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The 21st Century Residence: Baby Boomers Interact with Technology

Introduction

In the 21st century technological advancements have made several new products available for integration in the residential market. As time passes these technological innovations are becoming more accessible to the general public, both in quantity and pricing. According to Louise Murray, residential architecture is trending towards the integration of technology with the built environment. Murray traveled to Brussels to visit the Living Tomorrow complex. This development is "a highly interconnected 'brave new world' where smart phones, mirrors, carpets, multimedia systems, lighting and heating, banking, and bill-paying systems all communicate with each other wirelessly and seamlessly." (2009, para. 2)

A portion of the Living Tomorrow complex includes a residence that combines such factors as sustainable energy sources that create smaller carbon footprints than more traditional energy sources with carbon dioxide sensors which are connected to ventilation. This intricate system is managed from a touch-screen "smart board" which displays the house-hold energy balance. (Murray, 2009, para. 6-10) This type of integration is typical of features that will be prevalent in 21st century residential design.

Traditionally younger generations are considered as being more open to these new technologies. However, in order for technological integration into residential design to succeed it must have the support of a range of generations. The Baby Boomer generation is one of the largest and most influential generations in American history. According to Steve Gillon, the Baby Boom was "the single greatest demographic event in American history." (2004, p. 1) As Arthur C. Nelson states: "Just as their presence reshaped the country's built-environment in the 1950s through the 1990s, so will they reshape it over the next generation….In many respects, it is in response to the emerging needs and preferences of the aging boomers – not those of "Gen

X" or "Gen Y" – that America will come to a true version of what a number of community and land-use planners call the new urbanism." (2009, para. 1)

The purpose of this paper is to demonstrate that the Baby Boomer generation would be receptive to residential architecture with strong technological integration. In order to ascertain this it is necessary to first study the history of the Baby Boomers and their historical reactions to changes in society and technology. It is also vital to find out what aspects of technology are important and useful to the Baby Boomer population. Once this has been established, the next step is to show how architects can incorporate this information into design practice, both now and in the future.

Literature Review

During the course of the Literature Review it was found that, as a generation, Baby Boomers have historically been in the midst of, and promoters of, change; and that technology has often been the motivational force behind change. A factor which greatly affected the Baby Boomer generation is the introduction of television as a major form of media. This is important in two ways. First, television transformed the Baby Boomer Generation into a socially coherent collection of individuals. It became a media for social change and enabled an entire population group to be targeted at a single moment through a single medium. As Steve Gillon states, "Television separated the Boomers from every previous generation. Mass production and technological advances in the 1950s allowed most American families to own a set….Americans across the country watched the same shows, laughed at the same jokes, and watched the same new stories unfold." (2004, p. 8) In fact, some believe that television was a major reason for many of the social and political movements of the Baby Boomer generation. In his book The

Boomer Century, 1946-2046: How America's Most Influential Generation Changed Everything, Richard Croker notes that television created a divide between the Baby Boomer generation and their parents. He quotes Dr. Ken Dychtwald, a psychologist and gerontologist who has studied the Boomer generation in depth: "For many of us there was a disconnect between what we saw on the screen and what we saw in our communities. Raised by our parents to think for ourselves, we suddenly looked around and saw hypocrisy everywhere." (2007, p. 28-29)

The second reason that television is important is that it signaled the start of an interdependent relationship between the Baby Boomers and technology. People began to form their lifestyles around technology. "When a popular show was on, all the toilets in the nation flushed at the same time, during commercial breaks and when the program ended." (Gillon, 2004, p. 9) For perhaps the first time in American history people obtained a sense of community, not from physical location, but from an intangible network of media. Physical gathering spaces were replaced with digital versions – civic spaces were replaced with Internet websites, chat rooms and forums. Libraries were superseded by Wikipedia and online databases. The traditional constraints of social status, income, race, and gender were all overstepped by television, movies, and other forms of media. Dr. Steven Nock, a professor of psychology and sociology at the University of Virginia stated: "I think that the historical period, which means *when* we were born, perhaps for one of the first generations, is dramatically more important than *where* we happen to be born. The baby boomers certainly learned through open access to communications about everything that was going on in the United States." (Croker, 2007, p. 10)

The next phase of the Literature Review involved looking at how Baby Boomers have integrated technology into their living spaces. During the 1950s the United States shifted to a focus on suburban dwelling. Mass production techniques that had been refined during World

War II, a government-expanded highway system, and improvements in construction technology enabled housing to be quickly assembled in suburban developments. (Gillon, 2004, p. 157)

As Baby Boomers age today there is still a preference for technological advancements that make everyday living easier. Michael Rogers, a journalist, author, and consultant to media organizations on technology issues, states: "The baby-boom generation is different from earlier generations. You will find 80-year olds who love the Internet in the current generation. People over 65 tend to stop adopting new technology, but it's clear that the baby boomers keep adopting new technology. They've been doing it all their lives." (World Future Review, 2010, para. 4)

Even as Baby Boomers enter retirement communities, technology follows them. Courtney, Demiris, Rantz and Skubic conducted research into the use of smart home technology in skilled-nursing facilities. Their research discovered that "privacy was a potential barrier to adoption" of technology for some respondents but that for most individuals "the perceived need for a smart home technology would outweigh their privacy concerns." (2008, p. 199)

The Literature Review provided ample examples which demonstrate that Baby Boomers traditionally embraced technology in their formative years, and that they continue to embrace technology in their senior years. However, the years in between, while the Baby Boomers are classified as "middle-aged" are not as closely documented in defining that generation's perceptions of technology and the likelihood that they would want to live in houses that feature smart home technology.

Methods

During the course of research many methods were studied to determine which would be most useful. Linda Groat and David Wang published a book entitled Architectural Research

Methods. This publication provides an in-depth explanation of various research methods, strategies, and tactics.

Understanding how Baby Boomers perceive technology in their own environments is vital to predicting how they would feel about the 21st Century Residence. Due to the subjective nature of this paper, the Qualitative Research method was important to use because it enables the researcher to examine respondents in a natural setting. According to Norman Denzin and Yvonne Lincoln, qualitative research involves "an interpretive, naturalistic approach to its subject matter. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them." (Groat & Wang, 2002, p. 176) For example, Courtney et al used a qualitative, descriptive approach to conduct their study on nursing home residents. Within the qualitative research method, they used grounded theory approaches. (2008, pp. 195, 197) Grounded theory requires a researcher to "enter a setting without preset opinions or notions," allowing events to naturally unfold and then analyzing the results in order to determine theory. (Groat & Wang, 2002, p. 180)

In addition to qualitative research, Interpretive-Historical Research was also important. This method allows the researcher to examine the history of the Baby Boomer generation – key facts and events in their lives – and interpret that information into a plausible theory as to whether there are trends which indicate a preference for or against technology integration. This research method does not seek to alter past events, but to explain them in the light of the topic of research. However, this method has limitations in that it is open to the subjectivity of the researcher. It is not perceived as being as accurate as other forms of quantitative research. (Groat & Wang, 2002, p. 167)

Combining Logical Argumentation with the other research methods is helpful, but it again is open to interpretation and other social-cultural factors (Groat & Wang, 2002, p. 334). Therefore it was necessary to include data from additional research sources. Initially surveys were viewed as a tactic to ascertain how Baby Boomers would react to the 21st Century Residence. However, it was discovered that the surveys could not provide the in-depth information needed for this paper. Additionally, much information had to be provided as an introduction to the survey in order to explain to the respondents what the 21st Century Residence was and the types of technology that could be integrated into it. This additional step potentially influenced the results of the survey. Therefore the decision was made not to utilize this tactic. Instead personal interviews were chosen – talking with individual Baby Boomers and asking them whether or not they would be receptive to technology in housing, and why or why not. This direct approach would help fill the gap that is lacking in the research that is currently available.

Results

An essential part of this research paper is defining what is meant by the term "The 21st Century Residence." For the purpose of this paper, the term can be defined as a residential unit that integrates technology at multiple levels in a manner that has been historically unprecedented. This residence is not restricted to a particular setting – it can be suburban or urban, single-family or multi-family, in a nursing home or an apartment complex. The critical aspect of the 21st Century Residence concerns not the form or function, but the depth of technological integration within the dwelling and between the dwelling and its surrounding context.

The many innovations that could be integrated in this residential type include alternative energy sources, home automation and other "smart house" technologies. There are glass walls

that can be transformed from opaque to transparent and back at the flip of a switch. There are programmable thermostats and lighting controls that rely on sensors and dimmers, all of which can be controlled from a central network – even remotely.

Most of these technologies have already been used in several commercial, corporate and medical applications. However these technologies have been traditionally absent en masse at the residential level due to the relatively high cost of implementation. As mass-production techniques are applied to these technologies, the costs will be reduced, making them more available for integration into residential design. (Murray, 2009, para. 7)

An examination of the history of the Baby Boomers revealed that they experienced and often incited change at various levels. This flexibility makes them more likely to be receptive to the 21st Century Residence. They witnessed the assassination of John F. Kennedy, experienced movements for women's liberation and civil rights, and brought on America's obsession with Rock and Roll. They rallied for peace, witnessed the Space Age and lived through the Cold War and Vietnam. (Croker, 2007, pp. 31-146)

Not only did the Baby Boomers experience social revolution, they also experienced a shift in global identity. After World War II much of Europe was war-torn. On the other hand, America was comparatively unblemished. Many artists and architects such as Mies van der Rohe, Marcel Breur and Walter Gropius relocated to the United States. With this shift came an increased interested in technology in building design. "On the wings of the victory delivered in World War II by United states military technology, mechanization took command of the American imagination….The discipline of rational planning…was now seen as the prerequisite for continuing prosperity. …Modern architecture stopped being an American import and became an export." (Ockman, 1997, pp. 124, 127) Americans relied on improved construction techniques

to bolster their international stance with such building components as curtain wall façades. These techniques left the realm of the "elite" architecture and moved to the "mass culture" building. They became part of a "new vernacular, a common language of architectural components" – a kit of parts. (Ockman, 1997, pp. 136-138) By using these formerly elite components in residential design, architects helped to ingrain sensitivity to the benefits of construction technology into the psyche of the American people.

Not only did technology help America's global image, it also was incorporated into America's private dilemmas. One of the major changes between the Baby Boomer generation and the previous generation is the unprecedented growth rate. "From 1946 to 1964, 92 percent of all women who could have children did, and they averaged almost four children each." (Croker, 2007, p. 7) This population expansion, combined with efficient mass-production techniques that were refined during World War II, created fertile grounds for mass-produced communities like Levittown, a suburban development built in Levittown, New York from 1947 to 1951. Peter Bacon Hales writes: "Built by William Levitt and his family, using the most novel and up-to-date of building methods, Levittown (originally *Island Trees*) capitalized on the housing crunch of the immediate postwar years, offering affordable housing to returning GIs and their families, in the form of small, detached, single-family houses equidistant from New York City and the burgeoning defense industrial plants on Long Island." (2011, Levittown: An Informal Cultural History, para. 1)

As was mentioned in the Literature Review, technology – especially in the form of television, the Internet, and other media – has been instrumental in many of the transformations undergone by the Baby Boomers. Not only has technology been used in building design and to foster revolution, but it has also been integrated into everyday life to such an extent that the Baby

Boomers now view it as somewhat commonplace. For example many cities are interdependent on transportation systems like subways and commuter trains.

Another area in which technology has really made a difference is healthcare. Dr. Dychtwald states that due to innovations in science and technology, "life expectancy rose more than any period before. Improvements…have added about one hundred days of longevity for each year that passed – approximately two days per week….[The Baby Boomer] generation will live longer than any previous generation in America." (Croker, 2007, p. 273) Michael Rogers writes "In terms of telemedicine, we used to think it was the doctor coming to you on the video screen. Now it's also your diagnosis and vital signs going to the doctor. We'll have Band-Aids that measure pulse and blood pressure or insulin level….We'll have diagnostic consuls in the home that each day walk a person through the checkup – how is your energy level on a scale of 1 to 10 – making sure they're taking their medications." (World Future Review, 2010, para. 36)

Baby boomers grew up amidst the development of computer technology and the cell phone revolution. They have embraced social technology as a form of networking. As Thomas Horan states: "At the scale of a neighborhood or community, the design emphasis moves from fostering a sense of place to enhancing a sense of community….[D]igital villages can provide new agoras for encouraging cultural, educational and social interactions among community members." (2000, p. 11)

While many sources have been found that indicate Baby Boomers are receptive to technology, there is also information to indicate that there are limits to how much Baby Boomers will allow technology to be integrated into their lives. One issue that seems to be of pressing concern is privacy. Another is how technology affects their desired lifestyles. Michael Rogers sates: "They are not uncomfortable with new technology, but they are uncomfortable with the

idea that technology forces them to change their lives….[and there is] a real concern over security, privacy, and things like that." (World Future Review, 2010, para. 7, 10)

Baby Boomers are also concerned with the rate of change of technology and its increasing complexity in terms of usage. Concerning Baby Boomers and smart phone technology Michael Rogers states: "In the broadest sense in the future…all our devices…will have increasing intelligence built into them….When we looked at the baby boomers,…[t]heir recurring complaint was there were too many features to find the ones you wanted easily." (World Future Review, 2010, para. 19, 20).

Would these concerns over privacy and other issues be a stumbling block to Baby Boomers and technological integration? Returning to the qualitative research of Courtney et al, mentioned previously in the Literature Review section, provides additional insight. Courtney et al initially discovered that residents' primary interest in smart home technology involved how necessary they believed technology was to improve their health and/or quality of life. Courtney et al found that the majority of "residents seemed willing to trade personal privacy preferences for the perceived benefits of the smart home technology." However some residents indicated that "privacy factors would supersede any perception of need." (2008, pp. 198-199)

Would this finding be applicable in other residential settings? To find more detailed information on how Baby Boomers perceive technology and whether they would be receptive to the 21st Century Residence, in-depth interviews were conducted. Due to time constraints, there were a limited number of interviewees. However the results share similarities with the findings of Courtney et al. Below are the questions and the answers:

Q: Do you view technology as positive or negative, and why?

R: All respondents viewed technology in a generally positive manner when it "makes life easier." The responses varied from viewing technology as useful to necessary.

Q: Do you feel technology leads to an invasion of privacy?

R: All respondents viewed technology as invasive sometimes. Reasons varied from fear of the government spying upon their personal lives to individuals and organizations getting people's personal information and making it available to others without permission. Identity theft was a common concern.

Q: Would you live in a "smart house"? What features would you like/dislike?

R: All respondents would live in a smart house but wanted varying degrees of technology. For example, one respondent wanted a house that would do as much as possible – automatically lock/unlock doors, incorporate security features, automatically adjust lighting levels, etc. On the other hand another respondent wanted a smart house but did not want it "for everything." He said "Some things I'd rather just do myself." All respondents were interested in using smart house features to keep energy costs down. But they were divided in the level of media integration (for example home automation and media systems like AT&T U-Verse, etc.).

Q: What is important to have in a smart house?

R: One respondent answered that lessening physical work would be ideal – his exact words were that it would be great if the house could mow the grass – but generally speaking the major consensus again focused on energy savings.

Q: If technology could prolong life, or improve health and/or the quality of life, would you want it integrated into your home?

R: All respondents replied yes.

Q: If a smart house had all the features you wanted, and was affordable, how likely would you be to buy it, on a scale of 1 to 10?

R: Between 8 and 10.

Q: Do you view the integration of nature into technology as important in residential design (i.e. creating interior/exterior spaces, daylighting, ventilation and renewable energy sources)?

R: All respondents replied in the affirmative.

Discussion and Conclusion

A review of the history of Baby Boomers reveals that they have demonstrated a pattern of flexibility and a co-existential relationship with technology. Baby Boomers use technologies as tools to improve their lives, and are most likely to welcome technology when they feel it is beneficial or necessary.

However, there is a cautionary aspect to technology. Baby Boomers are concerned with technology when it comes to privacy issues and ease of use. Though these concerns are a common thread throughout the group as a whole, generally speaking most individuals are willing to make compromises if they feel the benefits of technology outweigh the negative aspects.

Applying this information to residential design in particular, the findings of the research indicate that Baby Boomers will be receptive to the 21st Century Residence. Care must be taken by designers to ensure that there is a balance between technology and nature, and between social and individual connectivity. While smart homes provide digital networking alternatives to the traditional sense of community that was originally linked with physical locations, it is important that there is not a loss of individualism.

This research is somewhat limited in scope, but does provide a background for additional research into Baby Boomers and the 21st Century Residence. It is of particular use to housing developers, who are looking for ways to revitalize the housing market. Some developers are targeting Generation "Y", which will soon be a formidable force in the workplace and among consumers. However this research has indicated that if developers omit the needs and desires of the Baby Boomers in the process, they risk the possibility of excluding a large market segment that is an extremely influential consumer, and one of the largest population groups in America's history.

The in-depth interviews demonstrated that Baby Boomers are likely to leave current housing to move to smart homes. One factor that the respondents mentioned that would be important is affordability. They are concerned that the increases in technology would trend towards being so advanced that they would be out of the scope for the average American. What is a way to possibly reduce the cost of advanced technology as it is incorporated into residential design?

The research indicated that mass-produced housing has been and will continue to be an acceptable method of integrating construction technology improvements with residential design. The cost savings of mass-produced and pre-manufactured housing can also contribute to the stabilization and growth of the housing market. Combining smart house technology features with pre-manufactured housing creates a potentially optimal situation because it improves efficiency and functionality. This is perhaps an ideal form for the 21st Century Residence.

In conclusion, there is ample indirect evidence to support the viewpoint that Baby Boomers would be receptive to the 21st Century Residence. Additional research is needed to provide more detailed information. However preliminary findings indicate that when the

perceived benefits of technology outweigh the negative aspects, Baby Boomers are generally willing to make some compromises.

A possible scenario for the ideal 21st Century Residence involves the integration of smart house technology with pre-manufactured housing. Baby Boomers would likely be receptive to this if they believe that this format will not cause undue interruption to their lifestyles and will improve their quality of life. Though they are forward-thinking technologically speaking, they are also concerned with not letting technology "take over" their lives and with ensuring that residential design also incorporates elements of nature. It is important that designers, developers, and architects keep these points in mind moving forward into the 21st century.

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