

Encouraging the Practice of Filial Piety through Designed Objects

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Encouraging the Practice of Filial Piety through Designed Objects

Abstract

The thesis explores the didactic potential that product design has to change behaviors and improve interpersonal relationships. These works were created as a response to the decline of “filial piety” among Chinese immigrants in the US.

“Filial piety” is the responsibility of each person to respect their parents, obey them, and provide material and physical care to them as they age. It is a virtue to be held above all others in Confucian ideals. “Filial piety” is highly honored and legally mandated in China (Sung, 2000), whereas in the US it is more of an individual choice (Luo, 2007). The first generation of immigrants who grew up in China feel strongly obligated to take care of aging parents while the second generation is more likely to have American attitudes and respect the spirit of independency and individualism.

“Three-generation cohabitation” is the traditional household arrangement in Chinese societies. However, younger generations tend to be resistant to this living arrangement and of taking direct care of their aging parents (Luo, 2007). Modernization or industrialization has caused substantial changes in the work-life balance of many workers; as a result, the practice of filial piety has become more difficult (Cowgill, 1986).

Three designed objects, Virtual Window, Motion Activated Message Chair and GPS Cane were created to address the missed emotional attachment in long distance parent-adult child relationships where technology is facilitating communication. The pieces are meant to serve as “Critical Design” (Dunne, 1999) to reveal insights about immigrants’ lives rather than to serve as commercial products.

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1. Introduction

1.1 Background

I was born and grew up in China, and came to the United States to pursue an MFA degree after I completed my BFA in industrial design in China. I am interested in how the study of human behavior can inform design solutions that maybe beneficial for contemporary social issues. I am drawn to work on those unconventional design problems that are sometimes not considered something can be solved through design.

I also started paying attention the cultural difference between the United States and China. I am in a position where I can experience both cultures and am able to make people aware of these differences through my design.

1.2 Rationale

My starting point came from the interest of the consequences of China's one child policy. In 1979, a "one child policy" (Hesketh, Lu and Xing, 2006) was introduced to solve the problem of over-population in China. By 2007, there were approximately 100 million only-children in the country. This has had a great effect on Chinese economic reform. However, it has also introduced new problems such as an increase in selfish behavior as these only children do not learn to share. This is currently resulting in a highly increased divorce rate in recent Chinese society since many of them are young adults. (China Daily, 2006)



Figure 1.1 Sharing-pillow



Figure 1.2

In an earlier phase of my study, I designed a series of products that only function by being shared to explore design's impact in changing selfish behavior. One of the concepts is an inflatable two-person pillow shown in figure 1.1, which cannot be used comfortably without a partner. If one partner tries to use it, all the air will be pushed into the other half of the pillow and will provide him/her with no support. This product will not let one partner be lazy while the other one is working to encourage them to share housework fairly. Through to changing couples' behavior, this pillow seeks to improve their relationship by letting them use it together and spend more time with each other.

A video was made to demonstrate how this pillow works and to show the potential implications when a couple wake up in the morning and go to bed at night. However, this product doesn't serve as a commercial product that pleases users and facilitates a task, it raises arguments and affords critical reflection. The target audience of the design is not just the users who can use it every day, but also those who see it in exhibition venues or through watching the video.

This project was invited to be featured on the website 'Design-Behaviour' among many other product designs that intend to change human behavior. 'Design-Behaviour' is a website launched by Debra Lilley in the Department of Design and Technology at Loughborough University, UK. Debra has been exploring “how design could influence user behavior to reduce the negative social and environmental impacts of products during use” and she created the website to provide a platform for designers and researchers to share their insights and studies.

That project led me to wonder about the values that design has and the conventional standards by which design is measured. Is design all about needs-satisfaction and ease of use or are there more aspects that can be explored? Designers have always been working on how to make tasks easier and contemporary lives more convenient and users have been relying more and more on this convenience. It could be argued that there is a tendency for people to expect technology to do everything for them. The loss of some traditional virtues could be one of the outcomes of increased convenience in modern society. What I want to explore in my project is if design is able to encourage morality values.

1.3 Designing for “Filial Piety”

The current project addresses the virtue, “filial piety”, in Chinese immigrants population in the US. In Confucian ideals, filial piety is a value that includes a broad range of behaviors, such as children's respect and obedience, financial and physical care to parents and so on (Zhan, 2004). It is held above all other values in traditional Chinese society. Confucianism is one of the three religions in China along with Taoism and Buddhism (Wu, undated).

The value of filial piety is naturally accepted by Chinese people (Sung, 2000). The performance of filial piety is also mandated in China, whereas it is not in the US. The first generation of immigrants who grew up in China feel strongly obligated to take care of aging parents while the second generation is more likely to have American attitudes and respect the spirit of independency and individualism. This is Assimilation Theory, which is widely used to study immigrants. Yetman (1991) defines assimilation as “social, economic, and political integration of an ethnic minority group into mainstream society”

This assimilation causes different expectation of the relationship, which is identified as “filial discrepancy” (Cheng and Chan, 2006). Filial piety plays a significant role in improving the psychological well being of an aging Chinese immigrant population since this “filial discrepancy” may have a negative impact on well-being.

I intend to encourage the practice of “filial piety” through my design and to explore design’s role in narrowing the “filial discrepancy gap” (Cheng and Chan, 2006) between first generation of Chinese immigrants and their American-born children to improve psychological well-being of an aging Chinese immigrant population.

1.4 The audience: Chinese immigrants

1.41 The primary study on Chinese immigrants

“The number of Chinese immigrants had increased nearly fivefold, making them the third-largest immigrant group in the United States after the Mexican and Filipino foreign born”(Migration Policy Institute, 2008)

The Chinese immigrants population had been highly increased from 1980 to 2006. There were about 1.6 million foreign-born from China in the US by 2006, as can be seen in table 1 (Migration Policy Institute, 2008).

Year	Foreign Born	Chinese born ^(a)		
		Rank ^(b)	Share of All Foreign Born	Number
1960	9,738,091	21	1.0%	99,735
1970	9,619,302	14	1.8%	172,132
1980	14,079,906	10	2.6%	366,500
1990	19,797,316	6	3.4%	676,968
2000	31,107,889	3	3.8%	1,193,685
2006	37,547,315	3	4.1%	1,551,316

Table 1 Total and Chinese Foreign-Born Populations, 1960 to 2006, Migration Policy Institute (MPI), 2008, Chinese Immigrants in the United States, available from: <http://www.migrationinformation.org/USFocus/display.cfm?ID=685>, accessed on 3/31/2010

There are in two waves - “early” and “new” where Chinese immigrants came to the United States. Those who came before 1965 are in the “early” wave. The majority of these people were young and unskilled, so they were hardly fitting into the mainstream culture (Guo, 2000). However, the new immigrants arrived after the 1980’s were much better educated. The data from the Migration Policy Institute shows that nearly half of these Chinese immigrants have a bachelor’s or higher degree (Migration Policy Institute, 2008).

“Nearly one-quarter of Chinese-born men were employed in management, business, finance, and information technology occupations.” (Migration Policy Institute, 2008)

The occupational rates in those professions that might require a higher level of education as giving in Table 2 for Chinese immigrants are higher than those for immigrants overall. It suggests that more and more Chinese immigrants belong to the middle class in the US and they might need more and more spiritual and mental needs compared to financial and material needs in the past. The Chinese immigrants came to the US in the “new” wave are

the target population of the current research. This data gives a background review on the target population, and suggests that most of these Chinese immigrants can financially support themselves. Therefore, financial support from their adult children may not be necessary and emotional support may be more preferable.

	Chinese foreign-born		All foreign-born	
	Male	Female	Male	Female
Persons age 16 and older employed in the civilian labor force	393,223	343,739	13,285,912	8,921,521
Total percent	100	100	100	100
Management, business, finance	14.2	15.4	10.2	9.8
Information technology	10.9	7.7	3.9	1.9
Other sciences and engineering	14	9.6	4.1	2.3
Social services and legal	0.5	0.8	1	1.9
Education/training and media/entertainment	8.6	9.2	3.3	6.9
Physicians	1.9	1.4	1.3	1
Registered nurses	0.1	1.4	0.3	3.3
Other health-care practitioners	0.9	1.6	0.9	3
Health-care support	0.3	2.8	0.6	5.2
Services	19.7	19.5	16.9	25
Sales	7.8	9.5	7.8	10.9
Administrative support	5.5	11.4	5.5	15.1
Farming, fishing, and forestry	0.1	0.1	2.5	1.1
Construction, extraction, and transportation	7.4	1.3	26.8	3.4
Manufacturing, installation, and repair	8.1	8.3	15	9.4

Source: 2006 American Community Survey.

Table 2 Occupations of Employed Workers in the Civilian Labor Force Age 16 and Older by Gender and Origin, 2006, Migration Policy Institute (MPI), 2008, Chinese Immigrants in the United States, available from: <http://www.migrationinformation.org/USFocus/display.cfm?ID=685>, accessed on 3/31/2010

It is estimated between 1990 and 2030, the White non-Hispanic aged 65 population in the US will increase by 91%, however, the Asian and Pacific population including older Chinese, will increase by 643% (Mui, 1996). Due to the fast pace of growing subpopulations, more attention need to be paid to elder Chinese Americans from policy makers to social workers, and even designers. To help elderly Chinese immigrants, what's important in not only providing better quality of living standards, but also improving their physiological well being, where "filial piety" plays an important role.

1.42 Main observations of Chinese immigrants

In order to understand my target population and their living conditions, I conducted in-depth interviews with 5 immigrants from mainland China in 3 households residing in an elderly community in Ann Arbor, Michigan. My access to this elderly community and these families was facilitated through Ann Arbor America Chinese Church (AAACC). Besides personal interviews, I attended several union activities and social gatherings of this community to understand the physical and emotional condition, well-being and the environment they live in.

The elderly community contains around 200 immigrant households and more than 100 of them are Chinese immigrants. The number of Chinese immigrant elders is increasing. According to the interviewees, it is a requirement of this community that residents have permanent resident status and be 65 or over.

The three households that I studied in depth have very similar care arrangements and residential patterns. 5 interviewees were elderly parents between 68 and 89 years old, including one widowed woman and two couples. The 5 interviewees came to the US between 8-12 years ago invited by their children after retirement. They moved between cities in the US as their adult children relocated for their career opportunities. Their children live within a 1-hour drive. The elderly families receive government benefits to pay for rent and food and hire no caregiver. The 89-year-old widowed woman lives alone and has her daughter send meals on a daily basis.

The adult children of the interviewees are all upper-middle-class professionals and originally entered the United States in pursuit of graduate education in the 1980's, which is the beginning of the second "wave" (Guo 2000). The majority of them are aged 40-55. They were fortunate to get college degrees as this only happened in high achieving families at that time while most their peers had lost their chance to get much education during the Cultural Revolution. This is supported by the literature that states that skilled and well-educated Chinese immigrants started coming to the US in 1980's. Now the majority of these first arrivals are middle aged and will become elderly in the next 20 years, which also explains the why Asians aged 65 and older Chinese immigrants population will be largely increased compare to other races. (Mui, 1996).

Several other interviewees were recruited through personal referral. Through talking with them during their union activities, I was able to obtain the basic information including when they and their children moved here, what they and their children do for living as well as their basic living standards. These Chinese immigrant households share a similar immigration pattern in which adult children settled in the United States first, and their overseas parents and other immediate relatives came later as "legalization dependents" (Portes and Rumbaut, 1996). None of them currently lives with their children, but most of the interviewees had experience living with their children before. Because of their low language proficiency, the aging parents greatly depend on their adult children.

Through observation and interviews, I noticed that most of these elderly Chinese immigrants appear happy with their standard of living. They appreciate the benefit of health care that they receive in the US and the effort their children have made in order for them to have this. It is clear that the initial motivation the adult children had was education and career prospects. However, they have also made efforts for the purpose of providing their parents and children with good a living condition. The parents appreciate those efforts and sacrifices.

Having observed the lives of the Chinese immigrants, I will be discussing in the following section the social context about how filial piety is maintained in Chinese society and its

influence in people's lives.

1.5 Social Context

1.51 Elder Care in Chinese households and Filial Piety

"It is widely noted that there are huge differences in patterns of elder care between Asian countries and the United States." (Luo, 2007).

"The values of filial piety has traditionally been given and accepted as a customary and normative duty (Sung, 2000).

"In Chinese culture, in which strong family ties and values are emphasized, elderly Chinese living alone is not a common phenomenon" (Lai, 2007).

The cultural tradition of filial piety has been perceived as main direction in intergenerational relationships in Chinese families. In China, adult children are required to perform the duties for aging parents and to live with aging parents under this direction (Luo, 2007). Children start to learn the concept of filial piety at an early age and accept it as a moral obligation (Blieszner & Hamon, 1992). For example, in classic Chinese literature, there are 24 paragons telling stories about how 24 dutiful sons fulfill filial piety. Each of them made huge sacrifices for the benefit of their parents, which makes the stories more meaningful and has educational significance. These stories have been widely told to young children and some of them have officially been included in textbooks for school children.

In Chinese societies, the traditional household pattern is three-generation co-residence due to filial responsibilities. Therefore, adult children who place parents in a nursing home can be considered as irresponsible individuals who disrespect filial piety (Lan, 2001). However, three-generation living arrangements are rare in the US (Luo, 2007). Adults living with parents may even be regarded negatively under the mainstream culture of independence and individualism.

Filial piety could be very well maintained throughout the history of Chinese society is because taking care of aging parents is considered as a payback on the investment of children being raised (Pyke, 1999). In many Eastern countries including China, most parents have the expectation of getting returns of the investment when they grow old (Luo, 2007). Due to the lack of social welfare or other related resources, Chinese elder care is heavily dependent on adult children. So there are a great percentage of aging Chinese parents looking forward to being taken care of financially by their children, especially those with a lower income. However, even in the cases where financial support is not necessary, such as future Chinese immigrants, a certain level of attention and a close relationship is still expected.

1.52 “Transformed Filial Piety”

“There is an evident decline in the rate of extended family arrangements. Younger generations also present a resistance to three-generation cohabitation and direct care to their aging parents, which lead to a social blame for failure to honor filial piety” (Luo, 2007).

“The receipt of public care among immigrant elders does not necessarily indicate the diminishment of family bonds, but reinforces kin connections as channels for circulating economic resources” (Lan, 2001).

There is an obvious decline in the living arrangements of three-generation co-residence. However, Lan (2001) argues that the decline of the three-generational cohabitation among Chinese American families does not indicate a decline in filial piety. The reason why more and more of the elderly are living independently is because of their financial feasibility in terms of welfare and social support. Lan identified a so called “transfer chain of filial piety”, which is by hiring home care workers, Chinese immigrants can keep the value of filial piety. Luo (2007) also agrees with this and calls it “transformed filial piety”.

Indeed, co-residence in contemporary society is becoming less of a requirement and more

of a personal choice. However, filial piety is never about necessity, but more about the attention one pays and the sacrifice one makes willingly and spontaneously. This enables filial behavior to have symbolic value in the sense of filial piety rather than to be a necessary action. In contemporary society, filial piety has become harder to perform in terms of the pace of urban lives, but overcoming obstacles is the sacrifice in the ideal of filial piety. By avoiding obstacles and paying others to perform duties in the “transformed filial piety” (Luo, 2007), the core value of filial piety is diminished.

As I discussed earlier, the majority of Chinese immigrants who came to the US in the 1980's are middle aged. The decline of filial piety will become more and more obvious in the next few decades when the first generation Chinese immigrants in the “new wave” become the recipients of filial piety and their American-born children become the providers of filial piety because these American-born immigrants perhaps will not understand how much filial piety means to people who grow up in China.

There are a number of reasons for the decline of filial piety that is happening in Chinese immigrant households. One may wonder how do people manage the practice of filial piety in contemporary Chinese society. As I mentioned, through the process of socialization, children learn the value of filial piety and perceive it as a social obligation. (Blieszner & Hamon, 1992). Luo (2007) has also pointed out that some people fulfill this moral obligation also because of social pressure. However, Chinese American families in the United States have much less pressure from the society to practice filial piety, which might be a reason for the decline.

In addition, providing physical, mental and financial support is legally mandated according to *the Law of the Peoples Republic of China on the Protection of Rights and Interests of the Aged* (Safeguarding Elderly People's Legitimate Right and Interests, undated). Chinese immigrants in the US are no longer mandated by this law by moving to the US, which is another reason for the decline of filial piety.

“Modernization or industrialization causes a separation of work from home. The work force becomes highly mobile as well. As a result, the connection between generations” (Luo, 2007)

Urbanization is also recognized as one the main reasons of the decline of filial piety. In modern society, it is common that adult children live different in geographic areas with their parents because of work. As a result, the practice of filial piety has become less accessible and the connection between elders and adult children has been weakened. All these reasons make filial piety either less accessible to perform or less important in people’s mind. That’s what I am trying to address this issue through my design practice.

1.6 Filial Behavior and elders’ well-being

“What parents do for their children is not motivated by self-interest or selfish purposes. Parental care is natural, instinctive and unconditional. In turn, this is what the children should do for their parents... in the process care giving children must resolve their feelings of worry, constant burden, frustration, being tied down, fatigue, difficulty in dealing with the parent's inability, and conflicting family obligations” (Sung, 1998).

It appears that as society becomes more affluent and urbanized, and as dual-earning families become the norm, expectations for filial piety have shifted somewhat from material and day-to-day practical assistance to emotional support. (Cheng and Chan, 2006)

Sung (1998) pointed out that parental care should be a heavy burden on Chinese adult children and their families and this is “filial sacrifice”. Sung defines it as “fully devoting oneself to one's parents”. It is an important expression of filial piety.

Cheng and Chan (2006) who identified “filial discrepancy” also discussed the role “filial discrepancy” plays in elders’ psychological well-being. They discovered Chinese elders

always want their children's contribution to support them" (Cheng and Chan, 2006). The study also discussed the situation where children do more than expected to affect their parents' autonomy, however, this situation normally sends a positive image in the Chinese culture, and elders are often reminded of how lucky they are if they have children like that (Cheng and Chan, 2006).

As has been argued, filial piety plays an important role in elders' psychological well being. It appears that emotional support is more desired in contemporary society especially when financial and physical support is not necessary. Cheng and Chan's paper also discussed the shift of the expectation of filial piety from material support to emotional support. Therefore, emotional support in modern society is not only more wanted, but also more expected. On the other end of the relation, elders need to pick up the emotional support from what their children do, that is "perceived filial piety". There are possibilities the one's attention to the parents is not perceived as much as it is paid.

Therefore, on one hand, the design practice should propose a way to encourage filial behaviors, especially emotional support, on the other hand, perceived filial piety also needs to be enhanced through the design to improve elders' psychological well being.

1.7 Summary

The values of filial piety have traditionally been given and accepted as a social norm in Chinese culture, but the American culture of independence and autonomy displays an almost opposite attitude for parent-child relationships. American families may be distributed over greater distances than in China. It is natural to expect that Chinese immigrants living in the US assimilate some of these values over time and struggle to perform filial piety in a traditional sense. Demographic data shows that there are large numbers of Chinese immigrants in the US and the number is still growing. Given the cultural differences with their American born children, these people have an increased opportunity to end up having very different expectations of filial piety, namely "filial discrepancy" (Cheng and Chan, 2006) and having more difficult relationships with their children as they are age.

This has not posed a problem until the present time because the children of the second wave of Chinese immigrants are just becoming adults. The situation may become more serious in a few decades and “filial discrepancy” may highly increase in their relationships.

The Chinese immigrants that I have been studying through observation and interviews may not be entirely representative of the potential problems anticipated since most of them came to this country at the invitation of their children, who had developed their personal values prior to the pursuit of graduate degrees in the US. However, they share many similarities with my target population due to their cultural background and life styles.

Some studies have been conducted to address the issues within Chinese immigrants in terms of filial piety from social and ethnic perspectives. Scholars have even pointed out the concept of “a transfer chain of filial care” (Lan, 2001) that allows Chinese immigrants to maintain the ideal of filial piety through recruiting home care workers. However, the ideal of filial piety contains physical, emotional and financial support. In the situation of paying for care, emotional attachment is gone and it is violating the spirit of filial piety. This missing emotional bond in the “a transfer chain of filial care” (Lan, 2001) is what the current research and design practice focuses on.

2. Behavioral Change and Design Methods

“Filial piety in the Chinese refers to a range of behavioral prescriptions, including showing respect, being obedient, honoring or promoting the public prestige of the parent and the ancestors, producing a male heir and carrying on the family line, living with the parent (or staying close if coresidence is not possible), taking care of the parent whether healthy or sick, and avoiding injury to self because the body belongs to the parent, among others” (Chow, 2001; Hsu, Lew-Ting & Wu, 2001; Yang, 1997).

People use various behaviors and activities to express filial piety. Scholars have discovered a range of behaviors that suggest this value. To encourage the performance of filial piety is to change these behaviors. As matter of fact, design for behavioral change is an emerging area in the field of design. In this section, the studies and theories in this area will be discussed.

2.1 Behavioral change through design

‘design for behaviour change’ (known more recently as ‘design for sustainable behaviour’) is a new field of enquiry in design practice exploring how design (in the broadest sense) can influence user behaviour to reduce the social and environmental impacts of products during use. (Lilley, 2007)

In traditional product design, functionality is a critical aspect. It can be argued that the easier and more comfortable a user can use a product, the better the functionality is. However, design for behavioral change is at an opposite situation since asking a user to change a behavior creates inconvenience. This type of design faces the problem of changing user behavior within established personal values and social norms (Rodriguez, 2004). There are a few design researchers are exploring how products or services could influence user behavior to reduce use impacts. (Rodriguez and Boks, 2005, Rodriguez, 2004).

“Architectures of Control” (Lockton, 2005) is one of these studies. Architectures of Control discussed design methods used in products, software or environments to limit user behaviors. Dan Lockton took examples of such designs that have also been observed in the physical environment, such as armrests in the middle of benches in parks to prevent people sleeping on them and uncomfortable chairs in cafes to avoid lingering. These examples can all be classified as Architectures of Control (Lockton, 2005).

“Architectures of control are features, structures or methods of operation designed into physical products, software, buildings, city layouts—or indeed any planned system with which a user interacts—which are intended to enforce, reinforce, or restrict certain modes of user behaviour” (Lockton, 2005).

Dan Lockton, David Harrison and Tim Holley (2009) discovered three approaches in the Design with Intent concept to influence behaviors: “Enabling behavior, Motivating behavior and Constraining behavior” shown in figure 2.1. The definition of each approach is given in table 3. These three approaches are relevant to my discussion and the classification can be adopted for my design.



Figure 2.1

Enabling behavior	Enabling ‘desirable’ behavior by making it easier for the user than the alternatives
Motivating behavior	Motivating users to change behavior by educating, incentivizing and changing attitudes
Constraining behavior	Constraining users to ‘desirable’ behavior by making alternatives difficult or impossible

Table 3 Three approaches to influencing behaviors by design (Lockton, Harrison and Holley, 2009)

However, Lockton's research focuses on behavioral change through service-based design to result in environmental or social benefits, instead of individually owned products. There might be different results while using these approaches. In next section, I will find examples particularly in product designs in each of the categories. These design works need to be analyzed to understand how each of them is appropriate for my own design practice.

2.11 Enabling behavior

"Enabling behavior" is making a particular behavior easier for users than alternatives. Take a vehicle as an example. The invention of cars has fundamentally changed the way people move. It easily changes behavior since it makes other options seem to be less effective, and driving is much easier. However, this approach tends to work from a less convenient situation to a more convenient situation. The practice of filial piety is inconvenient and encouraging the practice of filial piety is an opposite situation of making a behavior easier. Therefore, "Enabling behavior" may not be applicable to my design approach.

2.12 Constraining behavior

"Constraining behaviors" is to make alternative choices harder to realize, it almost forces users to change a behavior. The Social Mobiles project shown in figure 2.2 is an example of constraining behavior. Graham Pullin and Crispin Jones designed a series of mobile phones that makes noises, and send warnings and even electric shocks to provoke users to have good social manners in public. It uses punishment to control users and push them to change their behavior. However, it has more chance to be used when users consider this social manner so important, otherwise users may choose to not use such a product. Therefore, in this example, constraining is more of a conceptual approach for a product to change behavior. If a product tries to force users to perform filial piety by using unpleasant outcomes, some people may even result in stronger resistance and give up using it.



Figure 2.2 Social Mobiles project

Constraining is trying to control. From a behavior change perspective, even constraining behavior does work in many cases, but it still has some side effects. Gabriel Wilson stated in his study that the “controlling mechanism” undermines intrinsic motivation (Wilson, undated). Intrinsic motivation and extrinsic motivation are two forms of motivation that can be defined as the intensity and direction of effort (McCullagh, 2005). Intrinsic motivation can be understood as an individual’s enjoyment of doing something (McCullagh, 2005) and extrinsic motivation can be understood as an individual doing something for some extra outcomes (Ryan & Deci, 2000).

It was discovered that individuals who are intrinsically motivated, compared to those who are controlled by others, tend to have better performance. (Ryan & Deci, 2000). So even a product that can constrain a person to perform filial duties, the intrinsic motivation of this behavior can be undermined and may result in less desirable performance.

2.13 Motivating behavior

Compared to constraining behavior, motivating seems to be a more pleasant way to change a behavior. That’s what “The Fun Theory” does. “The Fun Theory” is a Volkswagen campaign in Sweden that is trying to use fun for social improvement. Through several projects Volkswagen conducted, it is concluded, “fun is the easiest way to get people to change” (Thefuntheory, 2009). One of the projects shown in figure 2.3 is a piano stair at the exit of a subway station that makes music when people step on to encourage the use of the stair and discourage the use of an escalator. A video was made to show how many people changed their minds to use the stair rather than the elevator once they know how it functions even though an escalator seems to be a much easier choice. It is obvious that the

users of the piano stair enjoyed walking on it enough to ignore the extra effort they had to make. This piano stair motivates people's behavioral change by fun. Therefore, motivating a behavior may be more appropriate to use for my design practice. A product that would bring fun to the practice of filial piety and would make a chore more inviting may have an increased chance to change a behavior.



Figure 2.3

Dan Lockton's study mostly deals with the effect sustainable behavior can have on environmental impact; whereas my research focuses on the effect filial behaviors can have on social impact. Unlike sustainability, which has been widely recognized, people may have a different understanding of filial piety, and this difference may make this model less applicable. I started looking into behavioral change theories from physiological perspectives to see how much his model can be adopted for my design practice.

2.2 Behavioral change theories

Several studies on behavioral change have been conducted in the past. Each of them has different focus in the process of behavioral change. The Theory of Reasoned Action (TRA)

focuses on “cognitively-oriented behavior” which links attitudes and behaviors (Fishbein & Ajzen, 1975, Fishbein, 1979). The research states that people need to change attitudes in order to change a behavior. Attitude and behavior are divided into two components in a behavioral change process in this study and I will be using these terms to articulate my point of view. “Attitude” in this paper refers to one’s positive or negative perspectives on something; “behavior” in the paper refers to any action of a human. This study suggests that people need to change their perspective on a subject in order to change their action.

The Precaution Adoption Process Model (PAPM) is another theory that demonstrates seven stages from “unhealthy behavior” to “healthy behavior” as giving in figure 2.4(Weinstein & Sandman, 1992, Weinstein, Lyon, Sandman, & Cuite, 1998). The applications of the behavioral change theory don’t just focus on the behaviors that can benefit the individuals themselves, such as smoking or exercising, but also include those that have a social context such as giving blood or breast feeding, which might be more relevant to the current investigation.

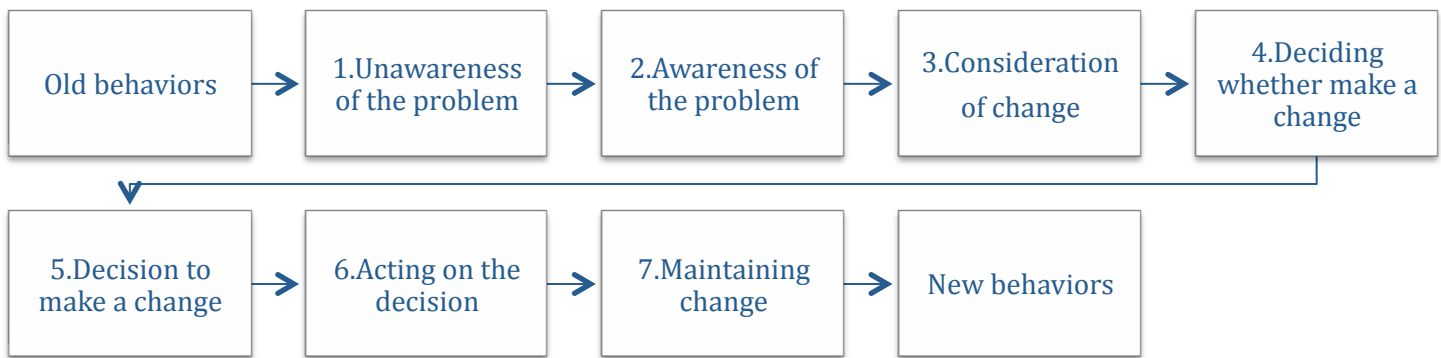


Figure 2.4 Precaution Adoption Process Model after Weinstein & Sandman, 1992

In the model, the path from an old behavior to a new behavior is the process of a behavioral change and it takes effort and time to happen. The closer the stages are towards a new behavior, more easily or faster a behavior can be changed. This model doesn’t conflict with the TRA theory. It indicates how one’s attitude is changed over time to result in a behavioral change. Stage 1to stage 5 can be understood as attitudinal change and stage 6 and stage 7 can be understood as behavioral change. From this model, it can be seen that awareness of an issue is a necessary step in the process and something else is also needed

to motivate people to consider to change and make a decision. To apply Lockton's three approaches in this process, these approaches can assist a behavioral change to occur at earlier stages. For example, with something that motivates or constrains a behavior, users may change their behavior once they are aware of the problem (stage 2) but have not considered a change (stage 3).

Lockton's model has more to do with approaches in behavioral change whereas these studies suggest that behavior change is also a process. By "approach", I refer to ways of achieving the goal; by "process", I refer to a time based procedure from one to another. Behavior can be changed through Lockton's approaches, but it also requires certain time for one to digest and make sense of it.

From the PAPM model, it can be understood that different people might be at different stages towards a new behavior and the later the stages users are at, the more likely these approaches can change a behavior. Therefore, attitudinal change is still significant to the success since it improves the likelihood of behavior change.

As I explained in the first chapter, there is missing emotional support in so called "transformed filial piety" (Luo, 2007). People hiring home care workers to help with taking care of parents doesn't necessarily conflict with the ideal of filial piety, but when they entirely depend on home care workers or technology, the emotional investment is diminished in the relationship. However, many people may not realize the problem with this situation. As I discussed, awareness of a certain issue is a necessary step of a behavior change, and it highly improves the likelihood of making a change through Lockton's approaches. Therefore, this leads to another goal of the current investigation: bringing awareness and changing attitude.

2.3 Design methods

I have discussed some approaches that can be used to influence behavior; however, these approaches tend to work better after an attitudinal change. For those who don't realize the

issues in “transformed filial piety”, how a design can bring the awareness and change their attitude is what I need find out. In this section, I will explore my hypothesis through a range of design methods to be used for my design practice in order to maximize the potential in improving the awareness of filial piety.

George Kubler (1962) stated that useful invention changes the environment and artistic invention changes our perception of the environment. That means a piece artwork may change how people feel about filial piety whereas a product can change how people actually perform filial piety. Therefore, by adopting the techniques of art, a design work may also be able to change a perspective.

This type of design can fit in a broader discussion. Other designers have been working in this area and have developed methods. I will discuss these designers and their work in the following section. These design projects question and challenge traditional design values, and propose that design can serve more purposes, such as a social provocation that changes viewers’ perspective on a given subject, which is relevant to my design objectives.

2.31 Critical Design and Cultural Probes

Dunne and Raby are such designers who don’t work within traditional ideal of design. Dunne and Raby teach in the Design Interaction department at the Royal College of Art in London. They use their projects to question unrecognized ideologies inherent in design and created the term “Critical Design”.

A “Critical Design” is an opposite of an “Affirmative Design” (Dunne and Raby, 2001). “Affirmative Design” doesn’t challenge the traditional design values and it doesn’t fundamentally change a situation.

“Affirmative design reinforces the current situation by leaving the ideologies unchallenged and conforming to cultural, social and technical expectation.” (Bowen, 2007)

An example of their “Critical Design” is this Huggable Atomic Mushrooms as shown in figure 2.5 designed in 2004/05. It is one of objects in the project of Design for Fragile Personalities in Anxious Times. It was created for people who are afraid of nuclear annihilation. It works like therapy treatments to allow users to literally embrace their fears. Dunne and Raby describe it as an example of designing for “how people really are rather than how they are supposed to be” (Huggable Atomic Mushroom, 2004-05). This strange design also has a sense of humor and provides a playful provocation to afford the viewers to rethink about emotional safety.



Figure 2.5 Huggable Atomic Mushrooms

This design challenges what product design are supposed to be. It challenges current ideology and refuses to compromise with what has been agreed as proper design. It operates outside of the traditional marketplace to probe social behaviors and cultural value (Bowen, 2007).

Besides Dunne and Raby, Bill Gaver has also been working in this area. He developed “Cultural Probes”, which are a series of objects that created for certain group of people. These objects gather stories and information about the users to let designers better understand them. He described the purpose of a “Cultural Probe” is not for designers to

gain an objective view of target audiences' needs, but to have “a more impressionistic account of their beliefs and desires, their aesthetic preferences and cultural concerns” (Gaver, Dunne & Pacenti, 1999). One of the examples of “Cultural Probes” is the Key Table as shown in figure 2.6 that uses weight sensors to measure people’s moods at the time when they put things on it. A wirelessly connected picture frame that signals the mood the by showing how far it swings out of balance to give a warning to other people living in the house. It emphasizes the emotional expression in the home and encourages people to communicate their emotional state by using objects. (Gaver, Boucher, Pennington & Walker, 2004) They are interested in seeing how the awareness of this other’s emotion can affect the interaction instead of solving a problem to improve a relationship.



Figure 2.6 Key Table

These “Cultural Probes” artifacts are intended to be both “prototypical” and “provocative” (Bowen, 2007). The “prototypical” nature makes them seem to be functional products, but at the same time, the “provocative” aspect affords reflection and influences users’ perception and attitude, which could apply to the attitudinal change through design.

2.32 Interrogative Design

There are designers or artists who work on similar projects but they might describe what they do as other names, such as Krzysztof Wodiczko's Interrogative Design. Krzysztof Wodiczko who is currently a professor and head of the Interrogative Design Group in the Center for Advanced Visual Studies at the Massachusetts Institute of Technology (MIT) has developed the homeless Vehicles shown in figure 2.7 in 1988/89.



Figure 2.7 Homeless vehicles

"The Interrogative Design Group's goal is to combine art and technology into design while infusing it with emerging cultural issues that play critical roles in our society yet are given the least design attention. This type of design can be called "interrogative design when they take a risk in exploring, articulating, and responding to the questionable conditions of life" (Krzysztof Wodiczko 1998).

Through discussions with homeless people in New York City, a proposal for a vehicle to be used both for personal shelter and can and bottle collection and storage was developed.

However, it is not just a design trying to solve the problem for homeless people; moreover, it brings the living condition of homeless people's into attention and works as an interrogative tool for examining social relations.

2.4 Conclusion

Base on finding on behavioral change approaches, design concepts can be brainstormed. Among these approaches, "Enabling behavior, Motivating behavior and Constraining behavior, "Motivating behavior" is more appropriate than others in encouraging the practice of filial piety. However, bring the awareness of missing emotional support in "transformed filial piety" is equally important.

Traditional product design is often concerned with marketing activities. The projects by Dunne and Raby, Gaver and Wodiczko are beyond boundaries of conventional design. These designs create provocation, and it is hoped that critical reflection might occur. The open-endedness of these projects is almost at an opposite situation to most ideals of design. I intended to encourage a morality value, filial piety, through my design project, instead of serve business purposes. So the methods of these design projects can be adopted for my own design practice to raise arguments and afford critical reflection in order to improve the awareness of filial piety. The design method I used makes the project different from traditional product design, so my design practice will be referred as "Designed Object" instead of product design in the following chapter.

This project will function from a provocative end towards a useful end. It brings awareness and changes attitude through the critical reflection and it motivates filial behaviors to result in a behavioral change. The market may not demand these intended functions or utility of my design, but this potential of design is what I would like to explore through my project.

3. Design Practice: Immersive Telematic Filial Piety

The research that I have conducted serves the goal of designing objects that intend to increase awareness of the issues in practice of filial piety in the Chinese immigrant population and influence their filial behaviors. By adopting the design method of “Critical Design”, the artifacts should be able to afford critical reflection and influence perception. By using Lockton’s “Motivating behavior”, the design should make the task of filial piety more fun and enjoyable. Therefore, output of the design practice should be able to influence both attitude and behavior.

In the Ideal of filial piety, emotional support is as important as financial and physical support in the parent-child relationship. However, in this design practice, the missing emotional support in “transformed filial piety” (Luo, 2007) is the point I want to argue, so the role emotional support plays is highly exaggerated to raise awareness and change viewers’ perspectives.

3.1 Design objectives and approaches

Design has the potential to change behaviors by enabling, controlling and motivating. Designed objects can also work as social provocations to influence attitude, which can serve the purpose of behavioral change in the end. My project is to engage in a problem solving process to create designed objects that could adjust users’ behavior. The main objective of the project is to use both critical reflection and actual functions of the designed objects to influence behaviors and encourage filial piety.

Looking at the bigger picture, this project’s goal is not to protect only elders’ interests, but to negotiate between the elder Chinese immigrants and their American born children and to help Chinese immigrants have healthier intergenerational relationships and a smoother emotional transition during immigration by encouraging young adults to adjust filial behaviors.

There are many behaviors that suggest filial piety, but living with aged parents or staying close is the one that has drawn much attention in previous studies. Even though several scholars argue that the decline of the three-generational cohabitation among Chinese American families does not indicate a decline in filial piety (Lan, 2001), at the very least, it indicates the symbolic value of this behavior to represent filial piety in Chinese culture. However, I believe there is a decline, and I am trying to indicate the point through my design.

When people are interacting in the same room, complex information such as vision, physical touch, sound of the movement, and even smells can be transmitted. This creates ambient awareness. Many people don't realize how important and powerful this information is. Not being able to capture this non-verbal information is the main difference between living together and living apart even though current technologies facilitate communication. It is also the main obstacle to realize the ideal of filial piety in long distance relationships.

I would like to bring awareness of the issues in "transformed filial piety" in long distance parent-child relationships through the provocation of the designed objects in order to motivate users to perform their filial duties.

3.2 Main study

The main study carried out at University of Michigan had the purpose to develop two remote spaces as a "telepresent" environment to let the audience experience filial piety. "telepresence" is a term that refers to these telecommunication technologies that provides virtual presence in another physical location (Wikipedia). The use of telecommunication technologies is also known as "telematics". The aim is to create an environment where two individuals can emotionally feel like they live next to each other while they are actually apart to encourage the engagement and involvement between two generations.

The exhibition contains three designed objects; Virtual Window, Motion Activated Message Chair and GPS Cane. These were created to express the missed emotional attachment in

long distance parent-adult child relationships where technology is facilitating communication. Instead of being commercial products, they are intended to reveal insights about immigrants' lives.

3.21 Motion Activated Massage Chair

The Motion Activated Massage Chair shown in figure 3.1 can be remotely activated by interacting with three “remote controls”, the Boxing Pad, the Rubbing Pillow and the Dance Mat. With this product, an adult child can physically “massage” a parent seated in the chair to perform filial duty as if they are in the same room.



Figure 3.1 Motion Activated Massage Chair

The diagram in figure 3.2 shows how the system works. When a user punches the Boxing Pads at one end, the person seated on the chair at the other end can feel the percussion. The percussion is realized through installed massagers that are controlled by the sensors on the boxing pads through a microcontroller. The sensor was made of conductive foam,

which changes resistance when it is pressed. The microcontroller read the resistance and turn the massagers on and off as the code asks. The concept is the same with the Dance Mat and Rubbing Pillow, only the Rubbing Pillow creates the feeling of a back rubbing realized by another type of massager. That way, the physical touch can be “transmitted” through the device to another location.

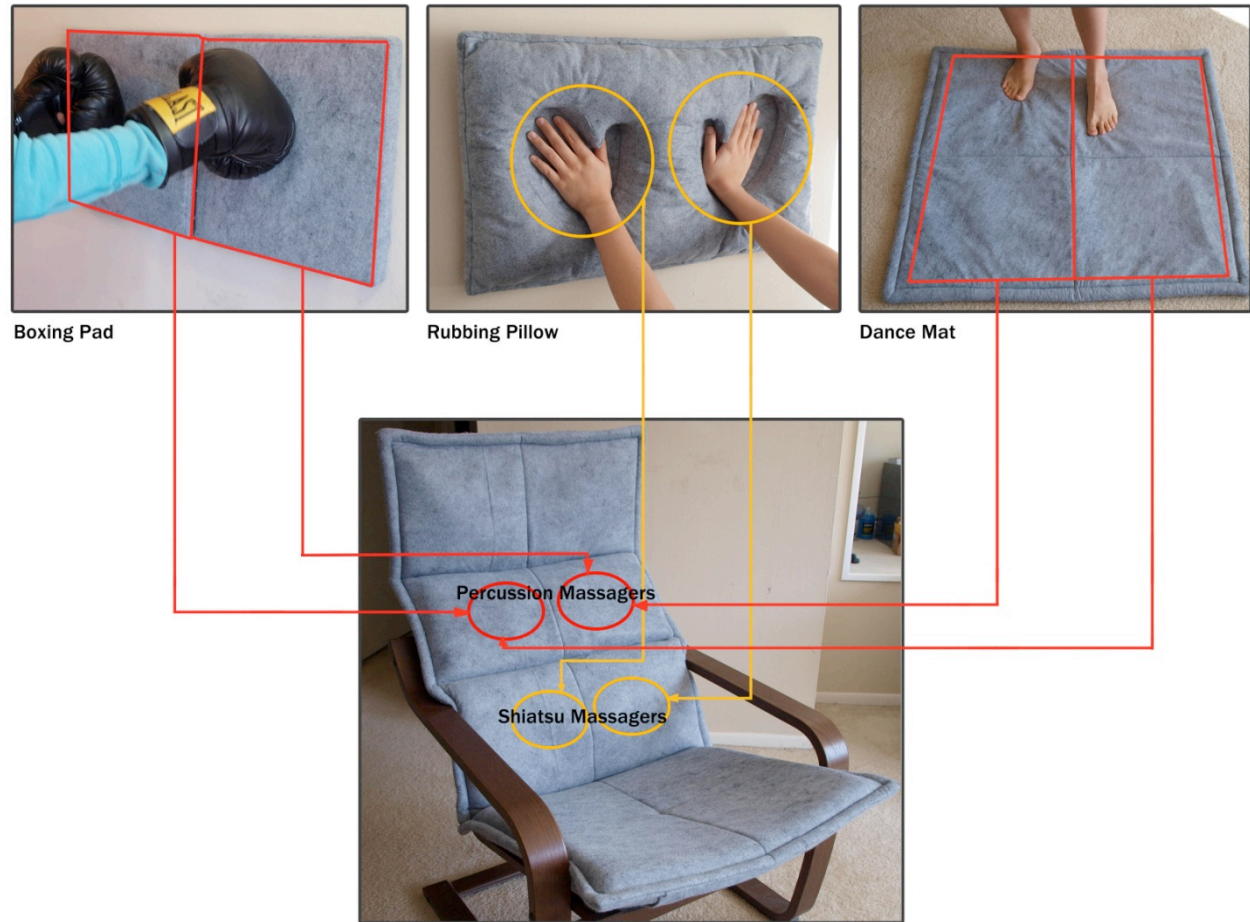


Figure 3.2 the diagram of the system

Two types of massagers are installed in the chair, Percussion Massager and Shiatsu Massager. The percussion massagers shown in figure 3.3 resemble the motion of punching and the Shiatsu Massager shown in figure 3.5 simulates back rubbing. To use such massagers to give similar feelings to make users feel like the motions are being “transmitted”.



Figure 3.3
Percussion Massager

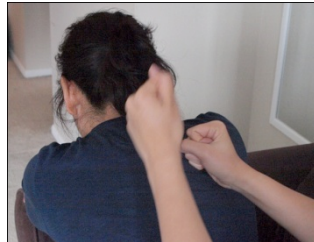


Figure 3.4



Figure 3.5
Shiatsu Massager

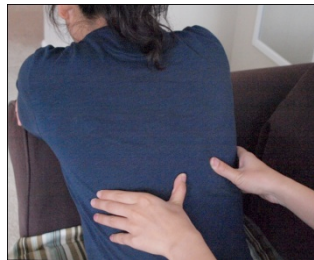


Figure 3.6

Three “remote controls” allow different ways of turning on the massage chair as shown in figure 3.7-figure 3.9 and provide entertainment and exercise to make performing this filial duty more fun. Users can choose whichever they enjoy doing the most to perform their filial duties.



Figure 3.7 Boxing Pad



Figure 3.8 Rubbing Pillow



Figure 3.9 Dance Mat

Physical touch is a powerful way for interpersonal communication. Most conventional communication technologies only allow users to interact through video or voice, but not through physical touch. In this Motion Activated Massage chair, physical touch is focused.

However, this is not designed for facilitating this task, but to address the values of this behavior.

The project InTouch shown in figure 3.10 is also a project with an emphasis on physical touch. It is developed by MIT Tangible Media Group (1998) allows distant users to send each other physical presence through a "shared" object. That way people can shake hands or interact physically at a distance to increase interpersonal intimacy. (Tangible media group, 1998) The Motion Activated Massage Chair uses a similar approach to enable that users over distance interact through physical touch. The interaction it creates has social and cultural significance: filial piety, making the object meaningful.

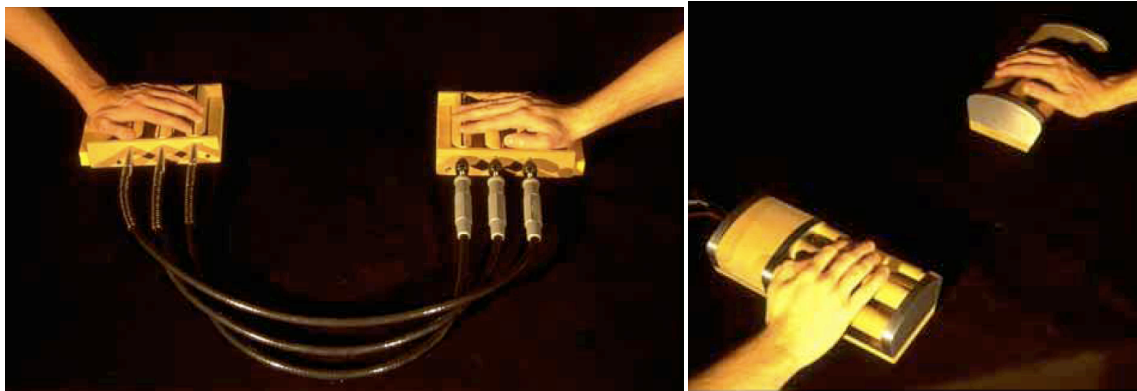


Figure 3.10 InTouch: "InTouch is a project to explore new forms of interpersonal communication through touch. Force-feedback technology is employed to create the illusion that people, separated by distance, are interacting with a shared physical object. The "shared" object provides a haptic link between geographically distributed users, opening up a channel for physical expression over distance" (Tangible Media Group, 1998)

3.22 Virtual window

Virtual Window shown in figure 3.11 and 3.12 is designed to create real-time communication through visual connection. The window affords the opportunity for family members to see what is happening in the other's life via a live video feed from a camera positioned outside the other's house. With this product, they can wave every morning and smile when passing by as if they are neighbors. It is designed in a way that curtains can be pulled cross when privacy is needed just the way people prevent their own neighbors from prying. It also allows users to choose how far they want to put the camera outside of their

window, based on how comfortable they are with being seen.



Figure 3.11 Virtual Window from thesis exhibition

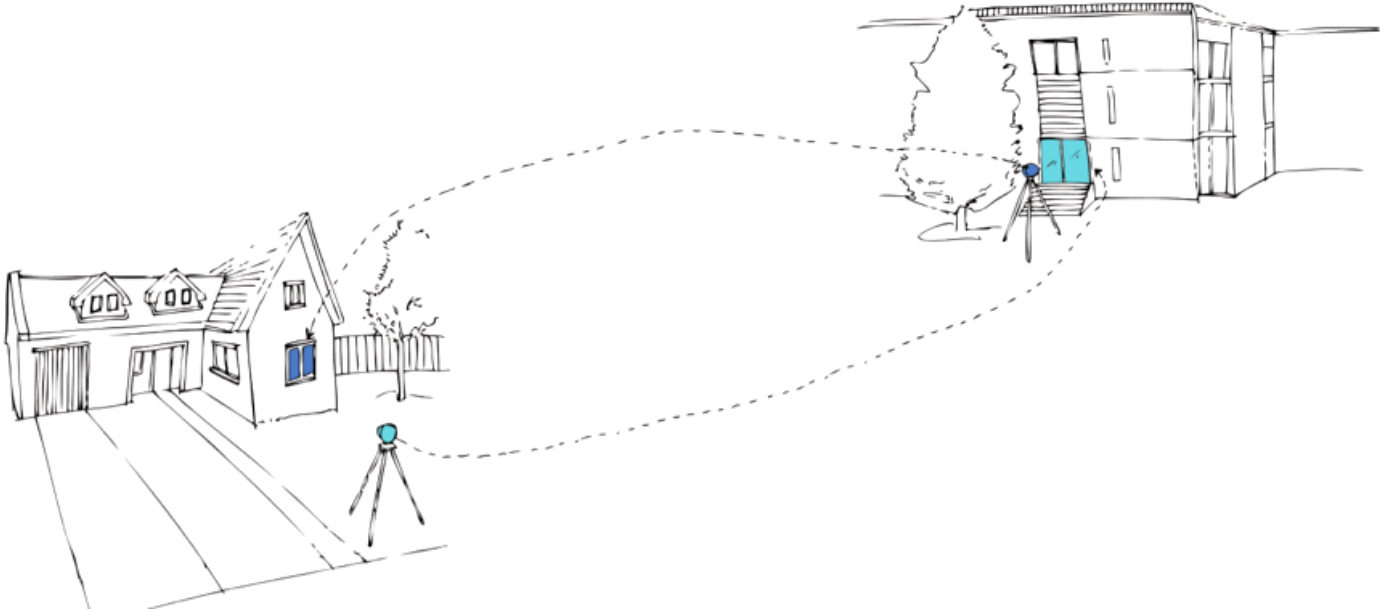


Figure 3.12 the diagram of the Virtual Window system

Many artists and designers have addressed long distance interaction by using telematic technique for completely different purposes.

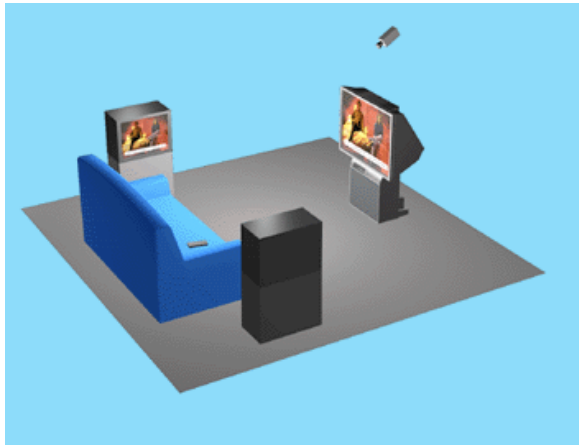


Figure3.13: Telematic Vision



Figure 3.14 the image appeared on TV

Paul Sermon (1993) created “Telematic Vision” in 1993. It connects two remote spaces with each other via a live video connection. There is one blue sofa at each location with a TV monitor in front of each as shown in figure 3.13. When two users sit on the two sofas at the same time, a video camera above each TV captures the scenery and then a mixed video is shown on both TVs. The user who sits on the sofa at one end sees himself/herself together or even overlapped with someone else at the other end on the television screen as shown in figure 3.14. They can interact with each other as if they are at the same location. Telematic Vision allows participants to interact with total strangers and break the conventional and social rules. The artworks that utilize telematic technique can be called telematic art. Michael Hohl has defined this in his PhD Thesis.

“Telematic art is technology-based and uses networks to connect to a remote location, often in real time. It induces an enhanced experience brought about by the unnatural distances the connections involve and their synchronous character of real time connectivity. Occasionally it consists of

controlling a device at the remote location and engaging in activity at the remote location.” (Hohl, 2006)

Hole-In-Space is another piece of telematic art shown in figure 3.15. It is a Public Communication Sculpture, developed in 1980. It was one of the earliest pieces that utilized telematic techniques when most people were not familiar with this technology. It was an evening event where people from the public walking past the Lincoln Center for the Performing Arts in New York City, and the people in "The Broadway" department store of the Shopping Center in LA had the opportunity to encounter each other. Live images of the people on the opposite side appeared. All of a sudden, they could interact through waving or talking with each other as if they ran into each other on the street.



Figure 3.15 HOLE-IN-SPACE

These pieces share a lot of similarities with the Virtual Window even though they are more event-oriented. They both allow people to experience being together while they are at different locations during the exhibition, whereas the Virtual Window allows users to experience closeness every day. When the excitement and passions of using a new product passes, it can create a new routine and influence behavior.

3.23 GPS Cane

The Global Positioning System (GPS) Cane relays a signal to corresponding GPS-enabled device (such as a smart phone) via an application. When the cane is in motion, the cell

phone application suggests a route in the same direction and at the same pace that the cane is moving. When the phone is moving along the suggested path, the bottom of the cane illuminates to let the user know that their relative is moving with her/him. This product allows users to feel as if they are walking together in different locations.



Figure 3.16 GPS Cane



Figure 3.17

Besides showing the cane, a comic book shown in Figure 3.17 was created to explain how it functions and to tell a story how people use it and to show the potential implications. The comic book is attached in the Appendix.

A similar design approach is used in product: “Kiss Communicator”, which is also a device with two corresponding parts to send information to each other. The Kiss Communicator is a concept prototype developed by IDEO in 1999. It allows a user to blow a kiss to his/her beloved when she/he's at the other part of the world as shown in figure 4.18.

Two Kiss Communicators correspond to each other at a distance. By squeezing one of them gently, a user can let the partner at the other end know that he/she is thinking of him/her. The Kiss Communicator produces a glow to invite the user to blow into it and create the “kiss” that appears light sequences. To send to the corresponding Kiss Communicator, the user just simply relaxes his/her grip. On the other end, the Kiss Communicator shows through the screen that there is a new message. The partner can then squeeze to receive the “Kiss” that shows on the screen.



Figure 3.18 Kiss Communicator (available from: <http://designandinteraction.wordpress.com/page/3/>, accessed on 4/6/2010)

Both of the designs target at the emotional need in a relationship and improve long distance relationships through encouraging new behaviors. This kiss communicator picks up the missed attention and intimacy in a long distance relationship that has been assisted by high tech products such as cell phones or online chatting tools. And it makes transmitting such information accessible just as what GPS Cane intends to do.

3.3 Functional Analysis of the designed objects

3.31 Motion Activated Massage Chair

The action of a back rubbing is not randomly selected among all possible behaviors that can suggest filial piety, but because of various reasons. First of all, back rubbing has been widely recognized as the symbol of filial piety. It has been used repeatedly in public or school to educate people as shown in figure 3.20. It is a photo shows young children are massaging their grandparents taken during an educational activity in their kindergarten in Xuning, China.



Figure 3.19 (Available from: <http://www.xiuning.gov.cn/newsdisp.asp?id=37419>, accessed on 4/6/2010)

Secondly, back rubbing is such an accessible behavior that when people are taught to do so and they can do it right away. It doesn't take much effort or energy to do. From a behavior change perspective, people can change their behavior with little effort. It can be argued that the more accessible a behavior is, the more likely the behavior can be encouraged.

Finally, massaging creates a physical connection between the two parties shown in figure 3.20, which now is replaced by the connection between human and a machine in a long distance relationship as shown in figure 3.21. It shows a father is getting massage from an automatic massage chair when his son is watching TV and drinking beer. There is no longer either physical connection or emotional connection. The son is off the hook and doesn't seem to care anymore. This can be understood as "transformed filial piety" (Luo, 2007). However, this phenomenon comes with a consequence, which is that it sends out a message that you don't have to fulfill the duties if you can pay to get it done. The fact of being spatially dislocated creates the emotional disconnection as a result of physical distance even if a good automatic massage chair can take away the back pains or muscle soreness as well as human hands. The emotional support in the ideal of filial piety is missing in this type of behavior. This Motion Activated Massage Chair is specially created to transmit physical touch and express attention to increase parent-child intimacy. When a child is "massaging" a parent, the parent knows that this chair is being activated by his/her child, so filial piety can also be very well perceived, which plays an important creating the emotional connection.

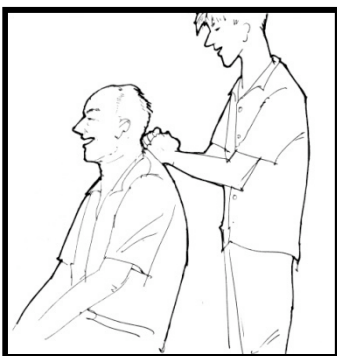


Figure 3.20 living together



Figure 3.21 at a distance

When the auto massage chair was designed, goal of helping people relax their muscles is emphasized, and those unintended results such as the symbolic value of this behavior, the notion of attention, might have been ignored. Paying attention is a form of emotional support. As I discussed in first chapter, financial support is no longer an issue for most Chinese immigrants, and physical support can be realized by hiring home care workers, but emotional

support seem to be more important in contemporary society. The physical touch transmitted by Motion Activated Massage Chair is an expression of the attention that creates an emotional outcome - feeling being loved and taken care of to meet with their expectations. This attention can be easily perceived and play a role in elderly people's psychological well-being.

As I explained in first chapter, Filial piety is less of what's necessary; more of the attention one pays willingly. Many of filial behaviors are hardly necessary such as a back rubbing or feet rubbing shown in figure 3.22, but they are often seen in Chinese families and turn out to be more of a symbol of love and care.



Figure 3.22 a girl has been washing feet for her father in law for 6 years, reported by Dezhou News (available from: http://www.dezhoudaily.com/news/dzsh/2008-9/25_100455.html, accessed on 4/6/2010)

The fact the chair can be only activated by the one who gives the massage implies the way filial piety is performed. Only when an adult child does something for their parents willingly and spontaneously, it is considered filial piety; so it doesn't force users to do anything. Given the amount of leisure time after retirement, elders' lives are often filled with waiting for filial behaviors to happen, just the way they may watch the chair all the time thinking about when it will be working shown in figure 3.23. At the same time, the

design exaggerates the role filial piety, especially emotional support, plays in both adult children's and aging parents' lives and shows the dynamic in their relationships to facilitate the attitudinal change.



Figure 3.23 an image from the film made to demonstrate how people use it

The Motion Activated Massage Chair with three “remote controls” demonstrates the stages users are at in a behavioral change process. The pair of Boxing Pads and a Dance Mat makes the task more fun and pleasurable. The fun and benefit of using it motivates users to have a certain behavior, which makes behavioral change more likely prior to attitudinal change.



Figure 3.24 a user is watching TV while back rubbing parents

However, The Rubbing Pillow is less fun to use and indicates a certain amount of sacrifice. Using it means paying attention even if users may be doing something else such as watching TV. It takes time and energy to function, but the users who do the task don't get anything as a reward for themselves. The sacrifice they make in the practice of filial piety represents the ideal of the traditional value. However, it is more likely to be used after a user gains the awareness of the issue and changes their attitude.

3.32 Virtual Window

It seems like video conferencing tools such as Skype can be perfectly used to see each other's movement and facial expression while talking when they are physically away from each other. However, just like the existing massage chairs, the purpose of sharing important information, asking and answering questions and the function of letting people verbally communicate at a distance are emphasized, and the nature of being present is ignored or neglected. People don't call or chat online when they are going to the grocery or coming back from work. However, these daily routines provide a more truthful story of their lives than a five-minute Skype video chat or a nice photograph sent to each other. Therefore, Virtual Window was designed to fill the interstitial moments and provide constant awareness of each other's lives.

The specific function of the Virtual Window is to provide face-to-face communications, which is the same with many other video chatting tools, but a broader function is letting users to see the other party's real life by having the window in the background all the time. It constantly informs users with a real time connection of the other party, and as a result, responses are very likely to be made, such as waving when the two users run into each other. The constant awareness it creates motivate response and more frequent interaction.

The behavior of using the product creates inconvenience at some level. Users have to balance their privacy and shared information, which is a sacrifice that they make. Therefore, just like the Rubbing Pillow, Virtual Window is also more likely to be used with the awareness of the significance of filial piety.

3.33 GPS Cane

The behavior of walking with aging presents was chosen for the same reason as the hand massage. Elders and young adults don't seem to have common interest in where they would like to go, nor the pace of walking. Walking with aging parents indicated certain level of sacrifice, that's why it is recognized as a representative of filial piety. On the other hand, it is also an easy action to do. Once one gets how significant this simple action is, people can easily adjust their behavior.

As shown in figure 3.25 the physical connection between the mother and daughter is not the only the physical touch, it is paying attention. However, the attention is gone in figure 3.26 where the mother and daughter are doing and thinking completely different things when they are spatially dislocated. The emotional connection is missing with the physical connection. The GPS Cane is designed to create an emotional connection while two parties are at different physical location and to let users feel as if they are with their relative.

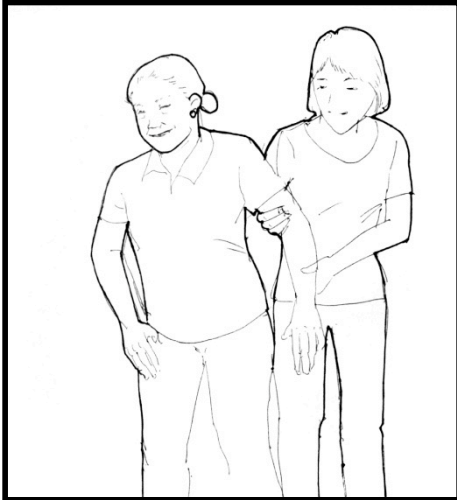


Figure 3.25 being together



Figure 3.26 at a distance

The LEDs at the bottom of the cane gives feedback to the elder whether his/her child is walking with him/her, in order to get the information whether his/her child is paying attention to him/her. When an adult child lives apart from the parents, thinking or not thinking about the parent can only be expressed by limited ways such as a phone call. The fact that no feedback can be seen when one pays attention discourages this behavior. However, the light at the bottom of the cane gives the feedback that enables the elder to know if the attention is paid. The elder might want to know whenever his/her children are thinking about him/her, and the cane provides a means for this. However, that's only possible when the adult realizes how important this emotional support is in the relationship.

In addition, I discussed the concept of perceived filial piety in the first chapter (page 15) since it plays an important role in elders' psychological well - being. When a user uses the GPS Cane, there is no physical benefit to the elderly user; instead, perceived filial piety becomes the result. When a young adult wants to spend some time to walk with a parent, this effort and attention can be perceived through the object. Therefore, it creates a better understanding between the two parties.

The fact that it is neither fun nor provides actual benefit to either of the users raises a

question to the viewer: what it is designed for? It affords critical reflection about what filial piety is really about.

3.34 Summary of the designed objects

The designed objects are intended to pick up visual and tactile information from one party and transmit this to another party at a distance. It focuses on what current technologies can't facilitate in long distance interactions in performing filial piety. They transmit the missing emotional support in the so-called "transformed filial piety" (Luo 2007).

Most previous immersive telematic works are screen-based and often involve the process of transforming data from one "sensorial modality" into another (Hohl, 2006). For example, audible data can be transformed to visual output. The transformation may influence an audience in fundamentally different ways. However, I avoid any form of "sensorial transformation" (Hohl, 2006) during the interaction between my target population in order to keep the nature of each sense. Therefore, a physical touch is transformed to data and then transformed back to a physical touch, and so does audible and visual information. That way the transformed information is easier to be understood and accepted.

The three objects demonstrate different stages that users may be at in the practice of filial piety. The Motion Activated Massage Chair makes the task fun and pleasurable to motivate users to perform filial piety. Even for those who haven't realized the missed attention in the "transformed filial piety", they may still want to use it just for fun, whereas the GPS Cane and Virtual Window are less fun to use and indicate more sacrifice. It takes time and energy to function without any reward as return. So it is more likely to be used with the awareness of the significance of traditional value.

3.35 The MFA exhibition

I exhibited all the design pieces at Slusser Gallery, School of Art & Design. I created two distinct spaces by building two walls as shown in figure 3.27 to separate the massage chair and the control pads to simulate the way they are supposed to be used. The chair was

displayed in a home-like space with no electrical wires connecting the “remote controls” exposed. One Virtual Window was installed on each of the walls. Video shown in Figure 3.28 and 3.29 was displayed on each window by projectors hidden behind the wall. Another movie was made to demonstrate how the Motion Activated Massage Chair works and was shown on the TV monitor in front of the chair. The photos I took during interviews of Chinese immigrant families in Ann Arbor were also displayed on the wall.

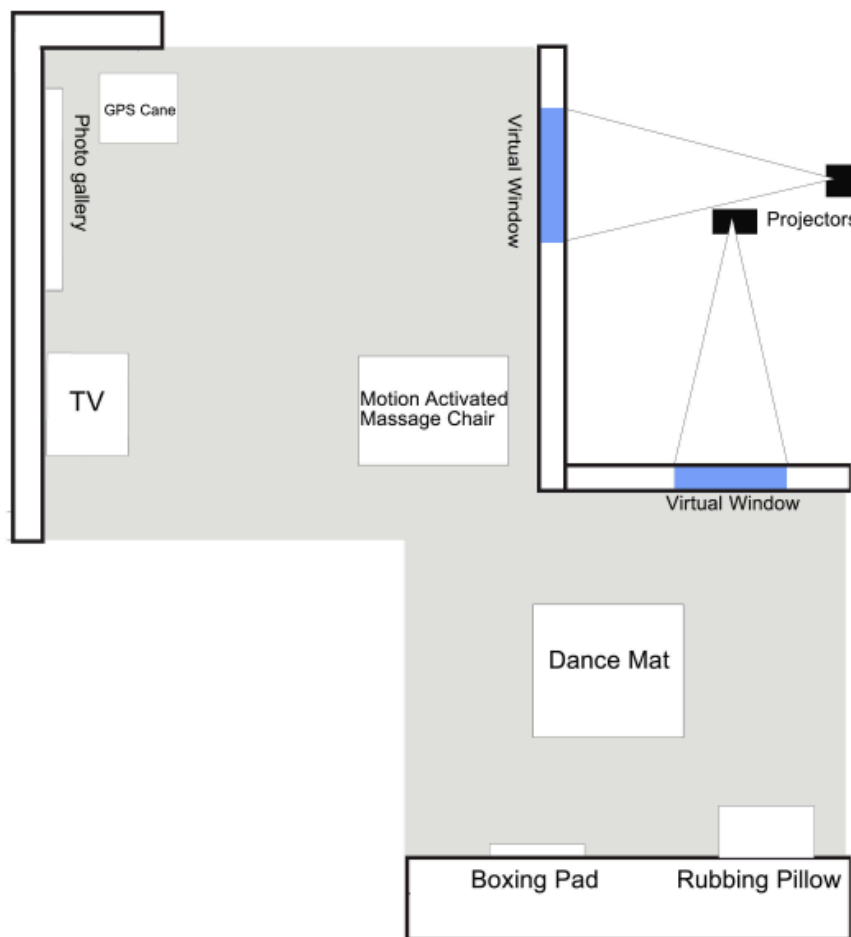


Figure 3.27 MFA exhibition floor plan



Figure 3.28



Figure 3.29



Figure 3.30 MFA exhibition#1



Figure 3.31 MFA exhibition#2



Figure 3.32 MFA exhibition#3



Figure 3.33 MFA exhibition#4

By showing each of the designed objects, explaining how they function and inviting people to sit on the chair, the exhibition allowed the audience to experience what filial piety is and tell stories about Chinese immigrants' lives. The exhibition was also intended to let people realize the missed emotional support in so-called "transformed filial piety" to motivate a behavioral change. Beside the three designed objects, the audience was shown the family photos I took during interviewing within Chinese immigrants families and videos made to demonstrate how the designed objects function.

The storytelling through the comic book in the exhibition about users use the GPS Cane is humorous and provocative. The Motion Activated Massage Chair also provides sense of humor while allowing the audience to experience it. The exhibition also surprised the audience with the function each object has since many of them didn't expect a working prototype for the Motion Activated Massage Chair and they were shocked when sitting it. Once they knew how it functions, they became very excited and brought their friends to experience it. It appeared that most people had fun using it. Surprise and humor are emotions the exhibition intends to create to intensify the message and change an attitude.

In an attitudinal change, emotion plays an important role in behavioral change, such as fear and anger. Although negative emotions are often studied more than emotions perceived as positive such as humor, however, humor does work by "creating incongruities in the mind" (Maase, Fink & Kaplowitz, 1984). By using humor, the exhibition afforded the audience to laugh but also see the issues behind the laughable storytelling.

The exhibition allowed me to observe and talk to the audience to evaluate the design result. Having seen most people were playing with the pieces and having fun, I could see that the designed objects do motivate behaviors. This exhibition meant much more to those who have some connection to Chinese culture, for example, a visitor told me she almost cried seeing the exhibition and thinking about her grandmother who lives by herself in Japan. The exhibition also explains the traditional value, filial piety, to those who weren't familiar with it. Another visitor told me her personal stories after her tour in the exhibition. She told me that her sister in law is a Chinese girl. After seeing the exhibition, she could understand

better why her brother's mother in-law always wants to get involved with the young couple's life.

The audiences have different understanding of filial piety, and the exhibition provide different information to these audiences. For some of them, it simply motivated a behavior through the playful interfaces; for some audiences, it afforded critical reflection; for some others, it explained what is filial piety and bring the awareness of the issue. However, they all serve the same ultimate goal, which is encouraging the practice of filial piety.

3.4 Summaries and future work

As Dunne (1999) said, design is more than just needs-satisfaction and ease of use, although most design today is concerned with these aspects. Based on my study, design has a didactic potential to lead users to do "the right thing". "The right thing" is culturally specific depending on the values people have in different parts of the world. However, the development of this design theory and method is valuable and can be applied to different contexts.

US-born, second generation, Chinese immigrants, just as any other immigrants, are trying to integrate into the mainstream culture of the United States, pushed by the new society's demand for assimilation. As a result, they are in danger of losing some important virtues, such as filial piety. Extended families and related family values of filial piety have been challenged in various aspects and the relationship between the first generation and second generation of immigrants that does not meet with the elderly Chinese immigrants' expectation. Scholars have pointed out that due to the industrialization and urbanization, the decline the filial piety can be viewed as reconstructed and transformed filial piety (Luo, 2007). However, in the transformed filial piety, emotional support is diminished.

The Motion Activated Massage Chair, Virtual Window and GPS Cane attempt to communicate the missed emotional support and operate as "Critical Design" to afford

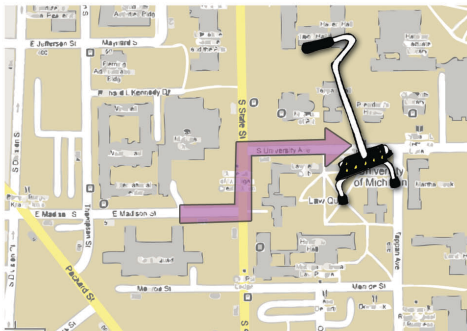
critical reflection. They also promote filial behaviors especially those that express emotional support, to reduce social impact and realize the ideal of filial piety. Unlike commercial product design, these designed objects don't serve just business purposes. They encourage the moral values of users rather than be dictated by the market. Like Dunne and Raby's "Critical Design", it challenges the ideology of design.

Social impact resulting from certain behaviors is what I have been working on by using the great power and influence that design can have. The design methods for behavioral change may evolve with further research, but they offer sufficient evidence of the practical and valuable application of Critical Design in response to social issues. The research and my current design practice have provided a framework to facilitate my future design practice and have also indicated an obvious direction -focusing on social issues that result from behavioral patterns and exploring design's role in those social issues to make a difference.

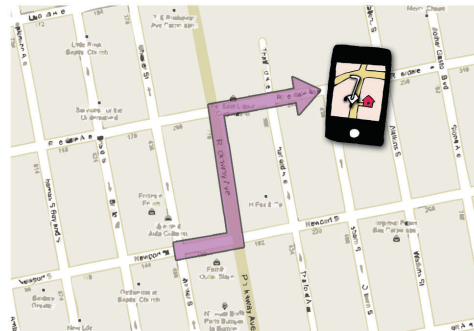
Appendix Comic book for the GPS Cane

GPS Cane

The Global Positioning System (GPS) Cane relays a signal to partner GPS-enabled device (such as a smart phone) via an application. When the cane is in motion, the cell phone application suggests a route in the same direction and at the same pace that the cane is moving. When the phone is moving along the suggested path, the bottom of the cane illuminates to let the user know that their relative is moving with her/him. This product allows users to feel as if they are walking together in different locations.



Ann Arbor



New York

*Filial piety is not about necessity,
but the attention one pays willingly.*

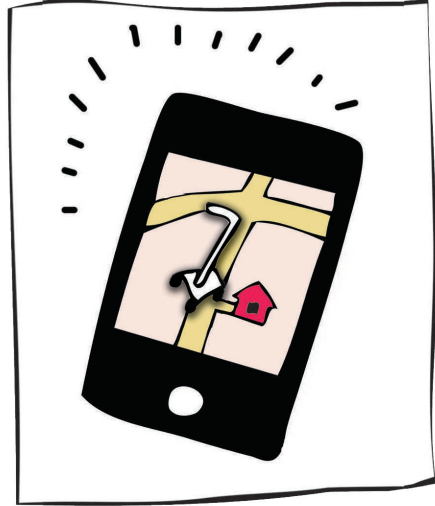
10 AM Saturday

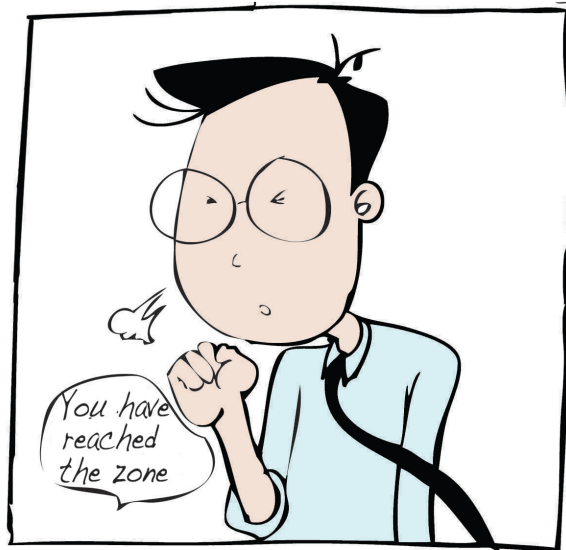
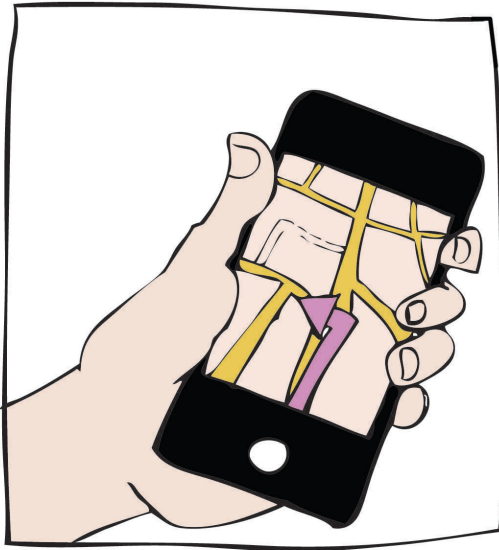


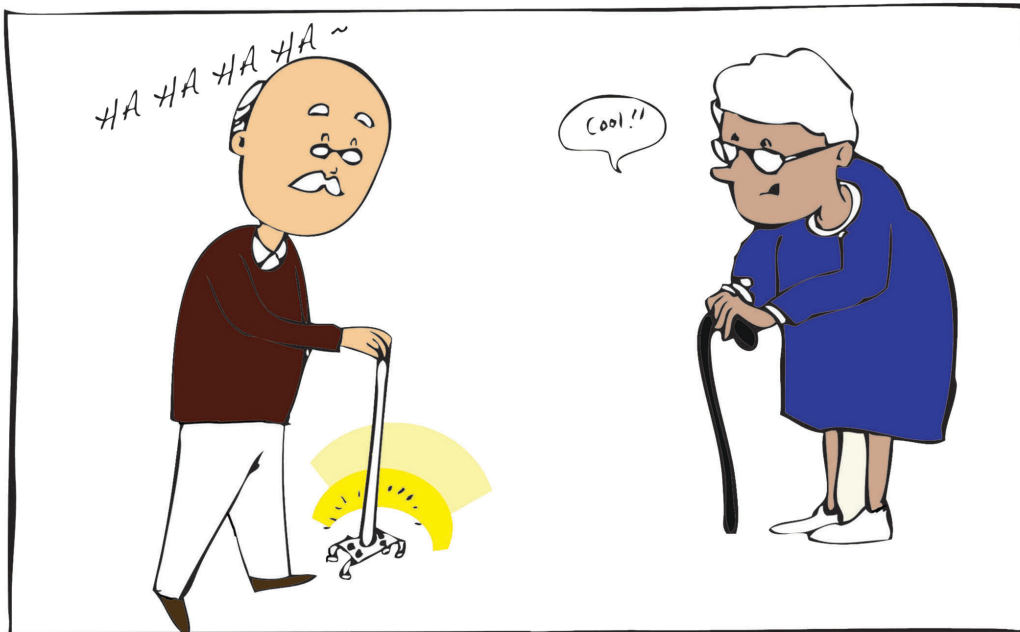
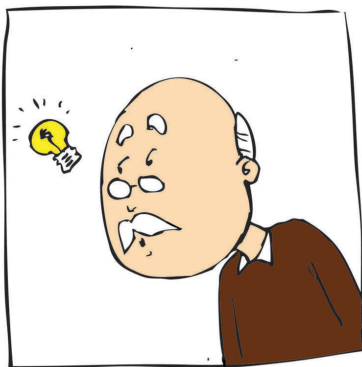
The father, age 60, Ann Arbor Michigan

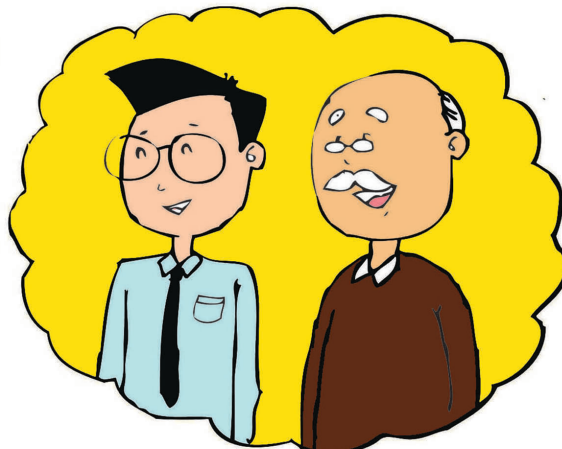
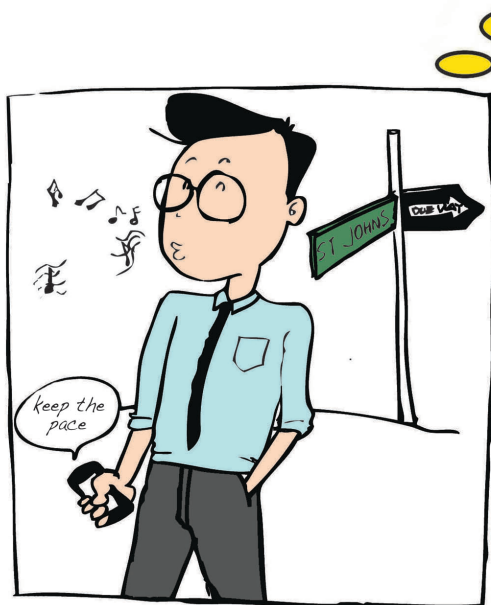


The son, age 30, New York

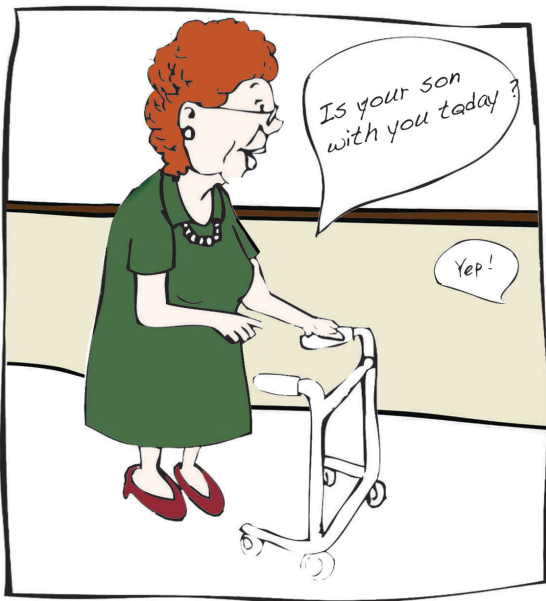








Just like walking together...



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