavior and values goes back to the core of human motivation. Therefore, in order to fill the voids, it is important to further explore how design fulfills a need. For as the example with the thermostat indicated, a need can be fulfilled without values resulting. The potential for architecture to fulfill a need and instill values simultaneously will be explored more in the following chapter. But as it stands now, sustainable design is failing to be fulfilling and consequently failing to endure.

Again, it is important to note that this discussion of individual behaviors, values, and the human psyche remains grossly generalized.

It is also important to note that the sustainable state being strived for is not an unyielding, narrow path for human behavior to follow. Human behavior results from a complex mix of internal, psychological factors and external influences, after all. And our needs are ever changing and values are prioritized differently from one person to the next. Values “reflect multiple motivations and not only environmental considerations,” (Steg, de Groot 89).

The course of inquiry explored by this thesis merely attempts to understand the potential for architecture to facilitate human behavior that is consciously or unconsciously environmentally “friendly.”

The trick, as with all behavioral possibilities of complex systems, is to recognize what structures contain which latent behaviors, and what conditions release this behaviors—and, where possible, to arrange the structures and conditions to reduce the probability of destructive behaviors and to encourage the possibility of beneficial ones. (Meadows 72)

This will be the task to come.

It is the intent to envisage new ways of tackling old problems, that will result in strategies to develop environments in which to live, work, and play, where the quality of our and other's lives are enhanced, not lessened. (Beeck, Smith, Lommerse, Metcalfe 18)

CHAPTER 03 | SUPPORTING

The previous chapter presented two, generalized behavioral typologies showing the separation between human values and behaviors. At the core of each issue lay the five, transformed fundamental human needs. In trying to move past the behavioral typologies currently resulting in our sustainable society, the issue of how needs are being fulfilled is vitally important.

Design should be used, and certainly has the potential to, fulfill more needs than just the physiological, as it commonly does now. Design also has the potential to synchronize individual values and potential behaviors, a necessary step in progressing forward. And as previously noted, behavior followed by a rewarding event or valued association is likely to be repeated (Krasner 29). Therefore, in order to create the personalized, positive experiences likely to make the connection between values and behaviors both strong and possible, we must analyze common design practices for their abilities to engender positive or negative emotions.

THE SUSTAINABLE DESIGN MATRIX

TABLE 03.00 presents a tool for design and personal enlightenment in the form of a matrix. It showcases potential behavioral contexts in a simplified, dissected manor so as to be understood by both architects and building occupants. As a designer, it is important to understand that the creation of a space also “involves deciding on what set of standing patterns of behavior and their relationships [should] be accommodated,” (Lang, Moleski 79). Choices, decisions about the form of a building “are made with the designer retaining substantial power to translate dweller’s needs and values,” (Israel

20). Therefore, the quest for sustainability and energy efficiency simply “must not compromise human health and well-being,” (Baker vii),

Research now indicates that the “effort to engineer the perfect environment, usually at a high cost in energy and plant, has not led to higher satisfaction,” (vii). In fact, “many passive design solutions are preferred [by building occupants] in spite of wider variations of indoor conditions,” (vii). This news is welcomed. It allows for the attention on the design of the built environment to be refocused. Understanding the needs, values, and shared behaviors of the people who occupy a space now takes precedence over technological advances (vii). And certain, pre-existing societal standards for behavior can be challenged.

As an individual, the simplified table removes all psychologically-based jargon to provide insight into often “ignorant” behaviors. A person may not know the term “sustainability” but can also change his actions based on recognized, acknowledged values that the proper, qualitative design of a space brings. In the average person, our needs are more often unconscious rather than conscious. Our values, however, can be a “louder” voice in one’s thoughts and feelings as it caters to the emotional component of the psyche. Therefore, change through personal enlightenment is the aim in this instance, as it is likely to elicit repeat behaviors.

There are five levels within the matrix, relating to Maslow’s five fundamental human needs. Within each level a common behavior response or design context is shown in relation to its likely effects. In contrast to the common approach, an alternative scenario is presented along with its values and positive effects.

Obviously, the Sustainable Design Matrix does not address all possibilities in design for meeting needs, instilling values, and promoting responsible behaviors. As Maslow noted:

Any motivated behavior, either preparatory or consummatory, must be understood to be a channel through which many basic needs may be simultaneously expressed or satisfied. Typically, an act has more than one motivation.

Instead, it is intended to show the potential for increased, experientially evocative quality in design. This is the quality that thereby instigates the change necessary to reach a sustainable, dynamic equilibrium state as a society. It is, as previously noted, a tool and welcomes further elaboration, promotion, and analysis through general education and design practice.

Table 03.00 | The Sustainable Design Matrix
Source: Author

THE SUSTAINABLE DESIGN MATRIX A TOOL FOR PROMOTING INDIVIDUAL BEHAVIOR CHANGES AND POSITIVE EXPERIENCES					
PHYSIOLOGICAL NEEDS BASED ON INDIVIDUAL ENVIRONMENTS					
PERSONAL STATEMENT	AREA OF CONCERN	COMMON BEHAVIOR RESPONSE	EFFECTS OF COMMON BEHAVIOR RESPONSE	ALTERNATIVE BEHAVIOR RESPONSE	EFFECTS OF ALTERNATIVE BEHAVIOR RESPONSE
I am hot. I want to feel cooler.	personal comfort	adjust a thermostat	- increased stress over time - failure to interact with nature - economic costs - poorer air quality	open a window	- connection to nature - improved air quality - decreased personal stress - active engagement with space
I cannot see well in this light. I want better lighting.	vision, functionality, productivity	turn on overhead lighting	- increased stress over time - poorer cognitive functioning, concentration	use daylight when possible	- increased productivity - emotional well-being - decreased personal stress
SAFETY NEEDS BASED ON SHOPPING ENVIRONMENTS					
PERSONAL STATEMENT	AREA OF CONCERN	COMMON ENVIRONMENTAL SETTING	EFFECTS OF COMMON ENVIRONMENTAL SETTING	ALTERNATIVE ENVIRONMENTAL SETTING	EFFECTS OF ALTERNATIVE ENVIRONMENTAL SETTING
The grocery store aisles are winding. I don't know where I am in the building.	mental health	shopping area within an unappealing warehouse	increased stress	allow for people to see one another and the incorporation of daylight	- sense of place instills values - order, predictability - security of body
The dining area in this store is unpleasant and isolated from all activity.	certainty, order	grocery store dining area is unappealing and located remotely at the back of the building	- doubt - uncertainty of space - uncertainty of self in spatial context	place the dining area at the front of the store and allow the incorporation of daylight	- sense of place instills values - certainty - sense of communal hierarchy and importance
SOCIAL NEEDS BASED ON COMMUNITY ENVIRONMENTS					
PERSONAL STATEMENT	AREA OF CONCERN	COMMON ENVIRONMENTAL SETTING	EFFECTS OF COMMON ENVIRONMENTAL SETTING	ALTERNATIVE ENVIRONMENTAL SETTING	EFFECTS OF ALTERNATIVE ENVIRONMENTAL SETTING
My house looks exactly like all the others. I wish I could make it my own.	individual identity in a group context	cookie cutter houses	failure to understand independent relationship to larger community	allow for occupant personalization (door color, finishes, etc.)	- sense of personal identity - sense of ownership - community connection maintained
PERSONAL STATEMENT	AREA OF CONCERN	COMMON BEHAVIOR RESPONSE	EFFECTS OF COMMON BEHAVIOR RESPONSE	ALTERNATIVE BEHAVIOR RESPONSE	EFFECTS OF ALTERNATIVE BEHAVIOR RESPONSE
I feel lonely. I want to feel connected to my neighbors.	social engagement	access social networking websites alone at a computer	failure to establish enduring human connections	volunteer with the community garden	- reduced stress - human-nature interaction - identification with a group - establishment of culture - belonging
ESTEEM NEEDS BASED ON OFFICE ENVIRONMENTS					
PERSONAL STATEMENT	AREA OF CONCERN	COMMON ENVIRONMENTAL SETTING	EFFECTS OF COMMON ENVIRONMENTAL SETTING	ALTERNATIVE ENVIRONMENTAL SETTING	EFFECTS OF ALTERNATIVE ENVIRONMENTAL SETTING
The office is too cold. I am struggling to focus on my work due to the temperature.	proficiency, active engagement, personalization	overhead vents	- increased stress over time - poorer cognitive functioning, concentration - lack of control over environment	individual, floor vents	- active engagement of user - responsibility - individuality and personalization - increased comfort
PERSONAL STATEMENT	AREA OF CONCERN	COMMON ENVIRONMENTAL SETTING	EFFECTS OF COMMON ENVIRONMENTAL SETTING	ALTERNATIVE ENVIRONMENTAL SETTING	EFFECTS OF ALTERNATIVE ENVIRONMENTAL SETTING
The overhead office lighting is glaring. I want to have more control over the lighting.	proficiency, active engagement, personalization	standardized, overhead lighting	- increased stress over time - poorer cognitive functioning, concentration - lack of control over environment	individual task lighting	- active engagement of user - responsibility - individuality and personalization - increased comfort
SELF-ACTUALIZATION NEEDS BASED ON CREATIVE ENVIRONMENTS					
PERSONAL STATEMENT	AREA OF CONCERN	COMMON ENVIRONMENTAL SETTING	EFFECTS OF COMMON ENVIRONMENTAL SETTING	ALTERNATIVE ENVIRONMENTAL SETTING	EFFECTS OF ALTERNATIVE ENVIRONMENTAL SETTING
I am at school. I want to feel inspired to learn.	personal growth	standardized, study carrels removed from natural light	decreased innovation, creativity, proficiency	incorporation of natural light, bright colors, visual connection to space beyond and security of individual space	promotes personal growth, creativity
PERSONAL STATEMENT	AREA OF CONCERN	COMMON ENVIRONMENTAL SETTING	EFFECTS OF COMMON ENVIRONMENTAL SETTING	ALTERNATIVE ENVIRONMENTAL SETTING	EFFECTS OF ALTERNATIVE ENVIRONMENTAL SETTING
I work in an architecture firm. I want to reach my full potential. I want to break out of this silo mentality.	personal growth, collaboration, progression of practice	inefficient silo organization	- failure to communicate effectively - increased stress over time - decreased quality of designs	practice in a systems framework	- promotes personal growth, creativity, collaboration - decreased stress over time - higher quality of designs

As the matrix illustrates, the quality of spaces we design and occupy is important. The environment around us plays a vital role as part of the very foundation upon which future satisfaction is built (Maslow).

Many of our daily tasks require mental effort in order to direct our attention toward the required objects and processes while avoiding distractions and delaying extraneous thoughts and activities. This effort draws on cognitive resources that can be exhausted, but which can be restored in the appropriate environment. (Clayton, Myers 85)

One quality or characteristic of such an appropriate environment is comfort. It is a “condition of mind in which satisfaction is expressed with the environment,” (Roulet, Bluysen, Müller, Oliveira, Fernandes 71). Natural ventilation in particular “[can be] used to serve as a prime influencer of comfort and health in buildings” due to its “role in performing the dual functions of controlling thermal and air quality conditions,” (70).

Modern offices and other public buildings are increasingly equipped with sensors that automatically adjust the temperature, dim the lights and flush toilets without any help from humans. These designs can help conserve electricity, water, and money—an obvious benefit. However, the inability to crack a window could have unintended side effects. When people lack control over their environments, their stress levels climb. There’s a disconnect between a technologized environment and what it can do, versus what we as human beings need to flourish. (Weir, 51)

Control, or an element of personalization is also a design characteristic with the potential to increase the perception of spatial quality. We “need to have control over our environment, to know where we are in space and time,” (Lang, Moleski 65). We need “to not be socially or spatially lost, and to have privacy for the behavior in which we are engaged,” (65).

The meaning of comfort is suggested to relate to a measure of satisfaction, implying the fulfillment of a need or want, a source or means of enjoyment. The occupant likes to feel in control of their environment and even needs such a control to adapt it to his needs . (Manchanda, Steemers 86)

Psychologists are also working with designers to create public buildings that promote sustainable choices. If a person is accustomed to composting and recycling at work, he’s more likely to keep up the habit in his own home (Weir 52). The key here is to “design spaces where such behaviors are easy and automatic,” (52). The “default option for behavior should be the healthy, easy option,” (52). And

the relationship between accessible, low-energy design and the occupant's comfort, health, and well-being is emphasized. This is "of key importance to the performance of buildings," (Roulet, Bluysen, Müller, Oliveira Fernandes 71.)

Quality experiences can also be fostered through the incorporation of nature in design, or a sense of connection to natural processes. The biophilia hypothesis posits that humans have an innate desire to seek out nature and other forms of life. Indeed, research supports the idea that exposure to nature and natural processes is "psychologically restorative," (Weir 52). Access to nature has been shown to "lower stress and anger, improve cognitive functioning and mood, and even speed recovery from surgery," (52).

Nature here is not only defined by physical elements such as plants, but also forces like daylight or wind.

The way sunlight penetrates windows through the day and during seasons is a major factor in providing light to the interiors of buildings. It also shapes our psychological reactions and moods. Its sanitizing power is a significant factor in creating salubrious environments. (Lang, Moleski 117)

PROVIDING EVIDENCE THROUGH INTERVIEWS

Given the minute amount of previous research found on using architecture to address needs and fulfill values in the vernacular, it is recommended in moving forward that a series of interviews be performed on existing architectural spaces. Using existing architectural spaces allows for additional research to be performed and information to be gathered from "real world" situations, not just those fabricated in a lab. These interviews shall be termed the Experiential Post-Occupancy Evaluations.

Furthermore, post-occupancy evaluations are used to corroborate the techniques presented within the Sustainable Design Matrix and have been performed on select buildings within Knoxville, Tennessee. These post-occupancy evaluations significantly differ from the traditional intent, however, as they are solely devoted to occupant experience.

The experiential studies are performed through a series of interviews. The questions to be asked will have an underlying theme or motive in regard to how the design works to meet needs, the values it instills, and common behavioral responses it elicits. There is no quantifiable bottom line.

If successful, the design of a space has the potential to fill voids between individual action and values. This theoretically would result in an evolved human typology, as **FIGURE 03.00** and **FIGURE 03.01** illustrate. The creation of such personal fulfillment and well-being is where architecture's true potential exists. Quality design can be the catalyst for a dynamic, sustainable equilibrium state.

As mentioned, three local structures within Knoxville have been chosen for this exercise. While regarded as “sustainable” in intent, the questions will seek to discover which design characteristics, qualities and sustainable strategies in particular were successful in fulfilling needs, instilling values, and promoting responsible behaviors. The design strategies will be judged for their ability to promote progression and positive change within the building occupants.

A New Form of Post-Occupancy Evaluation

To recap, knowing that how a basic human need is fulfilled is crucial to the transition toward a sustainable equilibrium state. The

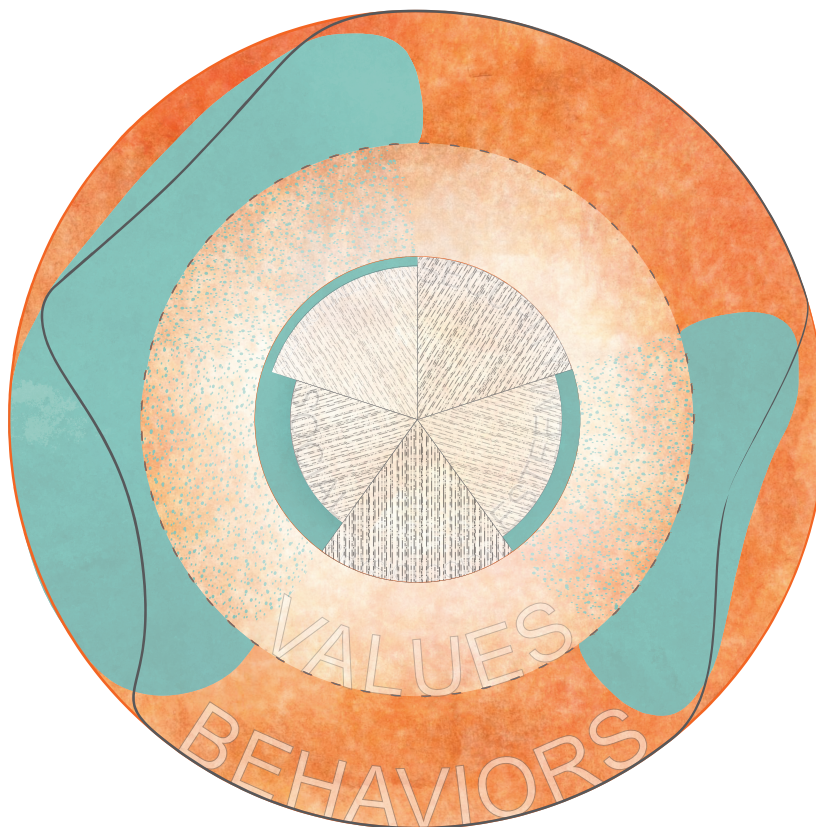


Figure 03.00 | The Evolved [Hypocrite]
Source: Author

information provided in the Sustainable Design Matrix is indicative of that. However, this remains a theory to be tested in realistic, practical dimensions. This brings us to the next crucial step in our sustainable evolution: the experiential post-occupancy evaluation.

Post-occupancy evaluations are occasionally performed as part of design practice. However, their intent is largely based on a desire to understand the energy performance of a building. There is little interest in understanding user experience, or what design elements actually define a quality experience. There must be a greater understanding of design's ability to encourage individual behavior changes by fulfilling fundamental needs properly.

The questions are composed in such a way as to allow for the fulfillment or unfulfillment of an individual's needs to be discerned by the conductor of the evaluation. As needs can often be unconscious motivators of behavior, the underlying intent of each question can even remain unknown to the person being interviewed. A sample of questions asked in regard to the following building is provided here and full transcripts of each experiential post-occupancy evaluation c

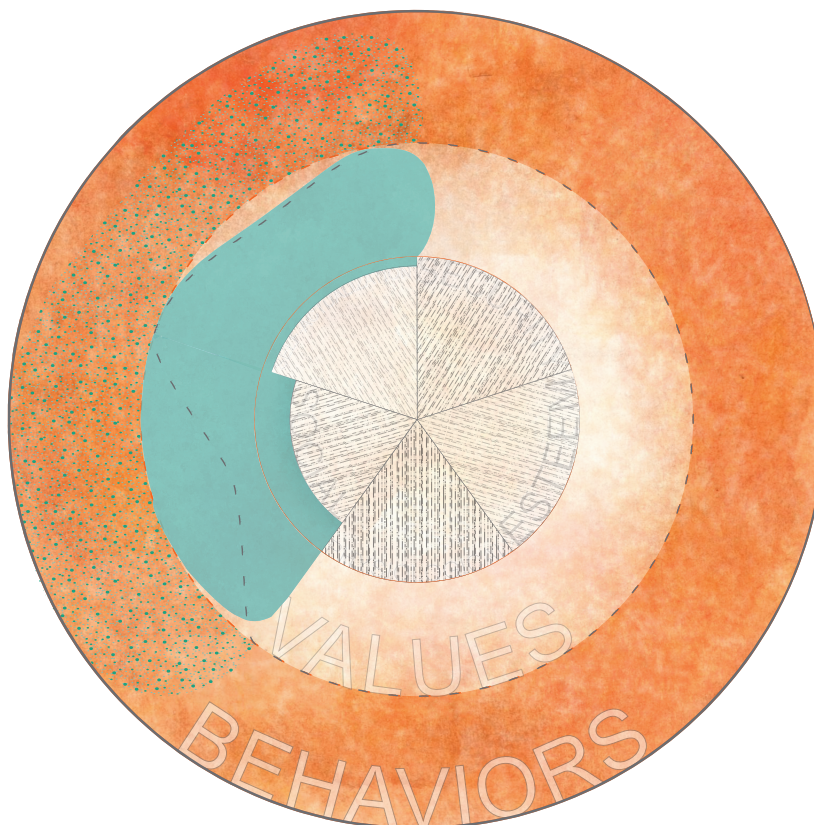


Figure 03.01 | The Evolved [Ignoramus]
Source: Author

an be found in the Appendix of this study.

- Example: A New Norris House
- In regard to the formal design, how well would you say the New Norris House functions for you as a home? Would you please rank your satisfaction with this functionality on a scale of 1-10? (On the scale, 10 is considered best.)
- How does the design of this house work to promote health and well-being for you as a resident?
- Do you feel as though the design of this house conveys a sense of order, security, or repetition? If so, how is this achieved and would you please rank this sense of order on a scale of 1-10?
- How well would you say this design instills a sense of community in you? Would you please rank this ability for the New Norris House on a scale of 1-10?
- Do any elements of this sustainable design actively engage you, the user (i.e. opening a window)?
- Would you say the overall design of the New Norris House conveys a sense of hierarchy, both spatially and programmatically? Would you please rank this level of hierarchy on a scale of 1-10?
- Do you feel as though the design of this home is innovative?
- How well would you say the overall design of the New Norris House promotes creativity and personal growth? Would you please rank this level of creativity on a scale of 1-10?
- Experientially, are there any quality, significant experiences within this home that you could share? How does the design play into this?
- Do you see or find value in this building? What elements of the design do you value most?
- Does living in a sustainable, architectural environment instill a stronger sense of environmental awareness in you?
- There is a notion that environmental awareness does not necessarily yield environmental behavior. Have you seen a change in your behavior since first living here? If so, to what would you equate this change in behavior?
- Have you experienced an increased sense of environmental consciousness and drive for environmental behavior outside of the New Norris House and would you credit these experiences to living here?
- On a scale of 1-10, would you please rank your level of satisfaction with the design of the New Norris House?

Performing these studies allows for the very generalized Sustainable Design Matrix to grow and develop, despite the complexity of human nature.

Three Rivers Market

Three Rivers Market is where our testing through experiential post-occupancy evaluations begins. This building in particular, was chosen for its ability to allow daylight to mold and enhance the experience of a typically mundane act—grocery shopping.

As a local cooperative, Three Rivers Market (as seen in [FIGURE 03.02](#), [FIGURE 03.03](#), and [FIGURE 03.04](#)) is primarily experienced by two groups of people—the employees and the shoppers. This made it imperative to analyze the design of the building for each occupant type, as the perception of the space would likely be different. The employee interview was conducted with the store's General Manager, Jacqueline Arthur.

The results of her experiential post-occupancy evaluation were very informative. Her favorite component of the design was the clerestory windows that surrounded the shopping area. Arthur recalled that the ability to see outside, to see the sky change with the sunset, was for her a design feature. She regarded this as her favorite experience



Figure 03.02 | Three Rivers Market
Source: Studio Four Design, Inc., 2011



Figure 03.03 | Cooperative
Source: Studio Four Design, Inc., 2011

and a powerful moment of connection with nature. This was a similar viewpoint to the shopper as well.

However, she also noted that her experience of Three Rivers Market as an employee was not as satisfactory away from the main shopping

space. The very natural light that made her experience so beautiful becomes robbed upon entering the uninviting, dark service space of the building. Even though this is an area of the building that does not hold as much programmatic and hierarchical importance, it is still an area of occupation that should attempt to fill the needs of those operating this business.

A New Norris House

The second piece of architecture to be evaluated was the New Norris House, as seen in **FIGURE 03.05**, **FIGURE 03.06**, and **FIGURE 03.07**. This project was chosen to represent a very different building typology than the mercantile Three Rivers Market. This is a residence and the analysis of this design proved valuable to the development of sustainable, vernacular architecture.

Through the two sets of interviews, it was learned that the house was valued most for its ability to integrate sustainable design strategies into an environment commonly associated with comfort, happiness,



Figure 03.04 | Produce

Source: Studio Four Design, Inc., 2011

and relaxation. The home was efficient not only in energy, but also space at 768 square feet. Though the small square footage only proved enlightening to the residents for its ability to meet functional requirements effectively.

The most powerful accounts of experience though related to daylight and the ability to see outdoors—just as it did with Three Rivers Market. The residents interviewed each discussed a connection to the daily path of the sun and the ability light had to illuminate, warm, and enliven the space within. With adequate natural light, even the smallest of spaces seems to grow in size. Additionally, the views outward prompted the residents to spend greater time outdoors, a behavior with numerous health benefits that contrasts common, reclusive tendencies within a home environment.

Ultimately, the residents of the home each regarded their experience within the space as life altering. Though they no longer live within the New Norris House, the behaviors learned were carried to new places of living. This evolution was credited to the design of the home and its ability to meet needs was regarded with high praise and value.



Figure 03.05 | Twilight Square
Source: Ken McCown, 2011



Figure 03.06 | Bedroom
Source: Ken McCown, 2011

Scripps Networks Interactive

The Headquarters for Scripps Networks Interactive was the last project chosen for this study and provides insight into the design demands of a work environment. Scripps Networks Interactive is the parent company of institutes such as the Home and Garden Television, the Food Network, and the D.I.Y. Network.

Therefore, as the corporate headquarters of a rather large entertainment empire, Scripps Networks Interactive required the design of its office to possess a high level of spatial flexibility. This is due to the wide array of occupations the building holds and the equally diverse requirements of each company department. The open layout of the building can be seen in [FIGURE 03.08](#), [FIGURE 03.09](#), and [FIGURE 03.10](#).

It became clear in the discussion with Pete Crowley, the Senior Vice President of Facility Services, that the satisfaction and safety of company employees was placed in high regard. To this point in this study, safety had not yet been associated with the incorporation of



Figure 03.07 | Doors Open
Source: Ken McCown, 2011

daylight. Crowley made such an association though given that each employee workstation had access to daylight. This design quality prevented employees from having to endanger themselves climbing on furniture to adjust overhead, artificial light sources—an apparently large issue from past management experience.

Additionally, it was found in this context that design strategies catering to esteem needs in particular, allowed for the highest levels of employee satisfaction. The personalization of individual workspaces within the open plan aided in making this design a welcoming, inspiring, and ultimately comfortable environment. Crowley said that issues over temperature controls were essentially obliterated with the design, as each employee has control over direct air flow.

Esteem was further instilled and valued on a departmental scale, as each work group possessed the ability to define their identity through “branding walls.” And collaboration was encouraged on multiple scales through various arrangements of meeting spaces. These

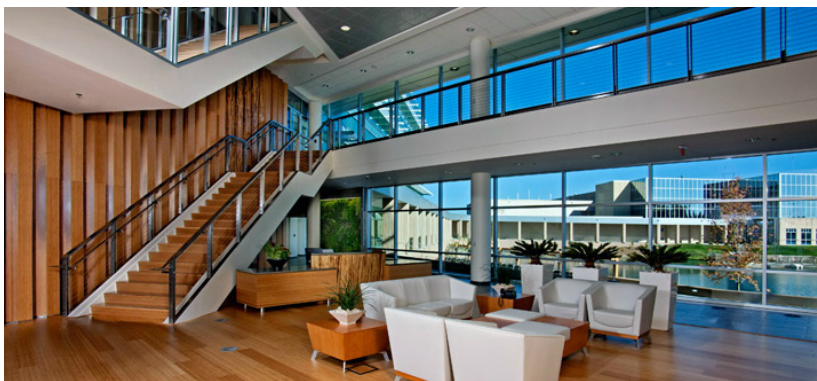


Figure 03.08 | Entry Lobby
Source: KZF



Figure 03.09 | Scripps Networks Headquarters
Source: KZF

are traits that Crowley believed to only enhance the operations of the company.

Crowley also recalled that users often performed sustainable behaviors without realizing the global or climatic benefits to our degrading world. Actions such as recycling were simply made easier through the incorporation of accessible stations. Employees no longer have to travel out of their way to perform this task and as a result, it becomes habitual. It becomes integrated with every day life. This is why it is important to redefine sustainability as not something that only exists on a large scale.

To this point, a vast amount of information and data has been collected. Now that the potential for architecture to create healthy, more fulfilling, evolved lifestyles has been recognized within three specific building typologies, it is necessary to recognize which design practices in particular showed universal appeal.



Figure 03.10 | Illuminated Flexibility
Source: Studio Four Design, Inc., 2011

CHAPTER 04 | EVOLVING

The information acquired from the interviews and presented in the Sustainable Design Matrix must now be synthesized and evaluated. Although specific design examples and building typologies were used, certain lessons learned through this course of inquiry can be applied to the design of projects across the vast spectrum of possibilities. These are the Best Practices.

BEST PRACTICES

01. The first practice encourages experiential post-occupancy evaluations and thinking regarding the following questions:

- Which design strategies resonate positively with building occupants and why?
- Which design strategies resonate negatively or not at all with building occupants and why?
- Which design strategies worked best to encourage—consciously or unconsciously—sustainable behaviors?

This exercise is important for practice because to know where we are going—where we want to be as a society—we must first know where we are. And the assessment of design strategies and occupant experiences will allow for progress to occur. The tools in architecture to create true sustainable environments largely already exist. The key is to know how to access them and implement them qualitatively for a positive user experience.

For instance, allowing for daylight to illuminate the spaces we inhabit—being homes, offices, even shopping environments—significantly and positively affects our outlooks, values, and ultimately

behaviors. Even Louis Kahn acknowledged that “a room is not a room without natural light,” as seen in his sketch in **FIGURE 04.00**.

If we are to slow environmental degradation and create healthier lifestyles, we cannot keep using the same failed system. And the assessment of design strategies and occupant experiences will allow for progress to occur.

02. The second practice promotes a simplified, technologically transparent sustainable design. As research has indicated, buildings incorporating high-cost, technologically-advanced systems within their design often increase occupant stress. Stress is not a positive; it does not allow for the occupant to have a quality experience of space. The increased stress of automated, “smart buildings” should cause designers to significantly reduce the use of often-expensive technological systems in sustainable design.

This practice also creates a serious issue of accessibility amongst the general population. Ideally, no special knowledge should be required for the use and operation of sustainable buildings and future

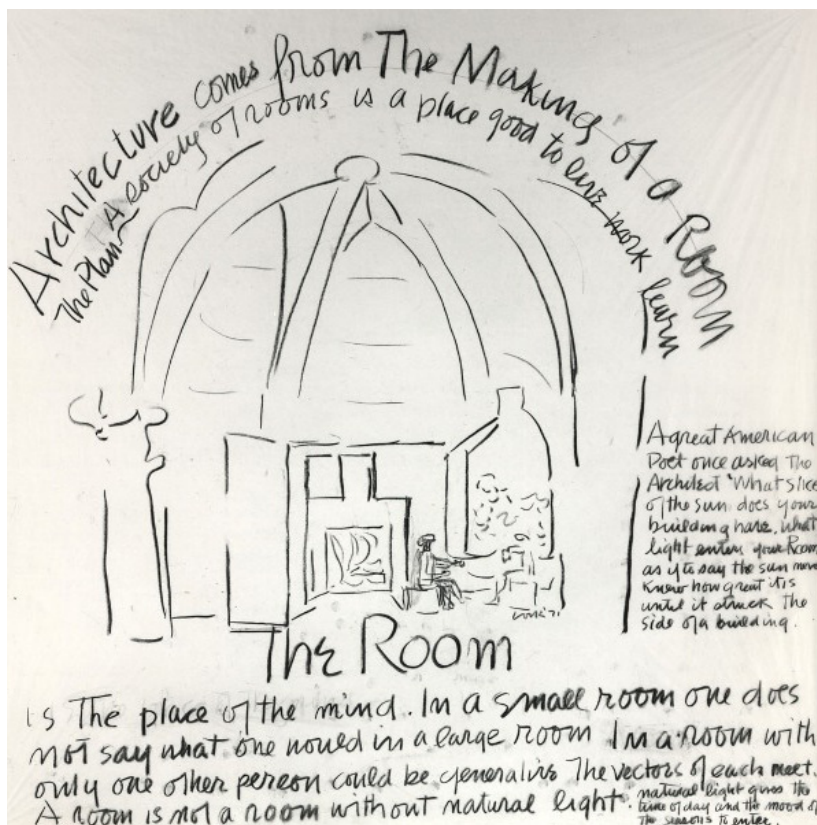


Figure 04.00 | The Making of a Room
Source: Louis Kahn

implementation the low-cost, passive building systems should certainly aid in integrating sustainability with the vernacular.

Furthermore, simplified design solutions and affordability can more deeply embed sustainability within the practice of architecture itself. It is this fusion, or integration, that is the goal as sustainability grows. As positive, environmentally harmonious ideas are built into architecture with greater success and frequency, even jargon like the term “sustainability” can disappear. Sustainability and architecture can become unified and synonymous. And the associated positive experiences created by the design of healthy, poetic, quality spaces will ultimately allow for this fusion to endure over time. Design, and sustainable behaviors as an extension, become integrated with living processes.

03. Make occupant health the new default in design (Weir 52). Designing healthier environments for life is an essential component to sustainability. The spaces we inhabit should work to inspire us, promote personal growth, and ultimately reduce stress. Creating the alternative is now unacceptable.

The three buildings previously mentioned each share a common design trait—healthy, sustainable behaviors were made easy. Recycling centers, for example, were incorporated into each design in such a way that their use became easy and automatic. People who grew accustomed to recycling within one of these three spaces, then became more apt to repeat this behavior elsewhere due to accessibility, habit, and gratification.

Additionally, healthy interiors were created in these spaces through the allowance of natural light. The daylight that warmed and brightened the rooms and minds of the building occupants assisted in creating the valued, positive experiences necessary for enduring, sustainable change. From an energy standpoint and quantitative approach, the penetration of daylight into each space often resulted in a reduced need for harsh, artificial lighting. From an experiential and qualitative viewpoint though, the same penetration of daylight into each space allowed for occupants to feel more relaxed, to feel connected to the cycles of nature, the seasons, and the day. It is this qualitative, valued sense of connection and influence on individual health that takes precedence, weight, and power in fostering sustainable change.

04. The fourth practice encourages general education regarding what true sustainability is and can be. As a society, we have the potential to be more than what we are. We have the potential to be

motivated by factors deeper than oil or money. The key in doing so is making sustainability personally relevant for the future. It is not only about saving the environment. It is also saving yourself and enhancing your quality of life.

The option for living a healthier, more satisfying life is in possible if design can instill values and better fulfill fundamental needs through the creation of positive experience. Change misconceptions through personal and professional education. It is this fourth Best Practice in particular that forms the intention and hopes of this thesis in moving forward.

CONCLUSION

This course of inquiry began with an acknowledgement that the epistemology of current architectural practice is largely flawed due to its myopia and technological dependence. Additionally, it was noted that sustainable behavior in society often results out of consequence for inflated oil prices or economic recessions. Unfortunately, this where society remains today. However, the need to change these correlations remains vital. It is vital not only on the basis of the volatile nature of oil crises throughout history, but also on the need to create a society of healthier, more satisfied individuals. In order for society to progress, however, one must first address the influence of the individual himself.

To promote a change in individual behavior towards sustainability, sustainability must first be made personally relevant. While issues concerning climate change and environmental degradation are important, their concern with global well-being alone results in their failure to truly resonate with the individual. It is then necessary to explore how design could be used to create this resonance and thereby encourage positive behavior choices.

The behavior of an individual is believed to largely be influenced by fundamental human needs that all individuals share. Such needs are physiological, pertain to security, social, concern personal esteem, and promote self-actualization. Currently, architectural design and building meets these needs at an incredibly basic level. However, it is not simply meeting the needs that is the issue for promoting behavior, but how the needs are fulfilled.

How design fulfills a human need influences not only individual behaviors, but also personal values. Although values are not as clearly defined as human needs, issues such as health, well-being,

satisfaction, and connection to natural processes are generally regarded as being universal desires. Current design is failing to instill these values and society is failing to progress towards a sustainable equilibrium state as a result.

By designing quality spaces better suited to fulfilling fundamental needs, the potential exists for heightened values and progressive changes in behavior to develop within an individual. The focus of sustainable architecture and design should be on user experience—in contrast to the aforementioned technological developments.

In contrast to the theoretical Hypocrite and Ignoramus behavioral typologies, there (hypothetically) exists the Idealist. The Idealist, as illustrated in **FIGURE 04.01**, presents an individual deemed “whole” and fulfilled. This is what design should aim for by filling the voids within. The “integrated wholeness of the organism must be one of the foundation stones of motivation,” (Maslow).

It advances a greatly expanded utilitarian ethic of sustainability that promotes the health and integrity of natural systems not only for their physical and material rewards but

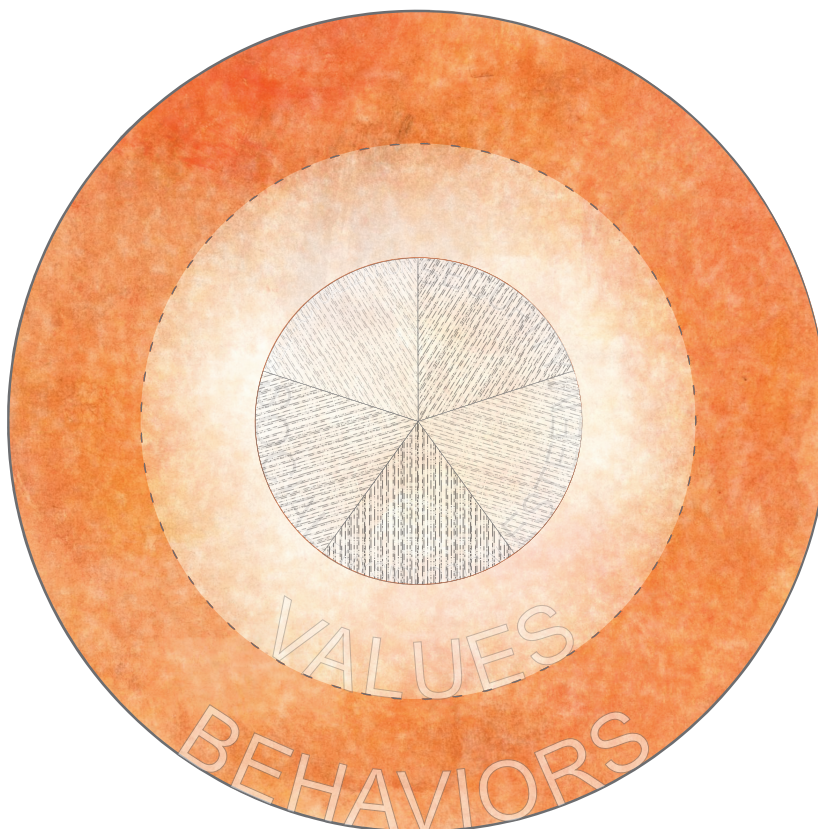


Figure 04.01 | The Idealist
Source: Author

also because they advance equally important human emotional, intellectual, spiritual needs. This ethic of sustainability embraces a vastly expanded understanding of human self-interest that reaches far beyond the cramped confines of economic materialism or the unrealistic idealism of nature's value independent of human welfare. This broad utilitarian ethic recognizes and affirms how the natural world serves as an indispensable basis for what it means to not only be physically and materially secure but also emotionally and intellectually whole. (Kellert 06)

Such ideas are challenged, developed, and explored through the Sustainable Design Matrix. The matrix serves as a tool for recognizing the positive or negative effects of a design strategy. It shows how design can meet a needs but fail to instill the personal values necessary to foster sustainable change. It shows how an alternative design can potentially evolve and awaken a person to become whole.

A series of Experiential Post-Occupancy Evaluations are used to test the validity and accuracy of claims and ideas explored in the matrix. The experiential post-occupancy evaluations are also tools that allow for designer and occupant to form a deeper level of spatial influence and understanding. They are tools for learning.

The Best Practices presented remain generalized and are a synthesis of the information acquired by the Sustainable Design Matrix and Experiential Post-Occupancy Evaluations. This is because sustainability does not have a specific "one size fits all solution." After all, social and personal change is a continuous process (Krasner 29). These guidelines for ethical practice seek universal appeal and influence within the wide array of design decisions, spatial possibilities, and various building contexts. These universal strategies are, however, the stepping stone in next phase of testing this hypothesis.

MOVING FORWARD

In moving forward, it is the creation of quality that designers and building occupants alike should seek and find. Once found, design can truly fulfill its potential as a catalyst for engendering healthy, ecologically harmonious futures. However, the testing of this hypothesis does not end here. For Maslow:

It is far easier to perceive and to criticize the aspect in motivation theory than to remedy them...The present theory then must be considered to a suggested program or framework for future research and must stand or fall, not so much on

facts available or evidence presented, as upon researches to be done, researches suggested perhaps, by the questions raised in this paper.

It is desired that the information presented here not only be applied to the practice of architecture and the vernacular, but to the design of a school in particular. For a school is an environment likely to have the most measurable impact on sustainability and development. As individuals, we owe it to ourselves to live a more fulfilling life. But this environment specifically possesses the potential to “build sustainability into the system and promote [individual] health and well-being from the ground up,” (Weir 53).

As previously acknowledged, the tools for designing healthier, more harmonious lifestyles largely already exist. The challenge now is to acknowledge them and use them for positive, enduring change. The challenge is to evolve in a healthier, more sustainable, balanced fashion—as an individual and as a society.

AFTERWORD

Upon the completion of this study, the theories I explored and developed were challenged for their validity, applicability, and resolution. Or so that was the intent. For the defense, I presented a poster to four practicing architects, the three members of my thesis committee, and my fellow students and colleagues of the College of Architecture and Design. This event is important to note due to the reaction and criticism of the four architects who served as the primary jury members at the time.

The original poster presented, as shown in **FIGURE 05.00**, was intended to be used as a means of explaining complex thought and research in a simplified, portable, accessible format. However, it was not successful. There was simply far too much text and the audience for the poster was not clear. I fully acknowledge that the criticism of the design of the poster itself by the jury was just.

In essence, the poster failed as a tool for communicating the complex theories I developed. I then created a second, far more simplified version of the poster in response to this criticism. The redesigned version is illustrated in **FIGURE 05.01**.

As far as the actual content, research, and theories of this study are concerned, I feel the reaction and criticism by the jury was far less constructive. This is not because the four architects disagreed with my hypothesis; rather, they simply would not listen. Not only did their attention spans rival that of a goldfish, their “God complexes” removed any willingness to assess their designs for potential flaws in experiential quality.

One jury member in particular even argued that the experience, as told by the building occupants, could not be trusted. I contest this and

DESIGN A BETTER LIFE

A STUDY IN THE POTENTIAL FOR ARCHITECTURE AND DESIGN TO ENCOURAGE HEALTHY, CONSCIOUS BEHAVIORS AND ENDURING SUSTAINABLE CHANGE

KNOW WHERE YOU ARE NOW

Essentially, human behavior and attitudes must evolve with the intention of building healthy and sustainable behavior. This is of course a shift away from the conventional relationship sustainable development has shown to us in the past. The "behavior" that is the economic heart of our culture should be exposed and our lives restructured "based on deeper and more meaningful goals." (Tom Bender)

The subsequent information presented proposes a means for achieving an equilibrium state of sustainable behavior on a societal level. The context of the volatile economy and inflation of prices against the proposed, new, balanced behavior state is highlighted in hopes of providing an inspired outlook for the future. In order to achieve such a societal change, however, we must first focus on the individual.

Societal change toward this equilibrium state remains the overall objective. Calling to the individual to become the means. It is necessary to explore the role architecture and design plays in influencing personal decisions and behaviors. The most "direct" outcomes in the context of space and the built environment as that sustainable action be encouraged.

KNOW WHERE YOU ARE GOING

What influences your behavior? The answer is neither one or the other. However, as behavioral influences can be human and/or nature. It can be said that at the core of an individual is a desire to fulfill basic human needs. Abraham Maslow presented this theory of motivation in 1943. His theory states that as human needs move to the forefront of the mind, the most "direct" outcomes in the context of space and the built environment as that sustainable action be encouraged.

KNOW HOW TO GET THERE

Human values in relation to behavior become harder to define as they are largely influenced by cultural contexts and past personal experiences. However, the sustainable design state aligned to promote general human values such as personal health, well-being, reduced stress, and a connection to nature. Essentially, design must bridge the gap between personal values and the built environment as that sustainable action be encouraged.

THE SUSTAINABLE DESIGN MATRIX

A TOOL FOR PROMOTING INDIVIDUAL BEHAVIOR CHANGES AND POSITIVE EXPERIENCES

PHYSIOLOGICAL NEEDS | BASED ON INDIVIDUAL ENVIRONMENTS

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EXPERIENCE A BETTER LIFE

Forming the best a basic human need is fulfilled is crucial to the foundation toward a sustainable equilibrium state. The information presented in the Sustainable Design Matrix is reflective of this. However, this remains a theory to be tested in reality, practical dimensions. This brings us to the next crucial step in the sustainable design process: the experiential post-occupancy evaluation.

Post-occupancy evaluations are necessarily performed as part of design practice. However, their intent is largely based on a desire to understand the energy performance of a building. There is little interest in understanding our experience, or what design elements actually affect a quality experience. There must be a greater understanding of design's ability to encourage behavioral change by fulfilling fundamental needs properly through.

THREE RIVERS MARKET

"where our feeling through" experiential post-occupancy evaluations began. The design team, working closely with the design team, the Sustainable Design Matrix to guide and develop, despite the complexity of human values. This building in particular, was chosen for its ability to allow daylight to mold and enhance the experience of a typically modern, yet-green, shopping.

THE NEW NORRIS HOUSE

was selected for its ability to incorporate sustainable design strategies in an environment commonly associated with comfort, happiness, and relaxation. The house is a testament to the power of design to create a sustainable equilibrium state. The design team, working closely with the design team, the Sustainable Design Matrix to guide and develop, despite the complexity of human values. This building in particular, was chosen for its ability to allow daylight to mold and enhance the experience of a typically modern, yet-green, shopping.

THE HEADQUARTERS FOR SCRIPPS NETWORKS INTERACTIVE

was the first project chosen for this study. Research indicates that working in a sustainable environment increases the potential for employees to incorporate environmentally sustainable behaviors in their daily lives. The context of the volatile economy and inflation of prices against the proposed, new, balanced behavior state is highlighted in hopes of providing an inspired outlook for the future. In order to achieve such a societal change, however, we must first focus on the individual.

BEST PRACTICES FOR HIGHER SATISFACTION

A FORMULA OF UNIVERSAL STRATEGIES FOR DESIGN APPLICATION, PUBLIC EDUCATION, AND THE MOST MEASURABLE IMPACT ON SUSTAINABLE CHANGE

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HEALTHY IS THE NEW DEFAULT IN DESIGN

The three buildings previously mentioned each share a common design trait—healthy, sustainable behaviors were made easy. As previously mentioned, a person accustomed to recycling at work is more likely to keep up the habit in his own home. Designing healthier environments for life is essential. The spaces we inhabit should work to inspire us, promote personal growth and ultimately reduce stress. Creating the alternative should no longer be an option.

TECHNOLOGICAL TRANSPARENCY

In fact, buildings incorporating high-cost, technologically-enhanced systems within their design often increase occupant stress. Under such circumstances, stress is not a positive. It does not allow for one to have a quality experience of space. Such positive experiences are what will allow for sustainable behaviors to be repeated over time.

CHANGE MISCONCEPTIONS THROUGH EDUCATION

Accessability in sustainable design can also translate to simplicity. There is not a technological solution to the problems at hand.

EXPERIENTIAL POST-OCCUPANCY EVALUATIONS

In order to know where we are going, we must first know where we are. And the assessment of design strategies and occupant experiences will allow for progress to occur. Generally, allowing for daylight to illuminate the spaces we inhabit—being homes, offices, even shopping environments—significantly and positively affects our outlook, values, and ultimately behaviors. Additionally, it can be said that the experience of sustainable design is heightened when the design itself is accessible.

POST-OCCUPANCY EVALUATIONS

Post-occupancy evaluations are necessarily performed as part of design practice. However, their intent is largely based on a desire to understand the energy performance of a building. There is little interest in understanding our experience, or what design elements actually affect a quality experience. There must be a greater understanding of design's ability to encourage behavioral change by fulfilling fundamental needs properly through.

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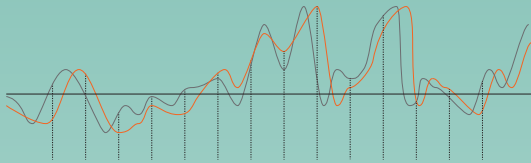
CHANGE BY DESIGN

A STUDY IN THE POTENTIAL FOR ARCHITECTURE AND DESIGN TO ENCOURAGE HEALTHY, CONSCIOUS BEHAVIORS AND ENDURING SUSTAINABLE CHANGE

Sustainable architecture is currently a practice of misconceptions and incomplete thoughts. It is an architecture largely dependent on technological advances that has failed to become embedded in vernacular design throughout a majority of the United States. It is an architecture so removed from the general population that it has failed to acknowledge the significant influence of human behavior in its quest to slow environmental degradation on a global scale.

Sustainability is more than a technologically based, financially motivated option for living. It is an invigorating opportunity for creating healthier environments on a mental, physical, and deeply personal scale. The intent of the following course of inquiry is to explore the potential for architecture and design to facilitate long-term environmental solutions. The hypothesis is that enduring societal change can occur through the creation and design of accessible, qualitative experiences.

WHAT INFLUENCES YOUR BEHAVIOR?



History indicates that as a society, we are more likely to behave sustainably when there is a financial need related to global oil crises and inflation. Altering this relationship is vital for the future. Catering to the individual in society becomes the means. It is necessary to explore the role architecture and design plays in influencing your personal decisions and behaviors. We must "dissect" ourselves in the context of space and the built environment so that sustainable action may be encouraged.

To promote a change in individual behavior towards sustainability, sustainability must first be made personally relevant. While issues concerning climate change and environmental degradation are important, their concern with global well-being alone results in their failure to truly resonate with the individual. It is then necessary to explore how design could be used to create this resonance and thereby encourage positive behavior choices. The behavior of an individual is believed to largely be influenced by fundamental human needs that all individuals share. Such needs are physiological, pertain to security, social, concern personal esteem, and promote self-actualization. Currently, architectural design and building meets these needs at an incredibly basic level. However, it is not simply meeting the needs that is the issue for promoting behavior, but how the need is fulfilled.

BE MORE THAN JUST A HYPOCRITE

FOLLOW THIS THOUGHT.

PERSONAL STATEMENT	AREA OF CONCERN	COMMON BEHAVIOR RESPONSE	EFFECTS OF COMMON BEHAVIOR RESPONSE
I am hot. I want to feel cooler.	I am uncomfortable.	To be more comfortable, I will adjust a thermostat.	As a result of this behavior, I will experience the following consequences: - increased stress over time - failure to interact with nature - economic costs - poorer air quality

CONSIDER THE ALTERNATIVE.

PERSONAL STATEMENT	AREA OF CONCERN	ALTERNATIVE BEHAVIOR RESPONSE	EFFECTS OF ALTERNATIVE BEHAVIOR RESPONSE
I am hot. I want to feel cooler.	I am uncomfortable.	Instead of adjusting a thermostat, I will open a window.	As a result of this behavior, I will experience the following benefits: - connection to nature - improved air quality - decreased personal stress - active engagement with space

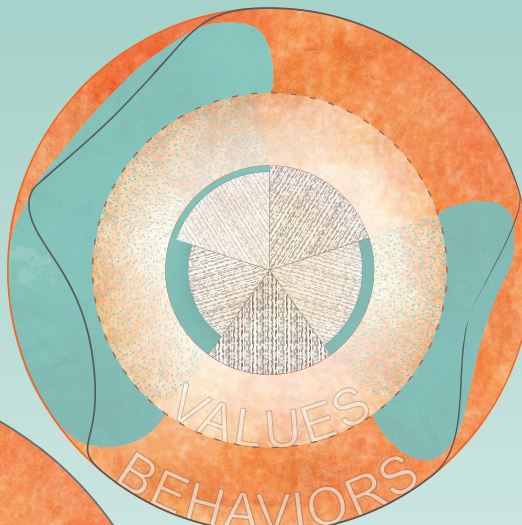
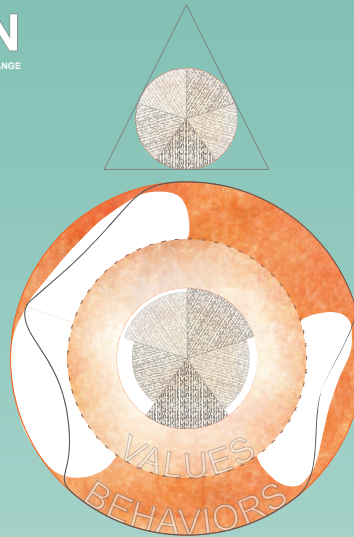
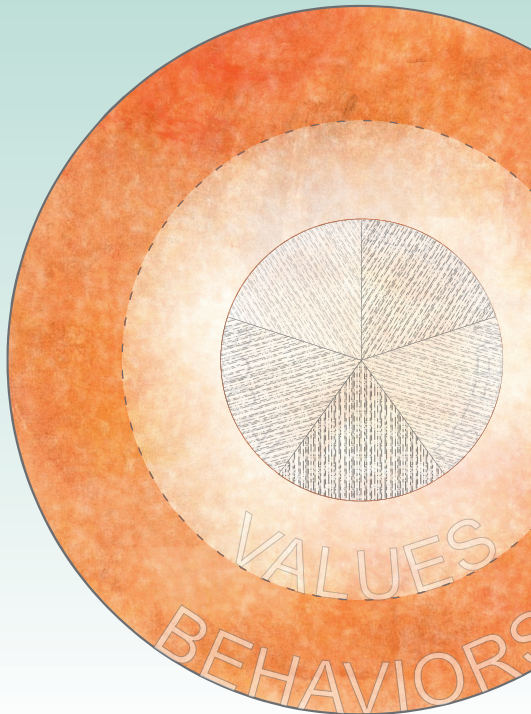
CHANGE THE EQUATION.

A HYPOCRITE = VALUES - BEHAVIORS

The disconnect between personal values and sustainable behaviors is largely caused by design failures and superficial societal aims. Additionally, we can also often behave in ways that follow unchallenged standards. For instance, adjusting a thermostat can fill a physiological need for comfort, but it voids all positive values and actually increases occupant stress over time.

How design fulfills a human need influences not only individual behaviors, but also personal values. Although values are not as clearly defined as human needs, issues such as health, well-being, satisfaction, and connection to natural processes are generally regarded as being universal desires. Current design and behavior decisions are both failing to instill these values. As a result, your behaviors are failing to progress towards a lasting state of sustainability. Be conscious enough about your actions to change the equation.

ALIGN NEEDS, VALUES, + BEHAVIORS



PROCESS FOR CHANGE

EXPERIENCE TRUE SUSTAINABILITY.

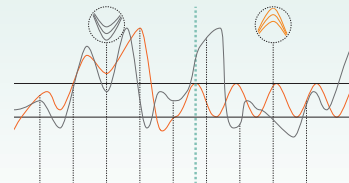
Accessibility in sustainable design can also translate to simplicity. There is not a technological solution to the problems at hand. The notion of accessibility in architecture here signifies the vernacular. Design, and sustainable behaviors as an extension, become integrated with living processes. As a society, we have the potential to be more than what we are. We have the potential to be motivated by factors deeper than oil or money. The key in doing so is making sustainability personally relevant for the future. It is not only about saving the environment. It is also saving yourself and enhancing your quality of life.

MAKE HEALTHY YOUR NEW DEFAULT.

Healthy, sustainable behaviors should be made easy. If you grow accustomed to recycling at work, you are more likely to keep up the habit in your own home. Designing healthier environments for life is essential. The spaces we inhabit should work to inspire us, promote personal growth, and ultimately reduce stress. Creating the alternative should no longer be an option.

SEE THE POTENTIAL FOR CHANGE.

You are now challenged to test the Alternative Behavior Response presented here, along with the additional practices found in its related Matrix. Knowing the benefits of your actions, knowing the deep, meaningful values they instill will help to foster a positive experience. A positive experience is more likely to be repeated. As a result, you can be the catalyst for a sustainable equilibrium state that our society needs.



EXPERIENCE MATTERS

Figure 05.01 | Revised Poster Concept
Source: Author

his argument that “architects could know an occupant’s experience better.”

It is easy, however, for those of us concerned with the design of the built world to fall into a trap of thinking that its configuration determines our social behavior and aesthetic experiences. This view is attractive because it enhances our self-images as social engineers. What we create is, however, a potential environment for human activity patterns and aesthetic appreciation. (Lang, Moleski 50)

Needless to say, the defense of this study was both a frustrating and insightful experience for me. It simply made clear the challenging road ahead of implementing sustainability not only into the practice and business of architecture. I have discussed here the need to redefine sustainability as a promoter of health and well-being—as an integral part of every day life. But it must also be redefined within the profession and certain omniscient, egotistical tendencies changed with it. Even the most veteran of architects and designers should be open to learning.

Practitioners must be open to changing preconceptions about what sustainable architecture is and can be. The responsibility to change and evolve does not lay with the client or general public alone. And an architect’s responsibility over his design should not end with the receipt of the last check for his services.

This statement is not made in regard to the legal binds and accountability of an architect, of course. Rather, it is a statement made to encourage learning and understanding of design strategies used for their effect on occupants and occupant behavior. It is a challenge to reconnect with the very people you are designing for or have designed for in the past.

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Karl-Werner Brand's chapter, "Environmental Consciousness and Behavior: The Greening of Lifestyles," begins with the presentation of comparative data differentiating environmental consciousness from environmental behavior. His study indicates that environmental consciousness does not necessarily indicate behavior, a notion bridged with the prioritization of values as described by Steg and de Groot. Behavior must ultimately be viewed within a cultural context to reflect such motivating priorities and preferences.

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"The Portable Particular" presents a portable process for designers to use in an attempt to create a holistic architecture that is environmentally and culturally harmonious with a particular site or building location.

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In "The Tragic Story of Human Success," Catton explores the historical evolution of human biology, population density, and habitation. He seeks to bring awareness to the current "state of things" by weighing the catalysts and speed of this evolution with the earth's carrying capacity. The purpose of such an exercise is to show that modern society can once more be defined as an ages of hunters and gatherers.

However, the process of hunting and gathering for homo-sapiens today is radically different than it was in 35,000 B.C., as the natural substances we seek now are exhaustible and not easily replenished. The cyclical nature of humankind's return to such a way of life denotes a return to square one. Essentially, Catton seek to "make clear to ourselves how we got where we are and why our present situation entails a certain kind of future" (17).

The notion of knowing where we are before we can move forward is vitally important for sustainability. This is the heart of Catton's article, as it allows the reader to weigh the consequences of humankind's actions in an understandable, historical context. To put it simply, we cannot find a solution to a problem if we do not fully assess the problem first. The primary critique of this article builds off of this last thought.

A full assessment of the manner in which humankind currently lives is not accounted for. Meaning, resource use has many more implications that simply "running out of stock." The burning of fossil fuels, the change in global climates, and the destruction of habitats due to oil extraction are just to name a few.

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Author Toby Israel uses his book as a tool for practitioners seeking to create "self-place" architecture. The purpose is to create places that allow users to achieve self-actualization, in accordance with Maslow's Hierarchy of Needs.

The problem is that the author takes Maslow's hierarchy at face value. Studies indicate that humans do have fundamental needs, but these needs do not necessarily conform to Maslow's pyramid structure. The author uses the pyramid and transforms it for his own use, maintaining the notion that several needs must be addressed before self-actualization can be achieved.

While the overall objective of this work is admirable, practicality is also an issue. Few clients will wish to have a psychological evaluation of their past, present, and future before commissioning a building. I don't feel as though a balance between design and psychology was achieved in this book.

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In this work, author Ralph Knowles seeks to reawaken the lost connection modern society has with the natural world and its rhythms. Knowles begins by looking to the past for historical connections between the natural life cycles of people and their homes. He addresses the migrational tendencies people share resulting from the natural cycles of the seasons or day, the spatial transformations of a home through the opening of a window, and the “metabolic” inclination for gathering humans possess. Essentially, he presents how life was affected by rituals.

Through understanding such rituals in a past context, Knowles believes the gravity of society's current disconnect with nature might be felt. The growth of urban centers and the development of technology has changed the way people live. However, the current divorce standing society has with nature need not be a permanent one. Knowles begins to analyze and redefine common connotations used to describe the built environment. In particular, the concept of “sheltering” comes into light.

Sheltering does not only come from the houses people live in, but additionally, the clothes they wear, and the cities they reside—even a shadow possess spatial characteristics. By re-examining the concept of sheltering, Knowles believes that architects, designers, and society as a whole can better learn to respond to the rhythmic cycles of nature so arduously avoided by modern means of living. He advocates reconnecting homes, cities, and people to their natural world by paying close attention to the sun in particular and its spatial effects.

Instead of embracing nature's elements and rhythms, society shies away in high-energy, enclosed buildings. However, Knowles believes a connection to nature, and even more greatly our souls, can be revitalized through architecture and building that honors natural rhythms, forces, and ecological balance. He believes that a reawakening can be achieved through design that engages nature, creativity, climate, and even choice into everyday living.

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In this book, William McDonough and his colleague, Michael Braungart, construct an argument calling for the minimization of damage resulting from human industry. Through an

analysis of the birth of the industrial revolution, the authors highlight a model for manufacturing that has since yielded a substantial amount of waste. Cradle to Cradle calls for the transformation of such manufacturing means by essentially, as the title indicates, “remaking the way we make things.”

McDonough and Braungart believe that this must first be accomplished by challenging the common notion to “reduce, reuse, recycle.” For such an idea supports the “cradle to grave” model for manufacturing that is inherently damaging in its cast of waste. Instead, the authors promote a means of production that uses nature as a primary model.

For example, when a tree produces seeds, it is primarily for the sake of sustaining life—meaning the seeds are intended to grow into other trees of the same species. However, not all seeds accomplish such a task. Yet those seeds that do not produce trees are not considered to be waste. Instead, those seeds often find other purposes in nature. For the authors, this notion of “waste equals food” pours the foundation for their argument for change.

The primary idea learned from this example in nature is that products can be designed so that, after their use, they may provide nutrients of equal importance instead of waste. Such “nutrient cycling” has the potential to create industrial systems, buildings, and even communities that peacefully coexist with the natural world. Furthermore, McDonough and Braungart clearly stress the importance of transforming society’s current model for manufacturing, as it is the key to achieving a sustainable, prosperous future.

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In the book *Ecological Design*, authors Sim Van Der Ryn and Stuart Cowan argue for a greater understanding of ecology in design. By being more environmentally conscious in designing not only buildings and cities, but also products, a more sustainable world can come to fruition. The text, much like that of *Cradle to Cradle*, poses a challenge for the reader to live and design in ways that do not merely diminish the impact of damage on the environment, but instead, restore it.

Using examples from architecture to agriculture, to wastewater treatment and industry, the authors present a foundation that is necessary for reestablishing a connection to the natural world. For example, the notion to "make nature visible" addresses the biophilic opportunities for space within the built environment. The potential exists for constructed space to explore means of energy preservation and biodiversity. Such ideas as expressed in *Ecological Design* inspire a true integration of design and living systems so that a more ecological world can sustainably, peacefully thrive.

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The article "Design In Mind" stresses the high level of influence our surroundings have on our moods, thoughts, and behaviors. The intent of acknowledging this fact is to aid in the creation of public buildings that promote sustainable choices. Currently, there is a significant disconnect between a technologized environment and what it can do, versus what we as human beings need to flourish. For instance, designs driven by technology and automated systems, a beneficial element in energy conservation, significantly minimize the ability for people to have control over their environments.

Such an inability ultimately results in heightened stress levels and the goal for creating healthier spaces becomes lost.

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White, Matthew P., Benedict W. Wheeler, and Michael H. Depledge. "Would You Be Happier Living in a Greener Urban Area? A Fixed-Effects Analysis of Panel Data." *Psychological Science* (2013): 920-28. <http://pss.sagepub.com/>. Association for Psychological Science, 23 Apr. 2013. Web. 09 Sept. 2013. <<http://pss.sagepub.com/content/24/6/920>>. Data acquired from over 10,000 individuals in the United Kingdom is used to explore the relationships between well-being and urban green space. Mental distress was also an element measured within the study, as it poses as the antithesis of desired, good mental health. Findings from the study indicated that individuals, on average reach a higher level of well-being and a lower level of mental distress when living in urban environments with ample green space. Although the effects on the individual were generally small, change was shown to happen through the cumulative building of values incrementally on a personal basis.

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Ian Wight's article, "Placemaking As Applied Integral Ecology: Evolving An Ecologically Wise Planning Ethic," explores the potential of placemaking in post-modernizing planning of sustainable futures. The purpose of such an exploration is to pursue a level of ecological wisdom absent from current practice. Wight is essentially trying to show the need for a pathology motivated by spirit, quality, and value.

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APPENDIX

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GLOSSARY OF TERMS

The following definitions are supplied to clarify the intent of the words used in this course of inquiry. There are naturally alternative meanings for these terms. However, these connotations and references were chosen for their clarity, relevance, and validity.

Terms

Adaptive Capacity: the capacity of a system to adapt if the environment where the system exists is changing (Folke, Colding, Olsson, Hahn 539)

Adaptive Cycle: a general model of systemic change that proposes that the internal dynamics of some systems cycle through four phases: growth (r), conservation (K), release (omega), and reorganization (alpha) (Holling 22)

Behavior: the response of an individual, group, or species to stimulation or its environment (Merriam-Webster)

Biodiversity: biological diversity in an environment as indicated by numbers of different species of plants and animals (Merriam-Webster)

Biophilia: a hypothetical human tendency to interact or be closely associated with other forms of life in nature (Clayton, Myers 81)

Biosphere: the part of the world in which life can exist; living organisms together with their environment; life (Wilber 07)

Carrying Capacity: the maximum population that an area will

support without undergoing deterioration (Catton 22)

Climate Change: a long-term change in the earth's climate, especially a change due to an increase in the average atmospheric temperature (Merriam-Webster)

Consciousness: the state of being awake and aware of one's surroundings; awareness by the mind of itself and the world; knowledge that is also shared by a group of people (Merriam-Webster)

Culture: the integrated pattern of human knowledge, belief, and behavior that depends upon the capacity for learning and transmitting knowledge to succeeding generations (Merriam-Webster)

Ecology: a branch of science concerned with the interrelationship of organisms and their environments (Merriam-Webster)

Ecological Wisdom: synonymous with ecosophy; living in accord with nature; living in ecological harmony (Wight 127)

Economics: a social science concerned chiefly with description and analysis of the production, distribution, and consumption of goods and services (Merriam-Webster)

Ecosystem: the complex of a community of organisms and its environment functioning as an ecological unit (Merriam-Webster)

Environment: the conditions, objects, or circumstances by which one is surrounded; the conditions and influences that affect the growth, health, progress, etc. of someone or something; the natural world; the spatial atmosphere of a building (Merriam-Webster)

Environmental Behavior: actual ways of acting on the environment that must be viewed within a cultural context (Brand 206)

Environmental Consciousness: a mental representation of public environmental debate with cognitive and affective aspects (Brand 206); a cognitive awareness of one's self, behaviors, and the effects of those behaviors on the environment (Author)

Environmental Design: a field of study and action, concerned with the conditions which are necessary to initiate, support, and maintain human activities, as well as with developing the means for intervening in such conditions to bring about the desired change...it is important to clarify here that "environment" is understood as those conditions, both physical and social, in which human beings behave

and relate, and that “design” is understood as a process of problem solving, decision making, and implementation to bring about a desired change in some current state of affairs (Krasner 03)

Environmental Knowledge: knowledge about and information on ecological connections and problems (Brand 206)

Environmental Psychology: a field of study dedicated to investigating the effects of physical settings on various aspects of behavior (Krasner 66)

Environmentalism: advocacy of the preservation, restoration, or improvement of the natural environment (Merriam-Webster)

Epistemology: the study of the nature and grounds of knowledge especially with reference to its limits and validity (Merriam-Webster)

Equilibrium: a state in which opposing dynamic forces or actions are balanced so that one is not stronger or greater than the other; a state of emotional calmness (Merriam-Webster)

Esteem Need: a need to feel important; a sense of achievement or conveyance of hierarchy (Lang, Moleski 64)

Experience: the act or process of directly perceiving events or reality; direct observation of or participation in events as a basis of knowledge (Merriam-Webster)

Hierarchy: an organizing system where an element is regarded as superior or subordinate to another element; a ranking system of relative importance or status (Author)

Hierarchy of Needs: a theory developed by Abraham Maslow that states our actions are motivated in order to achieve certain needs (Cherry)

Identity: the distinguishing character or personality of an individual (Clayton 165)

Methodology: a body of rules, procedures, and principles employed by a discipline (Merriam-Webster)

Motivation: the force that initiates, guides, and maintains goal-oriented behaviors; biological, social, emotional, or cognitive forces that cause someone to take action; the general desire of someone to do something (Cherry)

Nature: the external world in its entirety experienced through an interaction with physical elements (plants, animals, landscapes, etc.) or natural forces (daylight, wind, rain, etc.); the inherent character or basic constitution of a thing—essence (Merriam-Webster)

Need: the physiological and psychological requirement for the well-being of an organism; something that is necessary, essential, required (Merriam-Webster); the basis for Abraham Maslow's humanistic theory of motivation (Cherry)

Paradigm: example, pattern, archetype (Merriam-Webster)

Personalization: to make personal or individual; specifically, to mark as the property of a particular person (Merriam-Webster)

Physiological Need: a need for survival, health, development, and comfort (Lang, Moleski 64)

Place: conceived as the intersection of physicality, functionality, and spirituality (Merriam-Webster)

Placemaking: the art of creating 'places of the soul,' that uplift and help one connect to social and natural contexts (Wight 127)

Reductionism: a theory or procedure that reduces complex data or phenomena to simple terms (Merriam-Webster)

Resilience: the amount of change the system can undergo and still retain the same controls on function and structure; the degree to which the system is capable of self-organization; the ability to build and increase the capacity for learning and adaptation (Meadows 188)

Scale: a graduated range of values forming a standard system for measuring or grading something (such as time, distance, or levels of organization) (Merriam-Webster)

Security Need: a need for physiological protection (from nature, from the built environment, from machines, from people); a need for psychological protection (boundaries, privacy, territories) (Lang, Moleski 64)

Self-Actualization Need: a need for expression, creativity, learning, proficiency, and personal growth (Cherry)

Social Need: a need to establish social and individual identity; a need to belong (Cherry)

Spirituality: that which gives meaning to one's life and draws one to transcend oneself (Merriam-Webster)

Sustainable Design: design that minimizes environmentally destructive impacts by integrating itself with living processes (Van der Ryn, Cowan 33)

System: a regularly interacting or interdependent group of items forming a unified whole (Meadows 188)

Value: relative worth, utility, or importance (Merriam-Webster)

Volatility: a state that is likely to change in a very sudden or extreme way, especially for the worse (Merriam-Webster)

Worldviews: a comprehensive conception or apprehension of the world especially from a specific standpoint (Merriam-Webster)

THREE RIVERS MARKET

The following interview was conducted in-person with the General Manager of Three Rivers Market. As with all other interviews, Jacqueline Arthur was provided with a list of questions in advance. Her comments were made in a face-to-face discussion with this author and transcribed here. Her insights into the experience of this building are valued for their acknowledgement of both the shopper and the employee.

Jacqueline Arthur

Kathleen Lewis:

How well would you say that the overall design of your market meets the functional requirements of your business? Would you please rank this level of functionality on a scale of 01-10?

Jacqueline Arthur:

I would say it's a 10. I mean, I can tell you some things that could have been improved or we didn't think about at the time. However, in terms of the functioning, us being successful as a business, and us meeting our projections, we are over and above where we thought we would be. So I would definitely say a 10.

Kathleen Lewis:

How does this design work to promote health and wellbeing for you, your fellow employees, and your clientele?

Jacqueline Arthur:

Well, it's interesting because of where we moved from. So we are essentially going from really bad conditions to really good. So the health and wellbeing of our employees is probably even ranked that much higher because of what we endured to get here. I think it's truly

a 100% improvement over where we were. Now how we would feel if we were coming in “cold,” I’m not exactly sure. But having clean surfaces, natural light, the ability for everyone to see each other when we are working and find each other easily, the high ceilings, all help to make this a much better, a much healthier place to work.

Kathleen Lewis:

So generally everyone, from the employees to the shoppers, seems to enjoy the space a lot more than what was had before?

Jacqueline Arthur:

Yes, I mean there is a difference between coming from this really dysfunctional space, where everyone had learned to adapt and do what was necessary, to suddenly being where we were essentially supposed to be from the start. But then there is another level where it just feels...well, you know it’s healthier. It’s a new building and there is a lot more light. It’s generally setup safer and people can get in and out of the bathrooms. So there is a sort of normal, “new building” sense of comfort. I mean, being able to see in and out of the building and being able to see each other is simply vital.

Kathleen Lewis:

The daylight was definitely something I noticed when I first came to Three Rivers Market. I mean, some of those products on the shelves you can get at a store like Earth Fare or The Fresh Market. However, those stores are just an empty shell of a building. There is nothing to differentiate them from any other grocery store. But here, I can definitely feel a sense that this business is about more than just what is on the shelves. It’s a whole atmosphere that tries to further this idea of environmental responsibility from just the products being sold.

Jacqueline Arthur:

Yes, and we think about environmental responsibility a lot. We try not to have our shelves cluttered or overstocked. We want our store to be about more than just the products we sell and think a lot about hunger issues, food access issues. I believe it is the Natural Resource Defense Council says that 40% of food gets wasted. So we follow the recommendations that they have in terms of not overstocking our produce department for instance. People come in and say “Oh, it’s abundant and beautiful,” but you can guarantee that a lot of that is going to waste. So we don’t waste anything and we try to educate people about that a little bit (FIGURE 06.00).

You know, every six months or so we have someone from Earth Fare come here looking for employment and they say, “They don’t even recycle!” But people find it shocking because they link product standards with this whole way of operating. As organic shopping becomes more and more popular, companies see that that is an

area where the money is. I mean, private equity corporations own Earth Fare and they are not even from around here. It's just a "money maker" right now that it is disconnected from the underlying motivations most people have in wanting to buy these kinds of foods. Everything we do we try to make sure fits in with our end statements and vision statements.

- End Goal: Three Rivers Market, a cooperative center of sustainable commerce, exists to benefit its members by creating and nourishing a healthier environment, healthier people, and a healthier community.
- Primary Strategy: the sustainable growth and transformation of our cooperative as a means for delivering on the promise of the ends.
- Vision of Success: Our community has access to healthy food. How local economy is humane and strong. Our people are happy.

Kathleen Lewis:

Do you feel as though the design of this market conveys a sense of order, security, or structure? If so, how is this achieved and would you please rank this level of order on a scale of 01-10?

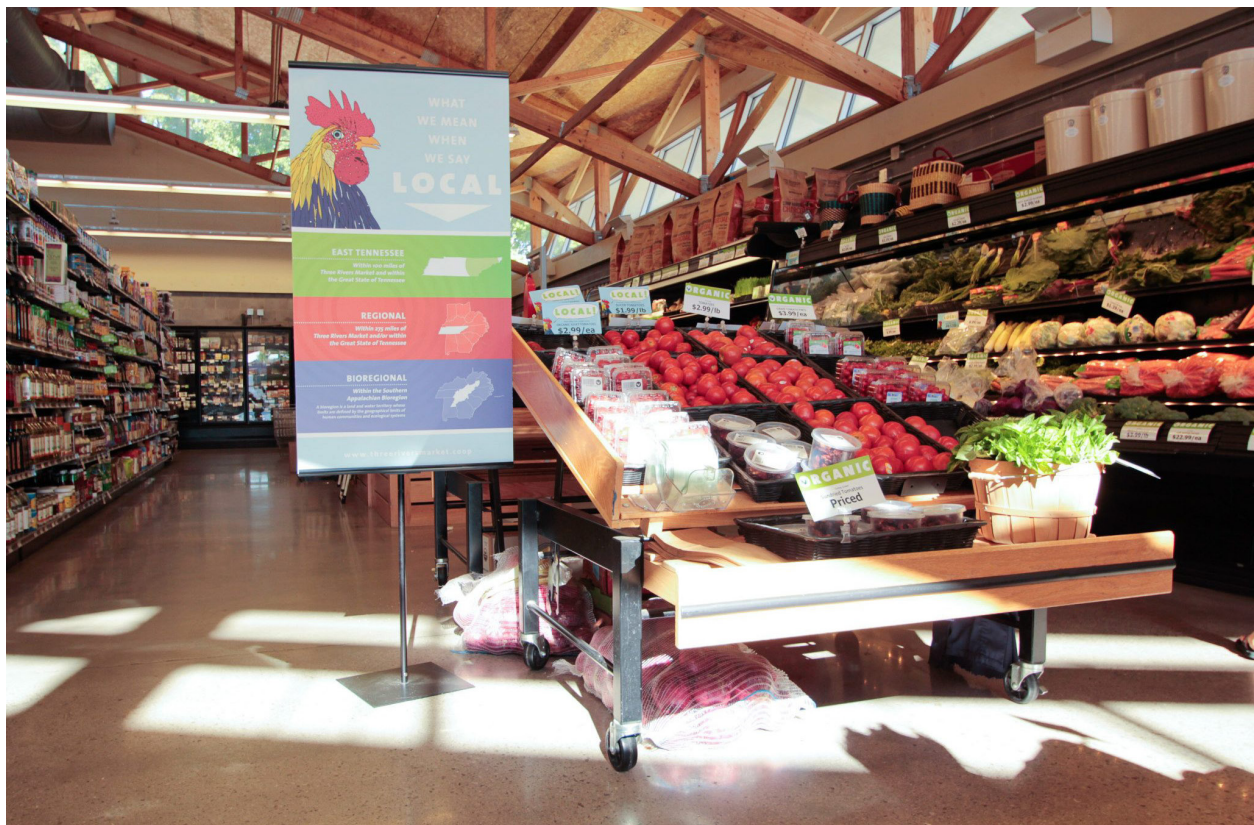


Figure 06.00 | Locally Grown
Source: Studio Four Design, Inc., 2011

Jacqueline Arthur:

Can you tell me a little more about your thinking behind the question?

Kathleen Lewis:

Well, one of the fundamental needs that I am discussing that all humans are supposed to share is a need for security. Now this doesn't necessarily mean, "Do you have a security system?" I am more asking whether or not to feel safe and comfortable in the space you were in. A lot of this idea of comfort can potentially come from honesty of the materials, being able to see and understand the structural system, the way the building is arranged programmatically, and general functionality.

Jacqueline Arthur:

I would say it's not quite at 10 and that's only because of little things.

Kathleen Lewis:

What "little things" are you referring to?

Jacqueline Arthur:

Well, I am just thinking about when we first designed the building. We had to cut out several things because of the budget. One of these items was the foyer, I guess you could call it. The idea was for you to come in and have to pass through a second set of doors before entering the market. Well, we had to eliminate that second set of doors. So now you come straight into the space and the weather comes straight into the space with you. I mean, we have an air curtain to try to offset that some, but I did not get a heated one. Now I wish I had, but at the time, I didn't think we would need it. Anyway, there's something about the entrance that changed because of how the design got degraded through the budgeting process. So in the way I am thinking of order, security, and the overall strength of the building, that is a weak point to me.

Somewhat too the back door is a weak point for me. As you know, we reuse the building and that included the loading dock. But there are sight lines that have been cut off because of a little wall that was put in to protect the water heaters and other equipment.

Once you are in the main space of the market though, you can see how the ceiling works, how open the structure is. You can also see how the new portion of the building works off of the old and that is something fun to show people. They enjoy seeing it as well. For these reasons, more so than the weak points, I would rank this level at a nine.

Kathleen Lewis:

Does the reuse of the old building play into the ideas or vision statements that you have as a co-op? Does it play into the idea of not throwing things away?

Jacqueline Arthur:

Yes, though we did have to tear down one small building in the process of construction. It did help us to reuse the remaining building, even though it had no historical value or significance. Over the past 30 years we have been in the midst of extensive historical restoration, particularly in the houses around our previous location. So there is a sensitivity to that for us. Even now, we have people saying that we should not tear down our old building, the building we used to operate from. But yes, reusing the building found on our new site was important to us. It also helped our business in the sense that it helped us tell our story and show some of the values we share.

Also, there was a sense of innovation behind reusing the old building. The first plot was that the new structure would continue off the old, down, as though it were a long rectangle, and create street presence for our business. But just to think, “Well, Baxter is an important street also,” we began to really think about how people would walk to Three Rivers from the surrounding neighborhoods. So instead of the long rectangle that was the first plot we just started to, not necessarily orient the building that way, but tilt it that way. It was an idea that was interesting to people and very well received

Kathleen Lewis:

Would you say the members of your co-op influenced the design process at all?

Jacqueline Arthur:

It is really hard to say. I mean, we are already looking at doing a second store and with that we hope to go for a more methodical building process. But by the time I was hired in 2000 there had been numerous focus groups and discussions about needing a new building. So we had a lot of information compiled already. This information really was not too different from what you see at successful co-ops across the country. So in the beginning, the members primarily wanted just what everyone else had already achieved. That was essentially the extent of their influence, with budgetary considerations aside.

Generally, I felt it was important to rely on a local professional for the design. I know there are some co-ops that try to design their spaces internally and they just end up, quite frankly...ugly. As I said, I think it was just as important to hire local professionals. I mean, this was a big project and took so long in coming. We really needed it to look good. And when there would be different choices to be made for colors used, or other small decisions, I would bring those items back to the leaders to see if consensus could be reached. Our board really

did not want to be involved though. They were truly more concerned with the function of the building.

Kathleen Lewis:

How well would you say this design embodies a sense of community?

Jacqueline Arthur:

I'm not sure how to answer that. I mean, I do not know about "embodying" community per se, but I do feel that design enhances a sense of community. In a literal sense, it is so easy for people to meet here. It's easy for people to find each in the open market space. We have also been able to use the space for a lot of different, big events. So being able to use the parking lot, the store, and the patio area in a flexible way has been really important for community enhancement. I don't know how else to talk about it though.

Kathleen Lewis:

Well, you previously mentioned the place you operated from prior to this location. Do you think that the building you're in now gives you more of the presence in the community? Has being here grown your membership at all?

Jacqueline Arthur:

Oh, yes! Our membership is approximately five times larger than before. Our sales are double what they were. I mean, the building is attractive and I think people were actually surprised by that. The design is attractive without looking too extravagant or unnecessarily expensive. The design still conveys a sense of practicality, yet it is pleasing to people. There is also a nice mix of this "rural feel" with modern elements. The design does not try to pretend like it's anything other than what it's supposed to be.

Kathleen Lewis:

So you are essentially saying that the design of the building is accessible or relatable?

Jacqueline Arthur:

Yes, I think people feel excited to walk in the doors and see what's here. It's clearly though a grocery store and has the features one would expect with such a business type. Going back to one of the problems at the old store, people were not sure if they were even allowed to come in. They were unsure if they could enter without membership status. But essentially, a co-op is still a business. So

people who were previously apprehensive, now feel comfortable shopping at Three Rivers. That is clear.

Kathleen Lewis:

Your business is adjacent to a residential community, as you know. Has your new location and building drawn in this business or is this something you had before?

Jacqueline Arthur:

I would say we primarily had residential business before. So the biggest surprise has not been the residential support. It has been the County building, Holston gases, people who I don't think would have previously sought us out. Our presence now gives people permission to come in. Before, there was a strong sense of ownership by the surrounding neighborhoods even though they only account for approximately 20% of our business. So unless you were already into natural foods, organic foods, or locally grown foods, you would not come in to our previous location. We now have a strong lunch business, and again, I think it is from those people who would not have sought us out had we not relocated to this building.

Kathleen Lewis:

Has the use of sustainable design strategies affected the image or standing of Three Rivers within the community? If so, please explain how you believe this is achieved.

Jacqueline Arthur:

Definitely! One of the things I tried to change when I first began working here was the notion that we "talk the talk" but we don't "walk the walk." We came from this crappy, non sustainable, almost "hippy-like" version of the building we are in now and that just didn't meet our needs or vision. I think this building now really illustrates that we are willing to "walk the walk." And again, some of what Greg Terry did just to help us get recognized by the green building community really brought free publicity as well—from the award, to the general attention of the community, to participating in some of the local building tours. It's all really made a big difference in creating a holistic sustainable image for us in the community.

Kathleen Lewis:

Do any elements of this sustainable design actively engage the users?

Could you elaborate for me?

Kathleen Lewis:

Certainly! In a typical building, for instance, that could mean opening a window. I wrote that question because more often than not, in sustainable buildings today, systems used in the operation of the building are becoming so automated and "high-tech" that they are

failing to properly connect with the users. Such failure to properly interact the users with the building, can result in the original sustainable motivation or design intent being lost.

Jacqueline Arthur:

I don't know. I'm not sure if I can think of any.

Kathleen Lewis:

Can I give you my thoughts on the answer? Though please remember that there are no correct or incorrect ones.

Jacqueline Arthur:

Yes, please.

Kathleen Lewis:

You promote people to walk here. I mean, the way the building is positioned within the site allows for people to easily walk in off the street. You also have the bike racks out front, thereby promoting an additional means of transportation. And although daylight isn't something that the users interact with from a behavioral standpoint necessarily, such exposure is proven to have numerous health benefits and an awakening effect on the mind. So in my opinion, although the active engagement of the user is not as "black and white" as opening a window might be, there is still an intention there and a strong promotion of the lifestyle you are seeking.

Jacqueline Arthur:

I agree. We did truly try to make sure that where people came in off the sidewalk was clear. We did not want them to have to walk through the parking lot and the same goes for those riding a bike here (FIGURE 06.01).

Kathleen Lewis:

You also have built in recycling stations, correct?

Jacqueline Arthur:

Yes.

Kathleen Lewis:

To me, having those recycling stations built in can also say that this is something your business is permanently trying to accomplish—that you are committed to being responsible in your own actions and hope your shoppers do the same.

Jacqueline Arthur:

You are completely right. I couldn't have said it better myself. Well, I think too, in terms of how we operate, we also establish recycling centers in the back of house. We do have automated lighting systems, but there still is an accountability for other aspects of our operations. Though a note on those lighting systems...if you happen

to be sitting in the office or standing in the storage room for a period of time, you will eventually find yourself waving your arms about to get the lights back on. They don't always sense that you are still there if you are still.

Kathleen Lewis:

Does this design convey a sense of hierarchy, both spatially and programmatically? Would you please rank this level of hierarchy on a scale of 01-10?

Alright, explain that one to me.

Kathleen Lewis:

Hierarchy can indicate what is important, what is public, what is private. Spatially, for instance, the shopping center has significantly higher ceilings than the office we are in now. That can convey a sense of hierarchy. I'm not trying to answer the question, but the eating space is in the front of the store and, to me, that conveys a sense of hierarchy, as it is a gathering space. It places community toward the front indicating its importance. The windows are also larger there than they are in these private offices and that change in scale is



Figure 06.01 | Biking and Shopping
Source: Studio Four Design, Inc., 2011

seen as they begin to wrap around the intersecting volumes of the building.

Jacqueline Arthur:

I would agree and say “yes” to your original question. I also think, operationally, the spatial hierarchy helps us as employees to really let us know when we are on the floor (referring to the shopping area). And that’s a big deal.

When you are in the back, for instance, and you are unloading a pallet or receiving a truck, once you step through those doors the space becomes utterly different. So although you are still working as you unload, you are also put “on stage.” You are now dealing with customers. You are now seen as something different, something more than you were just behind those doors to the loading dock moments before. You know that that change indicates that you need to become available and accessible to people.

So essentially, having that different sense of the space between the back and the front helps operationally to understand that you, as an employee, have a change in your role now as well. I think too having both the eating area up front and the patio along the street creates a strong interface with the community. I guess to rank the sense of hierarchy, I like that, that’s a ten.

Kathleen Lewis:

Do you feel as though the design of Three Rivers Market is innovative?

Jacqueline Arthur:

Yes, and I feel that myself. But also, just how the structure was built up and over the existing concrete warehouse was shocking to people. They really were surprised at how good it looked. We would tell people, “Oh, we bought that site,” seeing its potential and what all it could be. They were not always so clear of that vision, especially coming from an old, rundown facility that was never even intended to serve as a store. So people were pleasantly surprised to find that the design was as innovative as it turned out to be.

Kathleen Lewis:

Are there any “stand-out” or significant experiences within the building that you could share? Better yet, please describe your experiences at Three Rivers as they pertain to the architecture itself. I’m not sure.

Kathleen Lewis:

Well, what’s your favorite part of the building?

Jacqueline Arthur:

My favorite part right now is also my least favorite part, and that’s the windows. Given their height, no one can really see how to clean

them. So I think there needs to be a balance in terms of having really high ceilings and window and the maintenance associated with such features. Can they be reached from the back with a lift? If they must be reached from the interior or the front, will someone on the lift be able to go up through the rafters to clean the windows?

So as I said, my favorite thing is currently my least favorite thing as I am trying to get bids for those clerestory windows. Light still comes through them and that's a good thing, but it's been two years and they must be maintained properly.

Kathleen Lewis:

I agree that practicality is important. What would you say though is your favorite part in relation to the experience of those windows?

Jacqueline Arthur:

I am here often times after we close. No one else will be in here and I really love looking up through those windows and seeing the moon. I also love looking up to see the tops of the trees and realizing it's Fall, Winter, or Spring. That's great because I never feel like I'm isolated and some box. I feel connected. And just being able to see this building in relationship to the neighborhood in different ways through those windows, is powerful to me. So I guess my favorite thing is half the windows and half the height of the windows. It really just feels good.

Another thing is the fact that this building faces West. We have the most beautiful sunsets. There is one time of year where the sun shines too brightly. We think we might get shades but then always refrain because we would only need them for a month. When the sun begins to lower in the sky, it seems to cut right in through the dining room into the eyes of the cashiers. I joke with them to just wear sunglasses. The brightness only lasts for a moment and then it's gone. But really, what you get to see out of these windows are just beautiful sunsets. And I don't know if that was something that was thought about. I mean, the preliminary versions of the building didn't even face West. Being able to see the sunrise and sunset though framed each day by this building, is to me, both inherently powerful and a true design feature.

Kathleen Lewis:

Do you feel as though the design promotes personal growth for the employees and shoppers in any way? Would you please rank this ability on a scale of 01-10?

Kathleen Lewis:

Do you want to make yourself better? Do you want to make your lifestyle better? Healthier? Stronger? Honest?

Jacqueline Arthur:

I think in the sense that people can come here and see each other, yes. Some people arrive here on bikes, some by bus, some walking. That visibility opens up options for growth.

I keep going back to “seeing.” When we were in the old store, you couldn’t see out. You couldn’t see each other throughout the store. You couldn’t see who was there or what was going on. In contrast, this store allows you to see so much.

You can see what other people are eating, what they are doing. So to answer your question, yes, I would say that it does. If I try to think about this question only in terms of the design though, I am not sure that I can. I have a hard time separating the design from everything else.

But I will still say, yes. Compared to where we came from especially, I would say this is a 10.

Kathleen Lewis:

I do not see it as a problem that design cannot be separated from your reasoning. Again, there are no incorrect answers here. This is simply just an inquiry being made.

Also, and this is something that I mentioned before, but I would say personal growth is promoted by living out the message of sustainability past just what is on the shelf.

Kathleen Lewis:

What is the overall mission of Three Rivers Market? How does the design of this market embody that mission? Personally, what do you value most about the design?

Jacqueline Arthur:

Well, we have our “End Goal.” And that is to say that Three Rivers Market should be a cooperative center of sustainable commerce that exists to benefit its members by creating and nourishing a healthier environment, healthier people, and a healthier community. We also have what we call our “Primary Strategy” and that is for the sustainable growth and transformation of our cooperative as a means for delivering on the promise of the ends. I would definitely say that this building has helped us to realize and achieve our primary strategy.

In terms of realizing our “Vision of Success,” an important criterion is that our community has access to healthy food and this building has made that entirely possible. Not only is it more accessible to the community, but you feel like you can get here, that you can be here. Simply because the design is done well, we attract many more people than before. We have really been more successful as a business. This success then allows for us to have a greater outreach in supporting local organizations, local farms, local food producers and it all just builds out from there. Our local economy is humane and strong.

Another “Vision of Success” criterion is that our people are happy. We want our people to be happy, to be apart of what we are trying to achieve. I feel that this design has helped to make that vision extremely successful.

And I think our people are happy with the design also. They want to be apart of something that looks nice, something appealing. I think that can be underestimated, especially after having this conversation with co-ops across the country. To me, it seems as though some co-ops have underestimated the need or impact for adding to their neighborhood or community something really attractive.

So I have tried to build that into our interpretation of the “Ends.” We will support good design and make a point of enrolling our creative community around us in helping us achieve that. Here it is not just about pulling something off the shelf; it’s about wanting to be a part of something and something that looks good. And this building looks good.

Though now I’m just thinking about how awful this office looks (referring to the location of the interview) but, we are about to remodel it. Actually, I have been meaning to tell Greg Terry that. When we came into this building, we just hit the ground running. Now that we have caught our breath a bit, we want to remove all of the desks to and have countertops built in. It’s an open workspace and we want to clean it up, also have shelving put in. We also intend to put a small foyer at the entrance. That way, if customers look in and the office is messy, they won’t see it. But more importantly, the foyer will prevent the noise coming in from the main space and will allow this work area to be more separate.

I don’t know if Greg Terry told you this, but the only way we can expand this store is to include a mezzanine. We do actually have a tentative long-term plan to do that. We would expand the dining room into this adjacent office space. And the mezzanine would really allow us to separate the stage of the retail floor from the back end of the business as well.

Kathleen Lewis:

So it seems like there was a strong consideration in designing the building for the possibility of future growth.

Jacqueline Arthur:

You know, we actually had a mishap in the construction of the building and it surprisingly turned out to be something quite lucky for us. In the original part of the building, there were wooden trusses. So they tore out the front wall and had the trusses sort of propped up. They all collapsed.

That was an insurance issue for the construction company and

something had to be done about it. That is when we went to the beams and posts that you see now. So we wanted to be able to put a mezzanine up, though we thought we couldn't afford it. Due to this mishap, we suddenly could afford it because they had to fix it. So we sunk the structure down deep enough, and paid a little extra to do so, in order for that future mezzanine to be possible as part of our expansion.

To really answer your question, designing for future expansion was not originally part of our plan. But the idea became appealing. We then lost that hope to budgetary issues and after the mishap, the idea of growing our business became possible once more. It is something we are excited about.

I mean, there is not really anywhere we can expand within the site itself. The layout is already as tight as it can be. We even had to get approval for a reduction of the required parking just to have a recycling center in the back. And Greg helped us get that variance. The reduced parking has not been an issue though; it's really been okay. There has been plenty of parking and often times, people don't need to park at all.

It is nice though to have some plan for growth. I think that is needed. Really, there is one thing that we have missed within this building. We need a community room or a meeting room.

If we were able to convert this office space to a dining area in the future, we could keep it open during busy times of the day. We could then block it off as required for groups to meet or even have a proper place for staff trainings. Our board meets down the road at a church already because it got too crowded here.

I don't know how we would have addressed that need originally, but we have realized that this meeting room is one thing we are really missing as a business. We have so many requests from people to be able to meet here, but we just don't always have the ability to be accommodating. There simply isn't the proper space for it right now.

Kathleen Lewis:

Does your experience here allow you to see or find value in quality architecture as a whole?

Jacqueline Arthur:

Yes, although I admit I already had some interest in architecture. I have always liked to go out, to visit places, visit buildings in particular. I would say I already appreciate it.

For me though, experiencing the design through the construction process has been...I loved it. I want to do it again. I have to be careful in not pushing our second store too much just so I can have that experience again. It was exciting and I felt like it was important.

Greg Terry was great. I think he had a strong vision and he listened more than anyone else I have worked with. You know, we had a lot of people suddenly want to become our project architect when they realized that this move for us was really going to happen. Greg Terry had already been talking to me about the idea though, I'd say a year before it all was known.

Our intentions to move could have really gone nowhere. We could have not raised the money or all of these things. But by the time this was all possible, there was nobody that knew all of the concerns we had in going from a small store to a bigger store like Greg did. None of the staff had those concerns, but some of the members did. They thought they would lose a sense of coziness and they saw that as a negative.

A lot of members and customers saw that sense of coziness as a positive. They liked the "old-timey," country store atmosphere. So Greg did think about that a lot in the design. I told him though that I did not want our new space to pretend to be like our old one. I wanted it to be totally different, yet still maintain some connection to how things used to be. The siding on the outside, the colors used, the raw wood on the interior...I think all of those things make people still see us as a co-op.

Kathleen Lewis:

Do you think the scale of the building has played a role in that connection at all? I know it's not the same coziness you had before and it is a larger building. However, it seems to me like your co-op fits a vast amount of products into a modest space. Some stores selling the same amount of items might use twice the space that is here.

Jacqueline Arthur:

Definitely. It's not too much space and within the "co-op world," this building is considered to be about the perfect size. It's about 2,000 square feet. It's just about right for achieving the kind of sales you want from a singular location.

This also brings up the need for opening additional stores. If you become too much of a magnet regionally, you compel people to drive long distances to get to you. I mean, a lot of our customers now come from outside the county or other places. While we appreciate their business, the impact of their commuting is not good. And that definitely an important reason for planting a few more stores that are reasonably sized. It's important to meet people where they are.

Kathleen Lewis:

Has some of the initial worry about the coziness being lost gone away?

Jacqueline Arthur:

I mean, when we first moved we thought it important to hear what people are saying. But there really hasn't been anything even worth mentioning. I think as we grew there became more staff members, and people who had formerly grown accustomed to everyone knowing them had a difficult time. There was a sense of "Oh, I don't know anyone anymore." That was all going to happen anyway. Again, there is a turnover in this business and people change. The worry about coziness has really not at all been an issue and that's a relief. I mean, honestly, we have better things to worry about and this is a strong design. We opened the doors and wanted people to love it immediately. They did; they totally forgot about the old store.

Every so often we do get someone saying they miss the old store and its creaky floors. But we can usually squash those remarks by reminding them that it was an absolutely terrible place to work. We don't want people to have to work in a terrible place!

We do wonder if we will have to tear the old building down. It's been on the market for so long and we keep having to lower the price. There is one thing Greg wanted to do though if that happens. People, in talking about what they have missed, only reference the floors. There were not any other "features." So the thing to do may be to take out some of that old flooring and put it somewhere here, possibly along a wall. As we get closer to thinking we might have to tear it down, we consider the idea more and more.

We could say "This is genuine, old co-op floor. You may not want to know what all is on here. But at least it's genuine!"

Kathleen Lewis:

Does working in a sustainable, architectural environment instill a stronger sense of environmental consciousness in you? Do you think this environment has influence on your shoppers as well?

I asked that question knowing that a number of the customers who come here likely already feel some environmental consciousness. What I am curious to know is if that level of consciousness has been enhanced.

Jacqueline Arthur:

I think it has definitely been enhanced, especially by everything we do to be so visible. I keep going back to that notion but it's important.

For instance, you can see the recycling area in the back. You can see the multitude of things we recycle. You can see that you have a choice in the dining room to recycle things. We worked to get the bike fixing station and have the bike racks. We really tried to set things up to make it easy for people. Having these things be normal and easy for people to accomplish is key.

Kathleen Lewis:

Have you seen a change in your behavior, or that of your fellow employees, since first working here? If so, has this change been environmentally conscious? Architecturally, to what would you equate this change?

Kathleen Lewis:

I think you actually just answered that question!

Jacqueline Arthur:

I agree. I think the main thing here is just that behaving in a more environmentally friendly way has simply become easier.

Kathleen Lewis:

I agree that making these options easier for people is important. So would you say that such behaviors happen more frequently now also? Do you see people recycling more often, riding their bikes, or walking?

Jacqueline Arthur:

Yes, and I say that in terms of just scaling up. Everything we have here now is at least twice as much as we had before. We kept the same operational policies in terms of recycling, but especially with the customers, there is definitely more of a desire to participate in that now. As I said, it's just set up to be that way. In fact, we have had some trouble with people bringing their recyclable stuff from home here! We have to pay to have our recycling taken care of after all.

Kathleen Lewis:

I guess I can explain my motivation behind this question a bit more. I mean, sustainability in architecture has actually been around for some time. But what I have found, is that the desire to practice sustainable architecture or behave sustainably tends to come and go in trends.

Each time sustainability makes a "comeback," if you will, the conversation seems to be strictly about the energy of a building or the technology behind it. So part of why I am conducting this interview, and why I am asking about the experience of this building, is to see if we can change the way we talk about sustainability. I want to see if we can change the way we approach it in design especially. I think if we can make the ideas behind it more personal and connect to building occupants on a deeper level as is done with the experience, sustainability, as a lifestyle and practice, could then see fewer, exaggerated fluctuations over time.

There is this idea that you watch something on the news, something sad happening in another country for example, and fail to really connect with this event in a way that changes you. I mean, this event generally may make you sad for a minute, but you do not change

anything about it. You do not act differently. You go on watching the news and soon see the story change.

For many people right now, this “event” represents sustainability. My point is that there needs to be a stronger personal connection. These environmental concerns need to be addressed in such a way that they are personally relevant and not some distant problem on the other side of the world. I believe that doing so will allow for positive behavioral changes to happen.

Jacqueline Arthur:

I agree and I definitely think your ideas tie in with my answer. You know, we just had our latest meeting at the new transit center. Have you been in there? I keep thinking of that. I keep thinking that the way people are functioning in that building is so different than before. The building is attractive. It’s clean. There are ways to park your bike or recycle. I think the design of that building begins to allow for a huge shift in bus riders and people who may have not considered public transportation as an option before.

For us, I have a hard time really analyzing the change because these ideas have been ingrained within us for so long. We just act out these ideas on a much larger scale than before and in a much nicer building. But to make my point, in terms of promoting public transportation in Knoxville, that building is huge.

Kathleen Lewis:

No, I think that’s great. I mean, there is this idea that environmental consciousness does not necessarily yield environmental behavior. So the transit center, like Three Rivers, serves as evidence that the design of a building can encourage behavioral change.

Jacqueline Arthur:

I agree. I think people are more inclined to want to ride the bus because they get to experience that transit center.

Kathleen Lewis:

So is it safe to say that the new facility you have here welcomes people to shop here more; it welcomes them to live a more ecological lifestyle?

Jacqueline Arthur:

Yes, and it definitely fits better with our own self image. And that is another reason that the design matters. You want to feel that you are worthy of something nice like this. If you have to go into some gross, crummy building just to do something good, it’s not going to help promote that change. People will think, “Well, I’m not sure that this is really what I want to do,” and it will be because of the poor quality of

space they are in.

Kathleen Lewis:

Have you experienced an increased sense of environmental consciousness and motivation for environmental behavior outside of working at Three Rivers?

Jacqueline Arthur:

I would say yes, for sure. I certainly feel a lot more guilty about not riding my bike to work and really feeling like I could. You know, we have all of these programs around us now and I just feel personally like I could be better about participating. I feel like I could be better in my transportation methods especially.

In regard to things like recycling, for example, I was in pretty good shape before. But as I said, transportation is an area for improvement I do really think about a lot. And being here is the reason.

Kathleen Lewis:

Would you please rank your level of satisfaction with the design of this market on a scale of 01-10?

Jacqueline Arthur:

I would rank this building at a 9.5 to 10. There are things of course that we can continue to improve on and washing the windows still remains an issue. Even if the inside of the building changes over time, as long as the main things of the building could stay the same, it would still be perfect.

Also, when we were trying to decide whether or not to be LEED certified, Greg set it up so we could track our progress in the process of it all. We wanted to pursue the certification but the cost of it all is just crazy! And the city was going to help pay for some of it, but suddenly the required commissioning was left out of the whole equation. Although we got close to the end, we realized that we just couldn't do it. The money wasn't there. We may in the future try for it again, but there must be other ways to prove that you are sustainable than just LEED certification.

Kathleen Lewis:

I agree. LEED has definitely become a status symbol for sustainability and it's an expensive, time intensive process at that. In talking to other people within the community on previous occasions, the LEED process is also regarded as a costly hassle. There is no acknowledgement really of historic preservation. It is good in that it sets a standard for energy performance, a guideline. However, it falls short in so many other areas. Occupant experience, as we discussed today, is one of them.

Jacqueline Arthur:

Would you like to walk in the back and see the other employee spaces?

Kathleen Lewis:

Yes, that would be great! Thank you.

A Tour of Three Rivers Market

Jacqueline Arthur:

You can actually see the roof of the old structure intersecting with the new shopping space of the market. We have been thinking about putting birds or something up there so that kids could see them and get really excited.

This is the end of the wall of the old building. So this walk-in (referring to a freezer) is actually sitting on a platform outside and then the refrigeration rack, everything is back there.

This is the prep room. Obviously, the lights are not on (indicating they are motion activated and the room was empty) and it also goes



Figure 06.02 | Exterior Dining
Source: Studio Four Design, Inc., 2011

straight through to a walk-in. They can receive food in the back and just roll it in pallets into that walk-in.

So we are in the old part of the building now. That is the kitchen and a meat prep room with a walk-in.

This part has not worked quite as well (referring to a narrow hallway and adjacent rooms). It's like a buyer's office and it could really use a window. We may have to actually pop one in there. It's functional but people do have to sit there longer than we were thinking.

This is the break room but again, there was this strong sense of "Oh, it's the back of a grocery store. You don't need to heat it, cool it, or put in any windows. But people are back here a lot."

This is the original loading dock.

So this all was already here (referring to the configuration of the exterior loading dock). It was kind of nice because we didn't have to rethink too much in just using what was already here. We also used the awning from the old store to cover the recycling bins.

Kathleen Lewis:

I like that the siding changes orientation between the market space and the service space.

Jacqueline Arthur:

Yes, I do too. I don't know if Greg (referring to the designer, Greg Terry) told you, but the original plan was for the two exterior colors to be reversed. So the brown was going to be the dominant color for the market and the rest was going to be green. Well, they started putting the green up first and everyone like it so much. They were like, "Oh, I love that color!" So based on the inpouring of positive reactions, we decided just to go with it (**FIGURE 06.02**).

THREE RIVERS MARKET

As a new visitor to Three Rivers Market, this author performed a personal account of her first experience within the store.

Kathleen Lewis

Functional Needs:

There are clear zones designated for public shopping and private offices. Additionally, there is a food bar with local items prepared and an eating and gathering area at the front of the store.

Sensory Messages:

Smell of produce and food products constantly change as I walk through the aisles. Sounds of music playing, people conversing, cash registers ringing, and air units circulating can be heard. The exposed wooden and steel structure is seen coming in through the large clerestory windows.

Rank of Functionality:

The space at Three Rivers Market is small but efficient in its design and is therefore ranked at an 08.

Health and Well-being:

This is a space designed to promote sustainable purchasing and support of locally grown products. Purchases made at Three Rivers Market have the potential to take environmentally conscious ideas and bring them into the home. Also, the use of daylight in the space has significant health benefits.

Structure, Sense of Order, Repetition:

The exposed structure of wood and steel visually intersects with the perpendicular shopping aisles. As one aisle leads to the next,

a comfortable, familiar, winding progression is made through the space.

Culture and Community:

The mission of Three Rivers Market is evident in the signs displaying “small, local, cooperative.”

Local culture is emphasized through the types of products sold and community is emphasized within the dedicated spaces for gathering and eating (FIGURE 06.03). Such spaces are placed at the front of the market to showcase their importance. Additionally, the windows surrounding the interior gathering space grow larger in scale to further emphasize this importance.

Hierarchy and Status:

The primary space is the shopping area and it formally stands out in importance against the private offices within the building. Additionally, the design of the building itself stands out against some of the degraded surrounding context and status is further achieved through LEED accreditation.

Significant Experiences:



Figure 06.03 | Gathering and Dining
Source: Studio Four Design, Inc., 2011

As I meandered through the aisles, I enjoyed being able to still sense the brightness and daylight within the space. I enjoyed being able to look up at the wooden structure and see the sky beyond through the clerestory. I enjoyed being able to sit at the communal seating area and feel the warmth of the sun coming in through the large windows on the front facade.

Innovation:

A grocery shopping market does not necessarily have to be a windowless shell infilled with generic aisles and products. Three Rivers Market proves that daylight can be incorporated into such spaces and that community can be strengthened through intentional, accessible design.

The market provides external seating areas which I believe would prove a comfortable place for gathering in the warmer months. The area is lined with green edges and allows for seasonal migration of spaces from interior to exterior.

Value, Influence of Design Elements:

There is an honesty to the wooden, exposed structure and the wooden exterior siding.

There is a sense of value found in the idea that sustainable components are not solely found in the products sold but also the design.

Consciousness, Behavior:

Consciousness: yes

Behavior: uncertain due to lack of clarity of sustainable design for those who are not predisposed to seeing architectural elements

Conclusions:

Satisfaction: 06-07

Given the products sold at Three Rivers Market, I imagine a majority of shoppers there already possess some level of environmental consciousness. Many of these products can be found at similar stores like Earth Fare or the Fresh Market. What makes Three Rivers Market different though is their commitment to being sustainable outside of just what's stocked on the shelf. Shopping with "organic, local" statuses in mind is not enough. Instead, the building itself embodies such principles and becomes a symbol for the goals Three Rivers Market sets to achieve within the community.

My apprehension with the design of this market comes in its ability to influence human behavior. Is the design strong enough to convey a message to users that sustainability can be multidimensional? It is not simply the products you buy but the way you live and operate.

A NEW NORRIS HOUSE

The following interview details the experiences two residents shared while living in a newly constructed, high performance home. The interview was executed via written correspondence between this author and the former residents.

Additionally, blogposts from the residents have been inserted within this interview for their valued content. These posts were made by Mary Leverance at the time she and her husband, Ken McCown, shared the home. Given that this interview was performed two years after their time of residency, Mary's writings provide greater insight into her experience of the New Norris House from 2011-2012.

Ken McCown, Mary Leverance

Kathleen Lewis:

Before you begin, I want you know that there are no wrong answers to the questions you have been provided. I am simply inquiring about your experience of this building. Often with sustainable architecture, the focus is on the energy performance and the occupant experience can become lost. I am trying to bring this component of design back into the conversation.

In regard to the formal design, how well would you say the New Norris House functioned for you as a home? Would you please rank your satisfaction with this functionality on a scale of 01-10?

On the scale, 10 is considered best.

McCown + Leverance:

Overall, the New Norris House functioned very well for us as a home. It was the smallest space we've lived in, but we were able to adjust to

the size, in part because it was rather functional.

Thursday, October 20, 2011:

I made my first visit to the Norris House in June, at the end of the build part of the project. Finishing touches were happening inside—assembly of the bed platform, installation of bathroom shelves, sewing of slipcovers for the furniture cushions. The floor was still covered in paper to protect it from dusty footsteps, tool boxes and ladders occupied floor space inside the house, and students were in and out finishing up their work. The house felt open because of the high ceiling in the living area, but it also felt...small. At 768 square feet (not including the loft), the perception of “small” is relative, but that was my first impression. We were living in a 1,200 square foot condo with two bedrooms and two bathrooms, and a 1,350 square foot house with a garage before that, so it was obvious we would need to do some purging and rent a storage unit for things like furniture and larger items, and some miscellaneous boxes.

My original perception of the interior has changed after living in the house for several months. With the floors uncovered, the furniture in place, and only two of us here, it no longer seems small.

There are windows on every side of the house, allowing light in and views out. I can sit at the kitchen table, look across to the living space, and out the doors and window into the trees out back. The window in the kitchen between the counter tops and cabinets might be my favorite window in the house (**FIGURE 06.04**). Sitting at the kitchen table, I can look out the window to a direct view of the sky and trees and birds.

Without the high ceiling and skylight, the house would certainly still feel small, but the open space combined with all the windows gives the feeling of living in a house that is larger than the plans say it is. It wouldn't be difficult to live in a house this size after our time here is over (the time saved on cleaning a smaller house is a perk). For now, we're enjoying the views and the light. (Leverance)

Friday, October 28, 2011:

It is a truth universally acknowledged, that a single house in possession of occupants, must be in want of plenty of closed storage space (Jane Austen). Although the house has a relatively small footprint, we've found the cabinets and closets provide just enough storage space for the two of us (just enough equals everything we moved to the house fits, with a bit of room to spare). The house was designed with

attention to storage space; there are three closets (bedroom, broom, and 24" wide freestanding wardrobe), and cabinets in the bedroom, kitchen, bathroom, swing space, and loft... Adapting to the storage space here as it was designed to be used, and organizing our items to fit within, has meant thinking about space in a different way. And, it means being conscious of what we bring into the house, not filling cabinets just because there's room. (Leverance)

Satisfaction would be ranked as an 08 out of 10.

Kathleen Lewis:

How did the design of this house work to promote health and well-being for you as a resident?

McCown + Leverance:

I don't know that the design promoted health; the tight seal of the home may have helped prevent allergens (like pollen) from entering, but that's speculative. The loft area helped contribute to well-being, as it served as a place for relaxation away from the swing space, which was used as an office area. The deck outside would have



Figure 06.04 | Kitchen Window
Source: Ken McCown, 2011

been used as a relaxation area as well, but due to circumstances beyond control of the university, it wasn't furnished with a table or chairs until late in our term as residents.

Kathleen Lewis:

Did you feel as though the design of this house conveyed a sense of order, security, or repetition? If so, how was this achieved and would you please rank this sense of order on a scale of 01-10?

McCown + Leverance:

The design definitely had a sense of order and repetition. The cabinets in the kitchen, bedroom, and swing space all had the same paint color, design (for example, there were no handles on the cabinets, but the doors were cut at an angle on the bottom so they were easy to grab and open), and the interiors were all the same too (unpainted wood). This repetition was pleasing to the eye as well as functional (FIGURE 06.05).

The wood flooring (on the ground floor and in the loft) was echoed in the kitchen counters with not only the material as all were wood, albeit from different sources, but also in the direction of the wood



Figure 06.05 | Norris Living Dining
Source: Ken McCown, 2011



Figure 06.06 | Back Facade Door Open
Source: Ken McCown, 2011

pieces (meaning, the wood pieces of the floor weren't horizontal and the counter was vertical; they both flowed horizontally or vertically, depending which direction you viewed them from). The exterior of the house also had a sense of repetition with the wood planks of

varying widths spaced apart evenly (FIGURE 06.06).

Sense of order would be ranked as 09 out of 10.

Kathleen Lewis:

How well would you say this design instilled a sense of community in you? Would you please rank this ability for the New Norris House on a scale of 01-10?

McCown + Leverance:

The design of the home didn't increase a sense of community (FIGURE 06.07). This could be for a couple reasons. Ken worked in Knoxville, so he was gone Monday-Friday during working hours, and I had online classes in the evenings; our schedules often prevented us from doing things together in the community. Also, I don't know how well the community of Norris received the house because it's such a modern design compared to everything there. Combine these things with Mary having an introvert personality that doesn't seek community type of interaction, which also kept sense of community lower. We did take walks through the neighborhood, and talked with neighbors on either side of the house when we saw them outside.



Figure 06.07 | Up Road
Source: Ken McCown, 2011

We're not sure if it's fair to rank the ability of the house to instill a sense of community since as occupants, we were partly responsible for creating that. As the first residents, we had limited furnishings, and the backyard fire pit area wasn't complete because the landscaping

was established while we were there and hadn't reached a mature stage. With those factors in play, community may have been higher, as we would've been able to host visitors more comfortably.

Kathleen Lewis:

Did any elements of this sustainable design actively engage you, the user (i.e. opening a window)?

McCown + Leverance:

Yes. We opened windows in warmer weather to let air circulate through the house (FIGURE 06.08). We tried to use the natural light that came through the windows and deck doors as long as possible before turning on lights as it would get dark out (FIGURE 06.09). We used ceiling fans to circulate air as well. Before turning on the mini-split system for heating or cooling, we tried to use options like opening windows/using fans or putting on another layer to keep engagement with the mechanical systems lower, even though they're designed to be more effective than traditional heating/cooling systems.

Kathleen Lewis:

Would you say the overall design of the New Norris House conveyed



Figure 06.08 | Front Facade and Casement Window
Source: Ken McCown, 2011

a sense of hierarchy, both spatially and programmatically? Would you please rank this level of hierarchy on a scale of 01-10?

McCown + Leverance:

Yes and no. Although it was clear what the hierarchy was in the design, the open plan made it a bit nebulous as to what to do with the space in tandem with the circulation. For example, the main entry door divided the living and kitchen areas and left a significant section of unusable space, which had to remain open for circulation.

Hierarchy would be ranked as 07 out of 10.

Kathleen Lewis:

Do you feel as though the design of this home is innovative?

McCown + Leverance:

Yes. The customization of the stock chassis and the integration of sustainability with modern design contribute to the innovation.

Kathleen Lewis:

How well would you say the overall design of the New Norris House promoted creativity and personal growth? Would you please rank



Figure 06.09 | Skylight Tight
Source: Ken McCown, 2011

this level of creativity on a scale of 01-10?

McCown + Leverance:

Design helped promote creativity and personal growth through the opportunity to work in the garden and prepare harvested vegetables in the kitchen; the ability to complete classes online and work from home in a quiet, comfortable environment; and the space to relax in the loft. These activities promoted personal and professional growth. The swing space used as an office provided a place for desks to be set up as a space for computers used in work and design projects.

Level of creativity would be ranked as 08 out of 10.

Kathleen Lewis:

Experientially, are there any quality, significant experiences within this home that you could share? How does the design play into this?

McCown + Leverance:

One significant experience was watching the light from the skylight shift throughout the house during the day; it would move across the ceiling and down the wall. Sunlight would fall on a wall that was painted (whether it came from skylight or window), and the light would reflect subtle color back on the walls that were white (FIGURE 06.10).

Sunday, September 02, 2012:

We loved the natural light that filled the house during daylight hours. The roller shades over all the windows block direct sunlight and help keep the house cool, but don't block the light entirely like blinds or curtains would. Even on cloudy days, the skylight in the living area let in enough light so we didn't need to turn on the kitchen or loft lights until dusk. The skylight and kitchen window are two features in the house I [will] miss the most. (Leverance)

At night, significant experiences included star gazing through the loft window, and opening windows in the summer to listen to nature (crickets, frogs). Without the skylight, loft, or screened windows, these activities would not have been possible.

We also had a feeling of comfort being in an efficient home; it felt good inside knowing the processes/features in the house made it efficient.

Kathleen Lewis:

Do you see or find value in this building? What elements of the design did you value most?

McCown + Leverance:

Yes. The integration of sustainability and design was valued most. The overall cohesion of all parts of the design was valued. The

rectangular window in the kitchen, the skylight, the high ceiling in the living area which gave volume to the space and helped make the house feel larger, and the layout of the bathroom along with the natural light through the frosted window were much appreciated.

Kathleen Lewis:

Did living in a sustainable, architectural environment instill a stronger sense of environmental awareness in you?

McCown + Leverance:

Yes. We had a good appreciation of environmental awareness going in to the residency, but the experience living in the house did heighten it. Interacting with the filtered rainwater system, solar hot water heater, and the mini-splits made us more aware of the different ways energy consumption can be reduced. We were always excited when it rained since it meant the cistern would be filled up with more water that would be filtered for indoor use. Knowing that we weren't using fresh water for flushing or washing was a great feeling.

Kathleen Lewis:

There is a notion that environmental awareness does not necessarily



Figure 06.10 | Loft Down to Swing
Source: Ken McCown, 2011

yield environmental behavior. Did you see a change in your behavior after first living here? If so, to what would you equate this change in behavior?

McCown + Leverance:

Yes. Because we were being monitored, we were even more conscious of energy and water usage. For example, we tried to take short showers, made sure to unplug laptops and chargers when not in use, and not turn on lights when they weren't needed. The opportunity to garden—something we hadn't done before—was something that changed our behavior (**FIGURE 06.11**). Growing some of our own food instead of buying it was fulfilling.

Kathleen Lewis:

Have you experienced an increased sense of environmental consciousness and drive for environmental behavior outside of the New Norris House and would you credit these experiences to living here?

McCown + Leverance:

Yes. Although we're no longer being monitored, some of the habits we practiced, like unplugging items when not in use, have stuck. We



Figure 06.11 | Greywater Garden to House
Source: Ken McCown, 2011

would sometimes walk to the post office and grocery store in Norris, and have taken to walking to places where we live now instead of driving. Losing the mentality that you need to drive everywhere can be difficult, but the experience of walking in Norris was informative. We've continued to tolerate a wider range of temperatures while inside before turning on cooling or heating.

Although we now live in an apartment building where rainwater collection isn't possible, if we lived in a house, we'd definitely explore how to set up some kind of collection system so the water could be used for other purposes. Before living in the New Norris House, this isn't something that we would've necessarily thought of as an option since we were living in a desert area. Living in the desert again, we're also still conscious of water usage since we receive very little rain, so we still try to take short showers.

Sunday, September 02, 2012:

After moving into the house, we were asked if we thought our quality of life would be affected by living in a smaller and energy efficient space. Living in the house affected us positively, with design and systems we wouldn't have experienced otherwise. Much like the original residents of Norris who were introduced to electricity in their homes 75 years ago, we had the opportunity to experience the latest in energy efficient and sustainable systems, in the same community where electricity came to Tennessee. While the house looks a bit different than the first Norris cottages and the use of electricity has expanded to support computers and telecommuting, the experience we had there was educational, helping inform us about design and energy choices we can make wherever we might live in the future.

Kathleen Lewis:

On a scale of 01-10, would you please rank your level of satisfaction with the design of the New Norris House?

McCown + Leverance:

Satisfaction would be ranked as 09 out of 10.

A NEW NORRIS HOUSE

The following interview details the experience of the second resident to occupy the home within this model community. The interview was executed via written correspondence between this author and the former resident.

Additionally, blogposts from the resident have been inserted within this interview for their valued content. These posts were made by Valerie Friedmann at the time she inhabited the home. Valerie's writings provide greater insight into her experience of the New Norris House beginning in 2012.

Valerie Friedmann

Kathleen Lewis:

In regard to the formal design, how well would you say the New Norris House functions for you as a home? Would you please rank your satisfaction with this functionality on a scale of 01-10? (On the scale, 10 is considered best.)

Valerie Friedmann:

I would rank the functionality at a 09. The home functions very well. The rooms are appropriately scaled, there is ample storage that is easy to access, and the materials are durable and easy to maintain.

Kathleen Lewis:

How does the design of this house work to promote health and well-being for you as a resident?

Valerie Friedmann:

The window placement creates a sense of continuity to the landscape, which is very important to me as I feel connected to the

seasonal changes in the landscape (**FIGURE 06.12**). The windows also bring lots of natural light into the interior, which creates a cheerful environment.

The built in storage and primarily white wall finishes help minimize clutter leading to a visual calmness that can translate to inner clarity, and the wood floors and counters make the interior feel welcoming and warm.

Kathleen Lewis:

Do you feel as though the design of this house conveys a sense of order, security, or repetition? If so, how is this achieved and would you please rank this sense of order on a scale of 01-10?

Valerie Friedmann:

I would rank this at an 08. The house conveys each of these qualities. The floor plan is divided into equal halves, one more public (living area, kitchen) and one more private (bedroom, bathroom) and this provides a clear sense of order in the house (**FIGURE 06.13**). The rooms are scaled to feel secure and the materials create a sense of



Figure 06.12 | Left Side
Source: Ken McCown, 2011

order and repetition that tie all rooms together.

One element that detracts from a feeling of security is the window coverings, which are very beautiful and simple, but do not feel completely adequate to provide total privacy.

Kathleen Lewis:

How well would you say this design instills a sense of community in you? Would you please rank this ability for the New Norris House on a scale of 01-10?

Valerie Friedmann:

An 08—I'm giving this a high mark, even though I'm sure my experience is different from someone who would live there after the evaluation phase.

I feel very connected to the community through the house as I frequently have members of the larger community tour the home. In this sense, the house brings people together now, but after the evaluation phase I still think the home is designed to create a sense of community in the resident primarily through the large window at the front of the house (which feels very connected to the street) and generally



Figure 06.13 | House Tall
Source: Ken McCown, 2011

because the community of Norris is very engaged. If the house were located in a different community it may not feel as connected—I think location is what makes the New Norris House feel connected to the community.

Kathleen Lewis:

Do any elements of this sustainable design actively engage you, the user (i.e. opening a window)?

Valerie Friedmann:

Yes, many elements engage me. Opening and closing windows is very easy due to their design, which encourages me to open at night and close during the day minimizing reliance on the air conditioning system. The rainwater harvesting system requires monthly maintenance, which makes me feel connected to water as a valuable resource. I can hear the solar hot water pump turn on most days and I know that the sun is heating my water, and I enjoy knowing that anytime I do laundry, shower, or brush my teeth that I am essentially irrigating the garden through our greywater treatment bed!

Kathleen Lewis:

Would you say the overall design of the New Norris House conveys a sense of hierarchy, both spatially and programmatically? Would you please rank this level of hierarchy on a scale of 01-10?

Valerie Friedmann:

This is hard to rank. I do not think there is a spatial hierarchy that preferences one part of the home over another—and I prefer this. Many people ask why the front door is not facing the street (it is on the side of the house) and this is in response to the other homes and original Norris cottages that had doors opening onto shared gardens with neighbors instead of grand front entrances.

I like the equality of the spaces, both interior, exterior, and in relation to the larger community. Programmatically, I think the kitchen and living areas are the most prominent.

Kathleen Lewis:

Do you feel as though the design of this home is innovative?

Valerie Friedmann:

Yes, but in all its innovative aspects it feels comfortable and livable.

Kathleen Lewis:

How well would you say the overall design of the New Norris House promotes creativity and personal growth? Would you please rank this level of creativity on a scale of 01-10?

Valerie Friedmann:

A 09—there are plenty of spaces for reading (with books given a

prominent location in the built in bookshelf), the wooden floors and deck are good for yoga/stretching, and there is a great connection to the landscape and network of neighborhood walking and hiking trails (FIGURE 06.14).

Kathleen Lewis:

Experientially, are there any quality, significant experiences within this home that you could share? How does the design play into this?

Valerie Friedmann:

The response to your fifth question applies here as well. Additionally, the long, horizontal window over the sink provides the opportunity to watch birds, which has become one of my most treasured memories of living at the New Norris House. I think all homes should have a window over the sink and backyard habitat for bluebirds!

Monday, August 12, 2013:

This month marks one year for me as a resident at the New Norris House. As a previous resident of various apartments near the center of Knoxville, one of the most interesting aspects of living in Norris has been the increase in time I've



Figure 06.14 | Loft
Source: Ken McCown, 2011

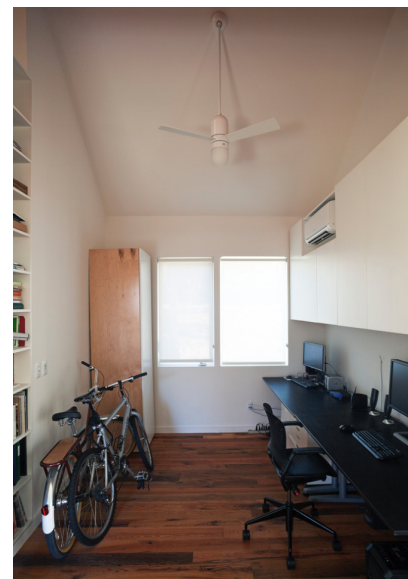


Figure 06.15 | Swing Space Straight
Source: Ken McCown, 2011

spent outdoors and the animals I've happily encountered along the way.

Kathleen Lewis:

Do you see or find value in this building? What elements of the design do you value most?

Valerie Friedmann:

Yes, I most value the natural light and the warmth and simplicity of the wood and white (FIGURE 06.15).

Kathleen Lewis:

Does living in a sustainable, architectural environment instill a stronger sense of environmental awareness in you?

Valerie Friedmann:

Yes, and the most helpful aspects of becoming more aware of my own consumption patterns has been having easy access to the energy and water usage data via our energy monitor (I have an app on my phone that shows me in realtime my energy use.) Being able to see how much I consume has been the biggest factor in reducing my usage.

Kathleen Lewis:

There is a notion that environmental awareness does not necessarily yield environmental behavior. Have you seen a change in your behavior since first living here? If so, to what would you equate this change in behavior?

Valerie Friedmann:

My behaviors have changed and I credit it to being able to see my actual energy and water usage. Also, knowing that a team of researchers and the general public can see this usage via our website puts pressure (good pressure!) on me to do better.

I agree that just being aware of environmental issues is not enough to make most people change, but seeing my actual consumption had a profound impact on me.

Kathleen Lewis:

Have you experienced an increased sense of environmental consciousness and drive for environmental behavior outside of the New Norris House and would you credit these experiences to living here?

Valerie Friedmann:

Yes, I've seen how easy and seamlessly integrated the homes rainwater, greywater, and solar hot water systems are and, through our calculations, how these small changes at one house could be compounded over the scale of larger areas. This knowledge will stay with me as a designer and advocate for more sustainable water systems in East Tennessee.

Kathleen Lewis:

On a scale of 01-10, would you please rank your level of satisfaction

with the design of the New Norris House?

Valerie Friedmann:

I would rank my level of satisfaction with the design at a 10.

SCRIPPS NETWORKS INTERACTIVE

The following interview was conducted in-person with the Senior Vice President of Facility Services at Scripps Networks Interactive. Given his position within the expansive company, Pete Crowley is familiar with how the LEED certified office facility performs and functions.

Pete Crowley

Kathleen Lewis:

Before we begin, once you know that there are no wrong answers to the questions you have been provided. I am simply inquiring about your experience of this building. Often with sustainable architecture, the focus is on the energy performance and the occupant experience can become lost. I'm trying to bring it back into the conversation. How well would you say that the overall design of your network headquarters meets the functional requirements of your business operations? Would you please rank this level of functionality on a scale of 01-10?

Kathleen Lewis:

On the scale, 10 is considered best.

Pete Crowley:

I would say there are two pieces to that answer. When we first moved in...well, what we have found since we moved in, would be about a 07. Now with the changes that we are making, we are easily approaching a 09.

For a company like ours, I'm not sure you would ever get to a 10. That is because the occupancy of the building is very diverse. We have everything from accountants, to the truly creative types, and everyone in between. And what works best for the accountants does not

always work best for the creative groups.

So what we have found over the last few years of having occupied the building, is the need strike a balance in some of those areas. We began very standardized in our workstation layouts, for example. But some of our teams, particularly in the digital areas, their workflows have changed. They have a need for more collaboration than we even envisioned with the original design.

So we are now going back in and where we had individual workstations in these areas, we are creating more “bullpen” type spaces. The employees now have separate, personal spaces facing outward and tables in the middle allow for them to pull together for collaboration. We have evolved as the workflows have evolved within this building. To me, that is one of the key objectives we had with this design meet our needs. The way the floor systems work, the way the infrastructure works...it’s all very flexible. We can change the configuration of the furniture very easily and relatively quickly.

Kathleen Lewis:

So you would say the openness of the space meets the functional need of flexibility required by your business?

Pete Crowley:

Yes, and I think we are probably at that 9 right now. You know, our old furniture had a solid, 60” panel and that made everyone feel like they had privacy. The demands of our employees now generally require lower, much more open, much more collaborative workspaces.

I mentioned the digital groups and their needs, I would say, even go a step beyond that. They sit without any separation. Each person has a 4’ table with their computer. They’re very collaborative and just chit-chatting all day.

So it works. The way the building was designed lends itself to being able to make those changes. And that was the most important thing from our perspective, being the flexibility. If we had gone in and built all hard offices, the change we need would be much more difficult to accomplish.

Kathleen Lewis:

How does the design of this building work to promote health and well-being for you and your fellow employees?

Pete Crowley:

So underfloor air systems are by their very nature healthier, I believe. They also give each of our employees the ability to control the airflow within their individual work environment. Every workstation has one, manually controlled vent in the floor. And I think every office has two. These vents can be opened. They can be partially opened. They can be closed. Though it’s just control of airflow. We are still setting the

overall temperature but, each individual has that capacity.

Also, in our normal course of maintenance operations we actually change the filters in our air systems more often during high allergy seasons. We do really want to promote a healthy workplace. And that is a standard or goal we try to maintain within the other buildings on our campus as well.

Obviously, access to sunlight, daylight, views is also important. I mean, the definition of healthy doesn't just pertain to one's number of colds. It also asks, "Is my mental health better?" People generally here like the building, like the environment. It is an open environment and 90% or more of the occupants can look up from their seat and see the sky. That's a huge bonus.

Kathleen Lewis:

That's great! Science has proven the benefits of daylight, especially within working environments. Daylight makes people more productive. It improves their mood. So I definitely agree that that goes a long way to promoting a healthier environment. I'm curious as to your motivation for the individual air vents. Would you mind to elaborate?

Pete Crowley:

Well, the motivation for that is really just operating experience. We have been in other buildings on this campus for at least 20 years now. We have leased off-site locations here within Knoxville. And if you ask anyone that owns and operates buildings for a living, The most frequent complaints tend to center on temperature and lighting.

What we observed over the years of doing many projects is, particularly when it came to lighting, people do not hesitate to take matters into their own hands. Meaning, if Facility Services does not respond fast enough to their issues, they will climb up on this very table and take a tube out of an overhead light. That of course being if the light is too much.

I have been with Scripps for 15 years now. For ten years of that time, when we would go into a new building project, we would endure the same kind of process a lot of clients tend to go through. You know, we went for full lighting on an "all on or all off" switch. We then went through all the different types of ballasts...two tube, three tube, four tube with the possibly to only turn two on at a time. We did all of that stuff.

At the end of the day it was very costly. It was really ineffective. From a safety standpoint, people were still climbing up on tables to take a tube out. Then from a maintenance issue, the staff would think, "Oh, well, a light's out." So naturally the staff would put a tube back in and then people would be back climbing on the tables once more.

We got to a point where we tested this. We just said, "This is

ridiculous. We are spending a tremendous amount of money and it is not improving the workplace at all. If anything, it is making things more frustrating.” So when we went to one of our offsite leases, when we did the development of that space, we decided we were going to do something different.

When we got the architect’s first reflected ceiling plan, my direction to that architect was, “I want you to eliminate 40% of those light fixtures in the ceiling.” He responded by asking, “What do you mean? We can’t do that.” I wanted to know why. He told me that we wouldn’t meet the minimum footcandle requirements. I then asked him to show me how we wouldn’t meet that and where does that requirement come from. In the end, we were able to test that. And through a few other experiments as well, we arrived at the conclusion that we really only needed to light egress aisles with permanent ceiling lights. This finding remained true across all of our operations.

So as a result of those tests, we have migrated to using less overhead lighting and all of our facilities. Obviously, meeting rooms still have lighting. But in the open spaces, we light the egress aisles and give every person individual control of lighting in their workspace. Each of these workstations has a desk lamp and a light in the overhead storage bin that the individual controls.

A lot of this was driven by a desire to give our people more control over their workspace. And in doing that it frees us up from the temperature problems, the lighting problems, and other things that have plagued us historically. So on the lighting side, that was a solution. We are giving people to lights and we have additional circuitry in the building. So if someone does say, “This is just not enough light,” we have the option to provide another desk lamp or even add overhead lighting if need be.

When it came to the HVAC systems we had the same approach. It was the same thing. With ceiling diffusers people would climb on furniture to either tape the vent shut or get the air flowing. There was still a safety concern. Well, with this building, since we went to an underfloor air system, it was a no-brainer that we go to a diffuser that everyone has control over. Again, it was all about giving people as much individual control over their work environment as we could. And I think that went over really well.

Now there are still complaints about temperature. We try to maintain ASHRAE standards and are usually at 70 degrees. That temperature to you might be cold, but 70 degrees to me might be hot. You are never going to get away from that. But you can close your air vent and then you are not getting that flow or circulation that is making you cold.

So I think it has been very well received. I mean, there are still

some pockets of cold relating to where air highways are in the floor. However, the whole genesis was to try and give people individual control over their workspace and reduce our costs. We wanted to reduce costs from a capital standpoint and also an ongoing maintenance sampling. I definitely think we hit that on lighting and did well on heating and cooling too. I think people appreciate that ability to turn a light on or turn a light off.

Kathleen Lewis:

I like that personalization aspect. I mean, automatic, overhead lighting can be great in certain situations. But I think people do need to have some control over their environment, especially if the notion of sustainability is going to register with them in a deeper way.

Pete Crowley:

Right. Within each of these workstations, we actually have a watt stopper or motion sensor. So it's basically a multi-plug outlet that is control by a motion sensor. Most people have their lights plugged into that with a couple of other things.

When our IT guys first started installing computers though, they plugged the equipment into those outlets because they thought it was a power strip. That caused some confusion amongst the employees because the next day, they would show up for work and their computer was off. They didn't know what was going on. So there was a learning curve on that.

But the motion sensors...well, that gets back to energy conservation and cost and that kind of thing. That was a driver for us. We wanted to see if we would see savings. It still remained a secondary component to this concept of giving our employees more control of their work environment though.

Kathleen Lewis:

Does every employee have a workspace to call his or her own?

Pete Crowley:

Yes, everyone has his or her own seat. Now we are, like many companies, working on alternative workplace policies and strategies... such as working from home, hoteling, that kind of stuff. This has so far not been a company that has gone full tilt into those sorts of things though.

Interestingly enough, you would think that the digital trams would be the ones that lend themselves to working at home, remote officing, that kind of stuff. They are the ones that are the most adamant that they have to have everyone in place, in a seat. They say they have to be able to look across the table and collaborate.

Kathleen Lewis:

And you said also that the types of workspaces vary depending on the type of work being performed, correct?

Pete Crowley:

Yes, everyone has their own space and their own computer. At this point, we have private offices...all of the private offices, with the exception of the executive wing, are 140 square feet. Then we have the standard workstation which is a 6' x 8' workstation. And what we have migrated to for this kind of agile workflow is more of a benching solution. So instead of an L-shaped workspace, you have a desk big enough for one, two, or three monitors and that is pretty much it. And then you have a center collaborative space that the whole team can pull around when someone hits a roadblock that they need help with.

Kathleen Lewis:

Do you feel as though the design of this building conveys a sense of order, security, or structure? If so, how is this achieved and would you please rank this level of order on a scale of 01-10?

Pete Crowley:

What do you mean by order, security, or structure?

Kathleen Lewis:

Well, how would you describe the structure of the building? Is it exposed? Is it hidden? Are there clear bays within the windows or does the building follow a grid?

Pete Crowley:

Yes, it's all very visible. It's definitely a standard, grid structure. It has a little bit of a tweak to it because it's an angled building with an elbow in the middle. But basically, that is just two buildings intersecting.

The grid that it is on was obviously driven, in part, by the dimensions of offices and furniture and those things. It was driven by the standard floor tile dimensions. It was driven in some degree by the exterior panel system and the dimensions we could get readily available from the manufacturer. So we tried not to create customized, material solutions.

To the sustainability piece, we tried to get, or source, materials and manufacturers that were near, within an "x mile" radius of here and all of the stuff that you do for LEED certification. And that drove some of the construction decisions that were made and some of the material decisions that were made.

Order and security, I think, this building has a greater sense of order than other buildings within this complex, for example. Basically, there are established traffic aisles in that building on the exterior perimeter on this side and on the interior perimeter on the other side. The break rooms are stacked so you kind of know where you are in the building

based on what you see around you. The restrooms are stacked also, and the central lobby, the flyovers—all that stuff is just stacked. So it is very easy to navigate around the building in terms of north, south, east, west, that kind of deal.

When you get into finding conference rooms though, it's always dicey. Even though they are stacked, the naming convention has something to do with that.

Kathleen Lewis:

What do you mean by that?

Pete Crowley:

Well, this is an area that we can correct. However, in the elbow of the building, we have two conference rooms on the second and third floors. They are exactly above each other. They are both considered on the east end of the building. So the naming convention is E249 and E349. Or that is what it should be. The name they came up for those rooms though is something more like E2-Blue. That means east, second floor, the blue room. And then the third floor might be E3-Red. Well, if we had thought through that in advance, then the colors should be stacked too. That way if you have to go from the blue conference room on the second floor to the blue conference room on the third floor, it's in the same spot. We didn't get that far.

So the naming convention makes it difficult, but in terms of the order of the building, I think it's pretty straightforward. You know you are on the east side, the second floor, or the third floor, that kind of thing. There are always going to be people that challenge this, but there are going to be people that have no issue with it at all. Particularly compared to our original building, which has been expanded on three times...well, that building is a mess. It's a set of puzzle pieces.

For security, when we started the project, we surveyed our population and one of the strongest feedback points we got was that getting into our original building was incredibly difficult. The technology center was regarded as Fort Knox. You had to go through the gate, be on the access list, buzz into the door, be on a different list—all that kind of stuff.

So the original plan with this new building was for our employees to be able to drive into the parking garage, walk in, and talk to the receptionist without ever being challenged. And that was a direct response to the survey results about how secure people wanted the building to be.

Now it was designed so that you could not leave the lobby without a badge. So you could get on site, in the parking garage, in the building, but you couldn't get beyond the lobby without having a badge or being escorted. We were not going to do away with security all

together.

Then, I think it was about four or five years ago now, there was an incident with a gunman at Discovery up in Chevy Chase, Maryland. And that's the point that even though our people said they didn't want it, we locked the building down. I myself took the case to our executive team and as a result we put guard gate in and made the building much like what we had originally.

Once you get into the lobby of this building now, you can pretty much get anywhere you want. But getting past security at the guard house and getting in the front door is much more cumbersome. It's the same as before. You have to be on the list. You have to talk to the guard. You have to be buzzed in—all that stuff.

You know, a competitor media company to us had somebody walk in off the street with a gun and hold people hostage in the lobby of the building. We can't rightfully keep that open of an environment anymore. And I think people understood that.

Kathleen Lewis:

But they still feel it's a safe work environment, correct?

Pete Crowley:

I think they do. Of course there are people that complain because, "Oh, it's like Fort Knox again." But I think the Discovery incident really raised people's awareness. And then at the beginning of this year, we did an after-hours active shooter drill in all of these buildings, where we had volunteers and a gunman come through each building just to test our systems. And again, that was an exercise that raised people's eyebrows to say, "Oh, that could happen here." So it's really an awareness thing. But in general, I think people feel as though they are safe here at work. It's a secure environment.

Kathleen Lewis:

So do you think that the way the building itself is designed can help create that feeling of safety?

Pete Crowley:

Yes, though I'm not sure that exists much outside of the entry vestibule. You know, you've got two levels of perimeter security and those sorts of things. Well, those are the design elements that really lend themselves to that secure feeling.

At the end of the day, the stark reality is, if someone wants to get in and wreak havoc, they are going to wreak havoc. And we have to be in a position to respond as quickly as possible to protect our employees and our assets. I mean, that's the kind of stuff that keeps me up at night. We are demographically...well, our company is bigger. We have 1,200-1,400 employees here in Knoxville. And the numbers are growing against us in terms...well, when you're a small company of

20, you get to know people a lot better. You get know when something is going wrong and be aware of it. With this number of people and human nature—you know, holding the door open for people even though you don't know who they are—means that something at some point is going to happen here. We just don't know when or where. But our charter is to make sure we have done everything we can to respond to those things as quickly as possible.

Kathleen Lewis:

I think you definitely answered the question, especially in saying that the reception area is essentially this transition zone or buffer zone.

Pete Crowley:

Yes, and after the Discovery incident we actually evaluated every one of our facilities across the company. We are finishing up in one of our New York facilities now adding a similar vestibule situation in one of our lease facilities there. There, anyone from the public could get on the elevator on the ground floor, get up to our floor, and come face to face with the receptionist. In addition to the reception area, you have to have some barrier that gives the receptionist the option to press a panic button if someone is coming in to harm them. It's a no win situation when that happens. Every year I even propose a policy for our employees to wear badges, but so far our executives haven't bought off on that. But that's the smartest thing you can do. That way, if you hold the door open for someone, you know if they are an employee or not.

Kathleen Lewis:

How well would you say the overall design of your network headquarter promotes community and collaboration among your employees? Would you please rank this level of collaboration on a scale of 01-10?

Pete Crowley:

I think we get a 09 on that one. You won't get a 10 out of me on anything because I think there is always room for improvement. But we started this project with a survey of our employees, with a cultural assessment. We asked them to give their perception of what our corporate culture was at that point and also what they would like to see it as in the future! Not surprisingly, the common view at that point was that things were very hierarchical, very structured. Our business was the traditional pyramid shape and all that.

The cultural desire though was to be more familial, more collaborative, more open. So that input was a major influence as we went into the design process. And as a result, there were several changes made in moving forward.

We talked about the workstation height, well, it came down. We moved most of the hard offices to the interior with glass fronts and

all of the workstations were put on the exterior. All of the glass in the building was designed so that you can see somebody. You can still be familiar with a face even if you don't know names, those sorts of things.

We incorporated multiple kinds of seating areas, both informal and formal, ranging in different sizes (FIGURE 06.16). We have “huddle rooms” like the one we are in now. They allow for informal, unscheduled meetings between two people, six people, whatever it needs to be. There are formal conference rooms that are scheduled areas as well though.

We have soft seating areas spread throughout the building and also open table areas. They have moveable tables that allow for the space to be reconfigured to essentially whatever you want. They are literally just in the middle of an open area or a public seating area.

Some use those areas, but of course, some don't. I think though that we struck a pretty decent balance. I know that most of the soft seating areas are used pretty frequently. And as for the “huddle rooms,” if anything, we don't have enough. But I think that all of these factors have created a much more open and collaborative environment.

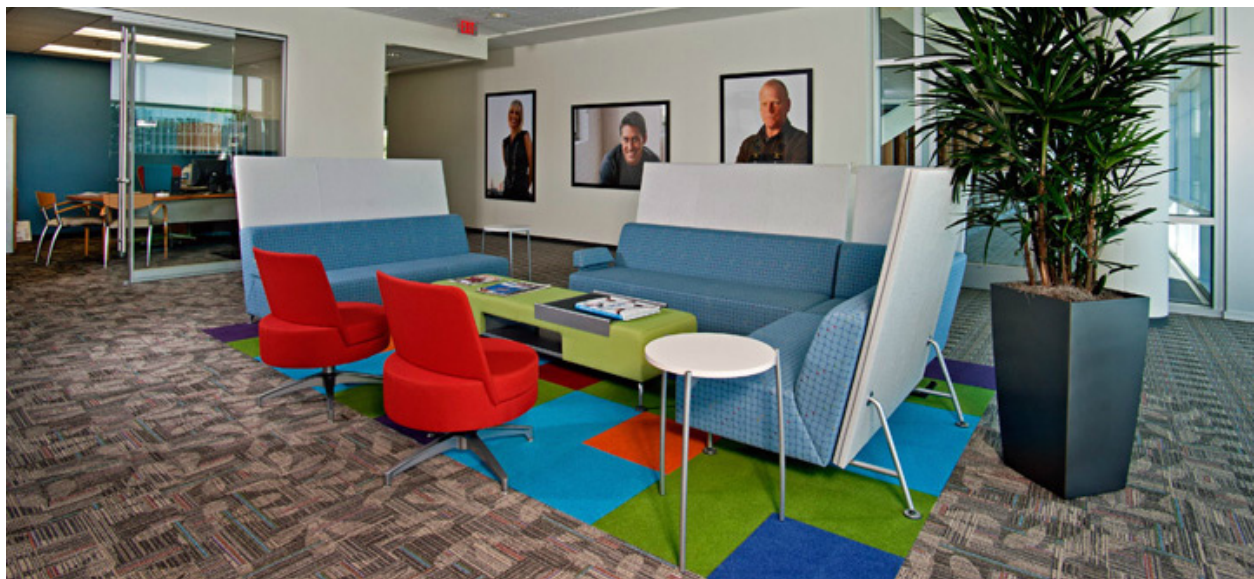


Figure 06.16 | Group Seating
Source: KZF

That's certainly what we never had before. You know, I think we did well on that one; I think that was a good score.

Kathleen Lewis:

Do you feel as though the design of this building helps to mold or establish office culture?

Pete Crowley:

It's interesting. I think it does. You know, we did the survey and our people said, "We want a more open, collaborative environment." When they saw what that meant as it translated into the physical design, and particularly the furniture, they were like, "Oh, no, that's not what we meant." They said, "There's no way we can work at a workstation with low walls like that."

And we took a very hard line when we moved people in. We said, "Listen, if you don't have power, your computer doesn't work, or you need more light, tell us about those immediately and we will take care of them." Regarding the workstations though, we set an eight moratorium on the "I can't work in this; I've got to make a change; I've got to move seats," etc.

Our position has always been this way on every project where we've created a new space. And that is because you will not do your job the same way in this new space that you are doing it today. So we are going to force you to take time to figure out how you are going to do your job in the new space before we start moving things around and making large scale adjustments.

Taking that approach, I would say we maybe had 20-30 issues we to deal with at the end of a six week period. They were not significant issues, however. Some areas of the building were too bright because there was too much daylight coming in. So we did some things to manage that process.

But it's funny because people ask for these things when they don't really want them. I mean, culture doesn't change quickly and it doesn't always change because you move into a new building. I think though that we have definitely moved the needle from a hierarchical business model to an open, collaborative operation, particularly in this building and due to its design.

Again though, a lot of that goes back to the kind of work the people are doing. You know, accountants don't necessarily have to be collaborative. They are doing their own spreadsheets; they are doing their own thing. That versus digital or the creative, programming groups...well, they have to have that interaction. And those are the teams that we have found really embrace the lower workstations and all that. They have made those areas very functional. They are the ones who have started to move that needle into the collaborative environment.

Kathleen Lewis:

Do you find that working in a sustainable building has affected or

changed the employees' behavior at all? Do the people within this building really start to take on those kind of ideas?

Pete Crowley:

I think that people in this building have taken on more of a sustainability mindset, but mostly because of what we added to the building. For example, we have recycling bins. We have made it easier for them to get into that mindset. There is no longer the thought, "Well, I have to go down two floors to get rid of my aluminum can if I want to recycle. It's easier just to throw it in here."

Kathleen Lewis:

So you made those options accessible.

Pete Crowley:

Yes. So that change has definitely happened. But I'm struggling to say more on that. You know, that's another one of those things where everybody was high on sustainability in the beginning going, "Yes! Sustainability, sustainability, sustainability. It's a great thing. We all need to be doing it."

But when it came time for each individual to take that upon themselves, it was a different story. Some individuals grabbed onto it very quickly. For others, it's still not even on their mind.

Kathleen Lewis:

How has the sustainable design of this building influenced the relationship between Scripps and the greater Knoxville community?

Pete Crowley:

I don't know. I mean, as part of my facilities/real estate area, part of the charter we took upon ourselves when doing a sustainable building was to make that building accessible for USGBC, UT, and Pellissippi State. We wanted to really use it as an educational tool, to show people what's out there. So from that perspective, I think we've been successful.

I take no credit for this, but as we were going through the design, we wanted to employ a gray water system for the building. When we started with that, we went to the city and code or ordinance would not allow it. Now whether that was a precipitating factor or not, the city of Knoxville now has a gray water ordinance. It's now feasible to do those sorts of things.

We've always had a good relationship with the city and the community at large. I don't know if having a sustainable building has necessarily increased that. I think it has raised awareness for us within the community though simply because it's a new building that's so visible. Most people who understand anything about sustainability can look at this one and say, "Oh, it must be a sustainable building because

it has the light shades in the outside.” But to the general population, it just looks like a cool new building that Scripps put up. And quite frankly, a lot of people might not even know that Scripps put it up.

So I’m not sure how to answer this question. The design has certainly helped us in our relationship with local education and USGBC. But beyond that, I can’t really say definitively if it has done anything for us.

Kathleen Lewis:

Do any elements of this sustainable design actively engage the user (i.e. opening a window)?

Pete Crowley:

Well, there are no operable windows, but we do have the manually controlled diffusers. We do have manually controlled lighting. We have window shades that are manually controlled. Every floor has a terrace so people can go outside on good weather days...or bad weather days if they so choose.

It’s not in the building, but within the project, we did incorporate a walking trail. And within the building we have locker rooms and showers. So if people want to exercise or ride their bikes to work, they can do that now with the right facilities in place.

Kathleen Lewis:

How well would you say the overall design of your network headquarters conveys a sense of hierarchy, both spatially and programmatically? Would you please rank this level of hierarchy on a scale of 01-10?

Pete Crowley:

So do you mean hierarchy in terms of organizational hierarchy?

Kathleen Lewis:

Yes, that is correct. And we have actually already discussed this a little bit.

Pete Crowley:

I think it does, but again, it’s another one of those mixed bags. All of the offices, with the exception of the executive offices on the fourth floor west end, are the same size. It doesn’t matter if I’m a Senior Vice President or I’m a Director, I have the same size office. That tends to flatten that hierarchical view of the world.

The fourth floor west is our executive wing. The model there is the same in terms of each of executive having an office of the same dimension. Each executive also has a “huddle room” next to his or her office which remain open for anybody to use. So that also takes

a hierarchical model and really starts to push things down.

There are four offices that we allow for corporate level executives. One is for Ken Lowe, the CEO. There is one for Jonah Castro, the CFO of Scripps Networks Interactive. And there are two others regarded as “super offices” which are reserved for other corporate level staff. Given their positions in the company, you know, they’re going to get what they want.

Actually, at the start of the project, the President of Scripps Networks at the time had bought into the idea that even he was going to be in a typical 140 square foot office. Then...well, the short version is that in the midst of the project, the decision was made to relocate our corporate headquarters and associated executives from Cincinnati to Knoxville. So that’s when the executive offices got a little bigger and the corporate offices got much bigger. The design intent skewed, but there still remains some regularity within that section of the building.

So our intention was actually to flatten the hierarchical view of the world and generally, we were successful in that regard. Going to standard sizes in almost everything definitely helped. I think it’s all a positive.

Kathleen Lewis:

Thinking three dimensionally, I know for instance that you walk in and the reception area is a double height space. Typically, that is done to show more importance to such a space. Are there any other spaces like that in the building?

Pete Crowley:

No, there isn’t really. The reception area was designed to create that spatial volume, obviously. But there was also the intention of walking through the entry doors and being able to see through the space, across the lake, and to our original building. So there was actually a lot of studying done to find what that view would be like when you walk in.

You know, there are other areas in the building, on each floor of the west side and east side, called “branding wall” areas. They are essentially 30’ wide by the standard height and are just blank walls. We made these areas available for whatever group is in that section of the building to do with what they want. So on the second floor for instance, we currently have a wall displaying framing and wall art since that is part of our Home group. There is another one where a group put a sculpture up. And another wall simply has televisions to show an HGTV branding kind of thing.

So those are all spaces where each individual working group could really turn that area into something of their own. And that design decision was actually based on another common input from our survey. It

was that there was nothing really to say, “This is where HGTV is.” So by creating these “branding wall” opportunities groups can now say, “This is where HGTV is. This is DIY. This is Accounting.” Those went over pretty well, though they are not on the grand scale of the lobby.

The lobby is designed to represent all of Scripps Networks. The monitor wall is there, the branding images—all of that stuff is there to represent the entire company.

Kathleen Lewis:

I definitely like the idea of the “branding wall.” It almost adds another scale to the idea of personalization or control of workspace. What would you say about the “green wall” (referring to a vegetated wall) within the lobby?

Pete Crowley:

It’s funny you mention that. It’s kind of growing bigger than we ever thought it would!

Kathleen Lewis:

What are the terraces like?

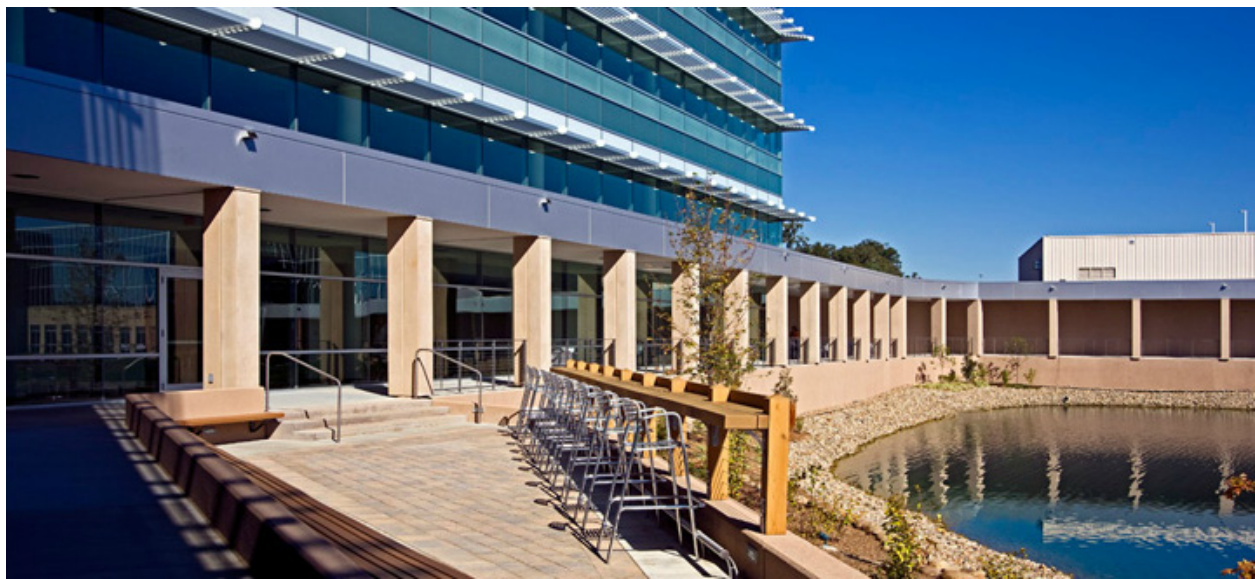


Figure 06.17 | Lake Terrace
Source: KZF

Pete Crowley:

Well, on the second floor on the west end of the building, that terrace is probably 12’ deep x the width of the building. We have some

outdoor furniture with chairs, tables, umbrellas, etc. (FIGURE 06.17).

Kathleen Lewis:

Do the terraces have any plants?

Pete Crowley:

They do not yet. However, we are getting our HGTV gardening group some planters to start doing herb gardens and that kind of stuff. So they can not only improve the environment, but use those gardens as test-beds for content on the web or other publications.

The third floor balcony is deeper with the same width. The fourth floor of the building has a terrace on the north side, right at the elbow of the building. It's not a very big balcony, but it has a view that overlooks the adjacent golf course and surrounding area.

I honestly haven't seen the terraces used a lot. Being winter at the moment, some of that is probably weather related. And on the west end of that building, there is always some kind of breeze blowing. I mean, they are used. I think it's just very much weather dependent.

Kathleen Lewis:

So do you know if there was any design intent behind placing those balconies in relation to the views?

Pete Crowley:

Well, we always said that if we were going to have the terraces, they should be on the west end and overlook the woods, along with the rest of our property. The fourth floor terrace was placed more to fit the executive area up there. And it fit there pretty well. I'm not going to say the placement of the terraces was driven by views. I think it was more driven by the structure and the architecture. It really just made sense to put them on the ends. We could have had a squared-off building with more occupiable square footage, but that would have been kind of boring. We also really wanted to make sure that each floor had some sort of outdoor venue. They could have just as easily been placed on the east end, but then you'd be looking over the generators and "business end" of the building.

Kathleen Lewis:

Do you feel as though the design of this building is innovative?

Pete Crowley:

I think it's innovative for Knoxville.

I'm not sure there is necessarily anything in there that is cutting edge. And any architect is going to have his or her own design stamp on things. If you look at other KZF designs, you'll find a lot of similarities.

I don't think there is anything overly innovative about it. The one thing that sets it apart is the elbow, or the bend, around the lake. That was

something that made sense though because of the site.

Kathleen Lewis:

Would you say the personalization aspects are innovative?

Pete Crowley:

Yes and no. I wouldn't necessarily call them innovative. I mean, they're great ideas, but I can't imagine that another company somewhere doesn't have the same thing regarding manual air flows. I know there are other companies now that have taken a similar approach on lighting. Lighting is lighting; some groups need a lot, some groups don't.

I'm struggling with the idea of innovation. I mean, there are certainly some good ideas within this building. How innovative they are though, I don't really know.

I know most of the architects we have worked with in the last eight years or so consider our approach to lighting innovative. It doesn't matter who we work with. At this point, we ask them strip out almost 70% of the light fixtures within their Reflected Ceiling Plans. Even if we tell them this on the front end, they always come back with way more lighting than anyone could ever want. So that might be something that is innovative.

Kathleen Lewis:

I agree. I definitely think it's innovative for Knoxville.

Pete Crowley:

Yes, and we learned a tremendous amount about sustainability. Our architect learned a tremendous amount also. Finding a contractor locally that could deal with this type of project though was next to impossible. Thankfully, we got a good one that was willing to take the swings and the leap of faith with us that this was all going to work. But again, in terms of today, even that is not a big deal around here anymore. There are several firms that have done relatively large-scale sustainable buildings.

Kathleen Lewis:

How well would you say the overall design of your network headquarters promotes creativity and personal growth? Would you please rank this level of creativity on a scale of 01-10?

Pete Crowley:

With the way Scripps is, I link creativity with collaboration. I think on the collaboration side, we are between the 08 or 09 score. For personal growth, I'm not sure. How does the design of a building impact personal growth? What is the intent of that question?

Kathleen Lewis:

Well, there is definitely a driving intent behind all of these questions.

That is something I will explain a bit more at the end of our discussion here. Personal growth, to me, can be conveyed in a welcoming environment. It is an environment promoting health, awareness, both on an individual and environmental scale, and it is an environment where your employees really feel like they want to be in for work.

Pete Crowley:

I think that building does that well and I can say that based on the messages we get from our employees. In the beginning, we got a lot of them. Still to this day though, we get two or three a month that say, “I love this building and I cannot wait to get to work. It’s truly the best building I have ever worked in.”

Honestly, I think the building is a minor component of that satisfaction though. I mean, the sustainability aspect plays a part of course with the individual controls, access to daylight, views, etc. But it’s almost as much just about the amenities we as a company provide. You know, we have multiple kinds of coffee; we have a food service operation; we have a Starbucks outlet. And it is also the people you work with. They have just as much to do with that kind of a concept as anything else.

If you come into the best building in the world and everybody you are sitting around you hate, you may still like the building, but you will hate coming into work. Right? So it’s kind of a double-edged sword. One of the things I like about Scripps is, for the most part anyway, I have enjoyed working with every person I have worked with here. We kind of have this informal “no assholes” rule. You don’t hire people that you don’t think will get along with others. Now that is not to say that you can’t respectfully disagree with someone or have your arguments, but at the end of the day, you can still leave enjoying working with each other. I think the building reinforces these relationships, but it is not the primary driver.

Kathleen Lewis:

Experientially, are there any quality, significant experiences within this building that you could share? How does the design play into this?

Pete Crowley:

If I am interpreting this question correctly, I think you already hit on the answer. You know, when you walk into that lobby, it’s like, “Wow!” We actually have a lot of people that come in and say, “Wow! I didn’t know Knoxville had anything like this!” So again, it’s kind of rooted in the idea that this building, for Knoxville, is still unique. There are not a lot of other buildings like it within the area. When I walk someone from New York into that lobby, for them it’s like, “Eh, so what?” And that’s because if you’ve been to New York and walked around the

Midtown lobby...well, that lobby is run of the mill there.

But I also think that outside of the “wow factor” of the lobby, there is a different “wow factor” when visitors hear of the lighting and individual control components of the design. And this is based on giving multiple tours to different groups. People say, “I wish my office...or I wish this...or I wish so and so” could implement these things where they work.

So I think there are some unique experiences you can have in that building that definitely set it apart from anything you can have in this area. Again, where there are sustainable communities, this building is probably run of the mill. For this market, however, it’s out there.

Kathleen Lewis:

Do you see or find value in this building? What elements of the design do you and your fellow employees value most?

Pete Crowley:

My take on the value of this building is the process that we used to develop it and the impact that it is slowly having on corporate culture. The whole idea of open, collaborative, and familial is very difficult to accomplish in a design but this building is perfect for that kind of a cultural shift. I think there is tremendous value in that and it is the culture that we wanted our company to migrate toward. It’s not the right building if you want your company to stay straight-up, hierarchical in structure. It doesn’t lend itself well to that.

From a pure facilities standpoint, the flexibility of the building is outstanding. The whole concept of having our infrastructure systems underfloor helps to create a much safer building to operate and maintain. We don’t have guys on ladders all of the time trying to adjust this or fix that. We don’t have people climbing on furniture to deal with lights and that kind of stuff. So it’s easier to maintain. It’s more cost effective and it’s a safer building in general.

Kathleen Lewis:

Does your experience here allow you to see or find value in quality architecture as a whole?

Pete Crowley:

Well, in my role, I have always found value in architecture. The built environment is what we all live in. Again, from my experience base, that building is unique. You know, architecturally that building gave us the opportunity to do something different from a corporate perspective, especially in comparison to the master-planned space we came from. Architecturally, it gave us an opportunity to display our brand and create a facility that represents Scripps Networks Interactive in

a good way. There is definitely value in that.

People often see this building from the outside and say, “Wow! I didn’t even know this was here!” It is truly is a good representation of Scripps. And if you see inside of it, the design reinforces that even more.

There is always inherent value in the architecture. Like I said before, each architect brings his or her own “stamp,” for lack of a better term, or design sense to whatever project they do. And in some degree, this building created a sense of the “haves and have nots” amongst employees left in our older building. We went in the original building and tried to match certain finishes and things after this building was completed. But given the three additions and amount of space available there...well, it’s better, but still not the same.

So the architecture within this building plays a factor in how our brand is represented. That was a key to us. We didn’t want to build a modern Gothic whatever. We wanted to build something that was more contemporary and more reflective of Scripps Networks Interactive as a company.

Kathleen Lewis:

Does working in a sustainable, architectural environment instill a stronger sense of environmental awareness in you?

Pete Crowley:

Yes, though you are getting the viewpoint of the guy that is responsible for real estate and facilities. So if you ask that question of regular employees who aren’t as actively engaged, you might get a different answer. Definitely going through the process of a LEED certified building raised my awareness of the environment of sustainable practices though. I had a pretty decent baseline of some of the benefits going into it, such as the reduction of operating costs to some degree and that kind of thing. But the certification process reinforced that knowledge.

Also, like I said before, the way we incorporated certain opportunities has made it easier for people to be more environmentally conscious. It’s definitely had a positive impact, though I cannot attest to how widespread that may be. But it has been positive.

Kathleen Lewis:

There is a notion that environmental awareness does not necessarily yield environmental behavior. Have you seen a change in your behavior, or that of your fellow employees, since first working here? If so, to what would you equate this change in behavior?

Pete Crowley:

Personally, I haven’t changed much. I mean, I recycle at home and

have been doing that for many years, even before the city did it. I was the one that would walk down three flights of stairs with a bag of aluminum cans to take them to the recycler in our old building.

While I don't think my behavior has changed, I do think there is a percentage of the employee population who have changed their behaviors in terms of sustainability and environmental responsibility. Even two years ago, after finishing this building and the renovations to our original building, we brought in a consultant and developed a corporate sustainability road map. It was for the company. And while we did not set timelines to it, there were eight different tracks of focus areas that we could make some inroads in. It not only covered recycling but even went up to the degree of how we might do sustainable production for studio production, field production, those types of things.

So we established company-wide this road map. Every budget year we now try to take off some chunks of that road map and say, "Okay, for a \$250,000 this year, we can hit points A, B, C, and D." And at some point in the future we will be able to say we have done 90% of these things and that road map has taken us a long way down the sustainability path. Getting traction around that was pretty difficult in tight budget years, but there always seems to be a "low hanging fruit" that we can go back and pull.

One of the things I am pushing right now regards personal printers. When we source personal printers for people's offices, the default setting should be Duplex. So you're printing on both sides of the paper instead of just one. It's a small change, but it will then become a chore for people to go back to one-sided printing. They just aren't going to want to mess with that.

I mean, my paper usage just got cut in half. That's a big deal. We use a lot of paper in this company. So it's that kind of stuff that we can work on.

And since that building was finished, we now have a Green Team. They focus what other sustainable things can we be doing as a company. They champion certain practices. And that's across the entire enterprise; it's not just Knoxville.

I think that building, and the architecture of that building, served as the cornerstone for kicking those activities off. We never would have gotten the traction we did with sustainability as a company unless we had done that building the way we did it.

Kathleen Lewis:

Have you experienced an increased sense of environmental consciousness and drive for environmental behavior outside of Scripps

and would you credit these experiences to working here?

Pete Crowley:

Personally no, but again, my take is that I was already kind of there.

Kathleen Lewis:

On a scale of 01-10, would you please rank your level of satisfaction with the design of these headquarters?

Pete Crowley:

I would give it a 09. I mean, it's done everything we needed it to do. And where we fell short, it has provided us the flexibility to make course corrections. That is important for our company because we are constantly comparing where we are versus where we want to be. We work hard to make sure we are on track to get there.

Kathleen Lewis:

Great! That concludes the primary list of questions I had for you. I got the sense that some of them might have seemed rather random to you though and I would like to explain my intentions behind them now.

Sustainability in architecture has been a practice that has fluctuated over time; it has come and gone. I'm trying to analyze in my thesis why that is. And the reason I asked these questions regarding the experience of the building was to see which design strategies had a positive effect on you as a user, versus the contrary. If we change the course of conversation from the energy consumption and performance of the building to "How does this affect me on a personal basis?"...well, there is the potential for that change to make sustainability a much more enduring solution.

Pete Crowley:

I think you're right. My take from my position within Scripps is that we developed that building in a very interesting time. Sustainability was on the rise at the time as an overall concept. We even had some shows in our on-air programming around sustainability and the idea of "green homes" was gaining popularity. So from our corporate perspective, it made sense to incorporate sustainability into a new building. So that was one set of factors.

The other set of factors regarded the economy. The economy was tanked. And while it tanked, that made it the opportune time for a company like us to go in and say, "We are going to build a \$40,000,000 building." We knew we could get it for less than \$40,000,000 because contractors were out there looking for work. They were commonly taking a loss just to keep their staff busy.

So we had that confluence of things. But on the sustainability road map, once that curve began to spike and then "top off," it made it

difficult to get traction again around sustainability. I don't know that it is an accurate statement to say that if we can personalize sustainability it will gain momentum. I say that because in the corporate world, I have to create the business case that says, "If we do these things...if we spend \$250,000 to do X, Y, and Z around sustainability, in five years we are going to recover \$400,000." So I have to make a business case on the one hand.

But I think from a grassroots perspective, the architecture of that building and a lot of the things we put in there were driven by the desire to create a better work environment for employees. That really was the primary thing and the sustainability component was secondary. So we were the beneficiary saying, "We want to give you more control over your workspace."

Well, what does that mean? It means underfloor air, which is more efficient and at the time was a sustainability practice. It means doing a parking deck instead of surface parking; we did that for employee convenience. If we had done 500 spaces of surface parking, we would have had people parking all the way up on the other side of the Brown Squirrel (referring to a local furniture store). Then we would have to be running a van or something just to get people to the front door. So we did a parking deck which put everyone closer to the building. It just so happens that doing that also gave us LEED points and it's a solid sustainability concept.

So tying it to the employees, not as a sustainability initiative, but as an employee convenience, an employee benefit, or making the workplace better for them has to be done. If you can't and you also can't show a financial business case for it, then there are few executives in the world that would say, "Yes, let's just do that anyway." There has to be a business case or there has to be a direct impact on the employee base. And that's for those companies who are really focused on making sure their employees have what they need.

Kathleen Lewis:

It's common in architecture for sustainability to be seen as a different approach to the field. I'm hoping that over time, the tendency to separate it or differentiate it from the vernacular can be changed. Sustainability and architecture become one.

I see the potential for the practice to largely be a return to basics in design. For example, and generally speaking, it can simply grow out of knowing where to place a window, how to orient it, what size it is. So if there can be this change, I hope also there can be the change that sustainability is not merely seen as energy efficiency. It's creating, like you said, better places to live and work.

So there needs to be a change in how we typically define sustainability, how we approach it, how we practice it. For then, it may really

begin to carry outward and grow in viability. There is also some research that says if you work in a sustainable environment, you might be more likely to carry that knowledge and desire for action home. Through this process, I interviewed you as a representative of a sustainable work environment. I interviewed people associated with Three Rivers Market, a retail environment. I intend to interview people associated with a particular housing project. That's all sort of to cover these bases to see what the relationship is among them and analyze this theory on a new level.

Pete Crowley:

That's interesting. I think you are right on in terms of architecture and engineering. This just needs to become the way it is done. You would think that by default the practice would go in that direction. I mean, you're creating better environments and as the cost of some of these different systems lowers, you will be less likely to have to also make a business case. That will just be what the cost of a certain system is.

I would certainly never do another overhead air system if I could get away with it. Unfortunately, most of the buildings we go into now were built ten to 15 years ago. They don't have those capabilities. Also, I think there are a lot of municipalities out there that are starting to adopt sustainability components. That should also help this process along because then you don't have a choice in the matter. Code will dictate that you must implement this strategy and will say, "Oh, and this happens to be a more efficient way of doing things. It's healthier and better for those you are designing for."

You know, when we started this project there were only a couple of LEED AP folks in town. And KZF, the architect for this project, had a couple of certified folks. It got even dicier when we went to the contractors though. I think Blaine Construction only had one person from a parent company who had done LEED projects before. This was really their first foray into it. Like I said, we hit bumps along the way.

But as the design community gets more engaged in sustainability and it becomes just a matter of process for practitioners, the construction community will follow suit. It will by default become a standard thing. Then that makes you wonder what will be next though. What will be the next wave that will hit out there to drive design?

Kathleen Lewis:

To build on something that we talked about before, and innovation might not have been the correct term, was the idea that this building is unique for the area. So that, with the idea that your employees enjoy working here, I think helps make architecture be seen as something more accessible to them. It seems that more often than not, what is regarded as architecture in practice becomes separated from people in their everyday lives. I have heard professors say before that there

is only 10% architecture and the remaining 90% are just buildings.

So space and the way it is designed really affects how you see things. It affects how you learn. It affects how you work. It affects your mood. So beginning to design with not only the intent of creating healthier environments, but also ones that are seen as accessible—from the design executive to the lowest person on the corporate hierarchy—is important for change.

Pete Crowley:

I agree. You know, I really think of what we strove for in that building in terms of standardization. All of the offices were the same size and everything was “cookie cutter.” Well, that’s effective architecture; it’s not necessarily the most creative. When I visit Google or some of these other corporations that have money at their disposal, it’s a different approach. They have the resources to do what they want. We standardized because we tended to look at the longer-term, operational impacts of the space. If you’re Google and you have an infinite amount of money, I don’t think you are as concerned with those things. You are more concerned with keeping your employees in the space for 18-20 hours a day and providing everything they need to the point they don’t even want to go out.

Well, that’s a corporate culture question. And our corporate culture promotes a work/life balance. That means that as a company, we don’t want to make this place so comfortable that people never leave. The need for work/life balance is one of our core values. You need to have an outlet; you need to have a life outside of what you do here. We try to hold the line against making this place your second home and there are some people that complain about that. But as a company, we don’t want that. You know, there are times when we are all here for 18 hours a day, three days in a row. It’s important to balance that out in some way though.

From the architecture perspective, that core value drives us to work with the architect to create a different type of creativity in the design. We want to look at facilities like this in a different way to make them a comfortable, good, safe, productive work environment. However, we don’t want to go overboard in a way that is actually going to create a greater maintenance cost over the next 30 years or so. I think that’s an important thing. The design has to engage culture; but it has to engage the culture that you have and also the culture that you want.

You know, we located in Knoxville so that our employees could live a home and garden lifestyle. That means you have a home and garden; that means you probably have kids. Given those factors, you just can’t stay here. We don’t want you here all the time.

But for architecture as a profession, I think you’re correct. It needs to get to the point where the sustainability components become the

standard. It should be, “This is just what we do.” I don’t ever want to go out for a design bid again and make one of the section criteria be in regard to the number of LEED AP’s you have on staff. It shouldn’t matter. Every architect coming out of school and every architect in practice should have a strong knowledge base in sustainable design. And that’s because it’s more cost effective and creates better environments. You can be as creative as you want, but the baseline of those things will always be the same. I cannot agree with you more.

Kathleen Lewis:

That is certainly reassuring to hear! I can give you a little more insight into why I asked some of the questions I did. I mentioned that I am trying to explore the ability for sustainable design to resonate with individuals on a deeper level. Well, it’s not a straightforward or easy task, as I’m sure you know. And that is especially since we each value things differently, based on varying cultures and personal experiences.

However, there is an idea that every person shares fundamental needs. Those basic needs are the same across all cultures. For instance, there is a need for shelter, social acceptance, and so on. So what I am trying to find first is “how does design meet those needs?” Secondly, I am trying to see that if the needs are fulfilled in a certain way, a healthier way, then “what values can then become associated with that experience.” That value base can then encourage better behaviors.

Pete Crowley:

I think that really makes sense. So is interest in architecture as a profession waning right now; is it on the decline? I know that when the economy tanked, there were a lot of firms struggling or going out of business. I guess I am curious as to what the driver is behind this study for you.

Kathleen Lewis:

Personally, I have always had this fascination with how we perceive spaces. As I have developed within school, it became clear to me that that component of design became increasingly rare in conversation. And that was troubling. Sustainability was a focus too though and I certainly have a strong interest in that as well.

But in the design process, it seems to me that architects are essentially empathizing with the user. I know when I design I find myself saying, “I want to create this kind of an environment. I want to encourage this kind of an outlook or experience for the user.” I became curious how sustainability influences those experiences.

I wanted to dissect these two components. I wanted to learn more about how we truly perceive spaces, how we act in them, and what

promotes feeling best. I wanted to learn more about sustainability, the energy performance strategies, and their experiential impact. I did this in the hope of becoming a better designer, a better architect, in the future.

As far as your question regarding architecture waning as a profession...well, it will always be around. I know there are fluctuations in building development, but you are legally required to have an architect when pursuing any building greater than a three-story, residential structure. Not many people realize that.

VITA

Kathleen Michelle Lewis originates from Kingsport, Tennessee. In August 2007, she began her undergraduate education as a student within the College of Architecture and Design at the University of Tennessee, Knoxville. After completing the five-year Bachelor of Architecture program, she graduated in May 2012 with a professional degree. Kathleen continued to advance her education at the University of Tennessee, Knoxville through the post-professional Master of Architecture program the following August. While in graduate school, Kathleen concentrated her studies on sustainable, ecological, behavioral design. The knowledge acquired during her two-year graduate education has been applied to this course of inquiry and will continue to be explored in future architectural practice.