

Tangible Memories and Elders: Objects as Containers, Reminders and Instruments

Eun Kyoung Choe (eunkyoung.choe@gmail.com)

U.C.Berkeley, School of Information

Abstract: This article reflects upon elderly people memory objects and memory practices in their home environment. A memory object is defined as a meaningful object that calls up memories. A memory practice is defined as a custom that people practice regularly for remembering memories. An empirical study of elderly people on their memory objects and practices showed that they use tangible objects as containers for memories and reminders, as well as instruments of memory practice in their everyday lives. Following a brief discussion of the memory aid design heuristics for the elders developed from the empirical study.

Keywords: memory, elderly people, tangible object, qualitative, interview

1. Introduction

People remember things, and they forget them as time goes by. Some memories stand out while others fade away. In one hand, there are precious moments that people want to keep and remember. On the other hand, there are important and useful information that people need to remember. To hold these memories and information, people have various practices and objects in their everyday life.

What are memory objects and memory practices? A memory object is defined as a meaningful object that calls up memories. A memory practice is defined as a custom that people practice regularly for remembering memories.

The main purpose of this study is to gather data about elderly people's memory objects and practices in their home environment. The first reason to focus on elderly people is that they are the group of people who are concerned about declining memory function. Secondly, this generation has been less exposed to the use of technologies such as computers and cell phones and they feel more comfortable using pens and paper in

contrast to younger generations that have been growing up with electronic devices all around them, which worked as external memory storage. Thirdly, there are not many memory support systems that are specifically designed for the elderly. Lastly, since they have lived for a relatively longer time than younger generations, they may have richer personal memories and family histories. For these reasons, the subjects of this study have been chosen among people whose ages range from their late 50s to 90s. The way in which elderly people deal with the challenges of declining memory may be very different from how younger generations face the memory challenge due to information overflow.

This research is mainly focused on elderly people's practice in their home environment. Homes are an interesting place to look at because they contain traits of its residents. There are many display spaces such as shelf units, furniture, mantelpiece and walls as well as storage space such as basement, rooms, and garages, so that people can display or store their memory objects. With many objects and limited space, the objects that are selected and how prominently they are displayed may convey meaning or the subliminal intentions of the people living in the home. This research mainly addresses the following questions:

1. What do elderly people want to remember, what do they need to remember?
2. What are the different types of memory?
3. What are elderly people's memory practices to capture, keep and recall meaningful memories in their everyday life?
4. What are some examples of memory objects? How did people acquire these objects? Where do people keep these memory objects?
5. What triggers people's memory? Beside visual cues, what other sensory cues trigger people's memory?
6. What are the relationships between memory practice, memory object and the types of memory?

First, I begin with a review of the literatures that cover three aspects – 1) research on personal collections and memory, which is called 'life logging', 2) research on technologies to assist with elderly people's declining of memory and 3) research on

tangible objects and memory. Prior research on memory has focused on each of the points above separately from all different disciplines including psychology, cognitive science, sociology, anthropology, computer science, neuroscience, and more. But the aim of this research is to understand the recent progress in the HCI community in memory studies, to define problem statement and to design problem-solving approaches by looking at how current technologies support elderly people's memory decline and how people use those technologies.

In the methodology section, I discuss methodological context and analysis methods for this study. This section describes how the study is designed, which includes recruitment, design of interview questionnaires, interview procedures followed by data analysis methods such as transcribing, coding scheme and tools that I used. Then I reflect on findings based on the analysis. In the end, I discuss the implications of the findings, concluding with design suggestions for elderly people's memory aid.

2. Related Work

Much research is currently being done into life logging (Kern/ Schiele/ Schmidt 2007; Gemmell/ Williams/ Wood/ Lueder/ Bell 2004; Mann 2004) in the HCI field. MyLifeBits (Gemmell/ Williams/ Wood/ Lueder/ Bell 2004), a representative project in this area, is an implementation of a personal digital store that realized the vision of Vannevar Bush (1945). It is designed to capture a digital record of one's lifetime experience including everyday conversation, computer interaction, and other pieces of information using camera and sensors. However, this approach is motivated by the view that memory is an archive, with a consequent emphasis on capture. While it is believed that the storage of this captured data will be affordable for the average computer user (Gemmell/ Bell/ Lueder/ Drucker/ Wong 2002), retrieval and indexing into such large data sets are unsolved challenges. Instead of focusing on the technology involved in complete capture of one's entire life, this paper reports a qualitative study to understand the principles behind the elderly people's memory objects and practices. We have little systematic understanding of what memories need to be captured and why people might need such

memories. This research therefore focuses on the question of what are the memories or information people want to keep and why are they meaningful.

This research also addresses the current ways elderly people capture and recall those memories. These methods might not necessarily involve electronic devices. In fact, the majority of electronic reminding devices (Cogent 1998; Levinson 1997; Mihailidis/ Fernie/ Barbenel 2001) or prototypes of cognitive aids (Kirsch 1992; Cavalier/ Ferretti 1993; Napper/ Narayan 1994; LoPresti/ Friedman/ Hages 1997) are not specifically designed for the elderly, and most likely would not be acceptable for this population because their limited ability to learn and adapt effectively. So requiring the user to continually provide manual interactions and input is a big challenge.

However, a number of 'Smart Home' platforms has been designed and implemented for the elderly to test out AI and ubiquitous computing technologies. Most notable research includes the Georgia Tech Aware Home (Mynatt/ Essa/ Rogers 2000), the Assisted Cognition Project (Kautz/ Fox/ Etzioni/ Borriello/ Arnstein 2002) and MIT's House_n project (Intille 2002). They attempted to incorporate AI and ubiquitous computing principles to feature an intelligent medical advisor and early detection capabilities. However, neither of them addresses the challenges of capturing, keeping, sharing or recalling memories of the elderly people.

Interfaces for elderly people should be easy to use. 'Ease of use' is often considered as a prior design principle when designing for the elderly people - especially for those suffering from memory loss. Previous studies used familiar objects such as a lounge chair (Hurst/ Zimmerman/ Atkeson/ Forlizzi 2005) or a radio (Nilsson/ Johansson/ Hakansson 2003) as an interface for the elderly people for easier control. It is a challenging task to design a memory aid that fits into the home environment and lifestyle of the elderly so that they can handle the device without relying too much on memory. This is because memory impaired people often forget to use the memory aid and are unable or fail to operate them which causes self-embarrassment (Wilson/ Watcon 1996). For the ease of use, using physical objects that represent some digital information may be one way to deal with this issue. It has been studied that humans are inherently adept at managing physical space by ordering and sorting artifacts in their environment (Holmquist/ Redstrom/ Ljungstrand 1999).

Therefore, the argument of this study is that for elderly people, using a familiar tangible object may be an alternative to computers or small screen hand-held devices, for handling information especially for memory purposes. In-depth interviews with elderly people on their memory objects and practices showed that they use tangible objects as containers for memories and reminders, as well as instruments of memory practice in their everyday lives. These interviews further shaped the memory aid design heuristics developed in the discussion section.

3. Methodology

Interviews were aimed to understand what are the memory objects and memory practices that people employed in home environment. In this rich context where objects are stored, chosen and displayed, objects may represent people's thought process of how they keep meaningful memories. Therefore, it would have been ideal if all the interviews had taken place in interviewee's home, but only three out of nine interviews took place in the interviewee's home setting. The other interviews took place at a senior center, church, café, and interviewee's office. Interviewee recruitment strategy, interview procedures, interview questionnaires along with the difficulties of recruiting elderly people for the study are described in this section.

3.1 Recruitment

Recruiting interview participants was one of the most difficult phases of the study. For the purpose of the research, people in their late 50s or older were targeted as subjects, but it was very hard to find that age demographic. The goal was to interview ten elderly people in total. In search for data richness and diversity, it was important to include diverse populations of elderly people considering gender and age differences, living structure, and daily routines.

The first half of the interviewees were recruited by an acquaintance from a local church choir, most of whom were working professionals. In the end of the interview

session, they were asked if they know anyone who might be interested in this kind of study, and some people introduced a friend. However, the major problem with this recruiting strategy was that the type of people who ended up doing the interview were very different from the general notion of the elderly. All of them had at least a master's degree and had very busy lifestyles even if they were already retired. From here, purposive sampling strategy was used. To find interviewees who have the opposite characteristics of the first group, people living in assisted living facilities were contacted. However, most of the residents in assisted living facilities were too frail and far too advanced in their dementia to being interviewed. Then people at one of the senior centers in Berkeley area were interviewed. There were many retired people late in their ages and most of them were in good health. Interviewees' current or previous job titles covered a range of professions such as: architect, teacher, professor, medical social worker, cartographer, actress, mail carrier, secretary, and a housewife.

3.2 Participants

Interviewees could be categorized into two distinct populations – a group of people who were socially active and a group of people who were less socially active. That is, some of the characteristics for the first group were the followings: 1) people were working professionals, 2) frequently engaging in social participation such as church choir or dance class and 3) kept up an independent lifestyle living in their own house either with their spouse or by themselves. People in the first group had busy lifestyle and they were relatively in good health condition. People in the second group were 1) mostly retired, 2) had relatively simple lifestyles and were not engaging actively in social participation and 3) they were living in an assisted living facility, retired community, or with their children.

In total, nine interviews with the elderly people between the ages of 56 to 91 had been done. Five were women and the other four people were men. The average age of the interviewees was 70.7 (women-75.8, men-64.25); five people were living in a house, three people were living in an apartment and one person was living in an assisted living facility. Most of them except two people were living independently without caregiver or children's help. Based on the categorizing scheme mentioned above, five interviewees

fell into socially active group while the other four interviewees were categorized into the less socially active group.

Interviewee	Gender (M/F)	Age	Working (W)/Retired(R)	Job description (Current or past, if they are retired)	Living Structure	Who they live with	Social Participation	Group A/B (socially active (A) vs less active(B))
P1	M	56	W	Architect	House	Spouse	Y	A
P2	F	61	W	Teacher/Counselor	Apartment	N/A(Alone)	Y	A
P3	M	57	W	Professor	House	Spouse	Y	A
P4	F	72	R	Ph.d student	Apartment	N/A(Alone)	Y	A
P5	F	68	R	Medical social worker	House	N/A(Alone)	N	B
P6	M	74	W	Architect/Cartographer	House	N/A(Alone)	Y	A
P7	F	87	R	Actress/Housewife	Assisted Living	Residents	N	B
P8	M	70	R	Mail carrier	Apartment	N/A(Alone)	N	B
P9	F	91	R	Secretary/Housewife	House	Son	N	B

Table 1: List of Interviewees and demographic information

3.3 Interview Procedure

The interviews were done individually and were audio recorded, transcribed, and coded. Snapshots of the memory objects were taken when permission from the interviewees was granted. Interviews were conducted in their home, café, office, senior center, and church. Most of the interviews lasted for approximately 90 minutes.

The interview consisted of three parts: warm up discussion, a set of questionnaires, and post-questionnaires to gather demographic information or snapshots of some objects. Since most of the interview questionnaires were related to people’s memories, stories of the past, and their involuntary memory practices, there were two things that turned out to be very helpful. First, in the beginning of the interview, an anecdote relating to the author’s memory practices were told– how she remembers when and where she bought a book – in order to give interviewees a sense of what stories were expected from them. Second, after the warm-up discussion, the interviewees were given two lists: 1) a list of items that are worth keeping in mind and 2) a list of actions that are generally considered

as memory practices. With that, they were asked to go through the list and report whether they had troubles forgetting those items and whether they used a certain item or a practice for memory purposes and explain why and how they used them. If they didn't use a certain item, (e.g. a contact list in a cell phone) they were asked why they didn't use the item. Demographic information was gathered in the very end of the interview session, about age, current/past job description, living structure, education level, and experience with computers.

3.4 Interview Questionnaires

When the elderly people heard the purpose of this study, they somehow related the themes to their lack of technical competency such as the use of electronic devices or computers. Some people simply said that they didn't use any memory practice at all and they had not faced any memory challenges because they misunderstood that this research was about elderly people's memory capability. So the 'breaking the ice' phase was very important by sharing the author's own memory practice. Then the interviewees were asked the following questions (See 'Appendix B' for the full list of interview questionnaires and guideline):

- Can you think of an item that reminds you of your past memories?
- What comes to your mind when you think of a "memory object"?
- Could you give me an example of your memory practice?
- Tell me about time when you had to remember something but you couldn't.
- Tell me about time when you use "reminder" or "reminding cue"

When interviewees ran out of stories, the following lists were given:

<Things to keep in mind>

1. Directions
2. Location of common items (keys, wallet, cell phone)
3. Location of uncommon items (cooking items, small gadgets)

4. Cooking (recipes, ingredients, etc)
5. Reading (what previous story/chapter was about, or stopping point)
6. To do list
7. Grocery shopping list
8. Making and keeping appointments, schedule info
9. People's names, faces, past conversations, phone #
10. Taking medicine
11. Important dates, people's birthday
12. Informational postal mails, catalog

<Memory practice ideas>

1. Calendars
2. Diaries
3. Alarm / watches
4. Whiteboards, corkboard
5. Hanging something on walls, attaching something on a fridge
6. Photo album, photo frame, slide
7. Post-it notes, memos
8. Hand-held electronic schedulers (iPhone, Palm...)
9. Electronic calendars or other electronic reminder program
10. Relying on other's memory

With that, people went through the lists and kept telling me more stories that they had forgotten at first. Those two lists were very helpful to do a thorough interview on memory practice. Why people use or didn't use a certain memory practice was particularly interesting so I often asked interviews why a certain memory practice worked or did not work. In the very end, interviewees were asked the following questions:

- Tell me about the oldest item that you own?
- If you can leave only one item to your closest person, what would that be?
- What triggers your memory beside visual cues? (Smell or auditory cues?)

Over the interview, people's stories were mainly focused on visual cues and physical objects. However, people started to think about smell, taste, tactile, and auditory cues after the last question.

While there was a specific set of questions and interview guideline, I wanted this interview to be a semi, open-ended interview.

3.5 Digitization of Data

3.5.1 Transcribing

All the interviews were audio recorded using Sony IC Recorder ICD-MS515. Once the interview was over, the voice recorder was connected to the computer to convert the MSV (audio) file format to MP3 file because Sony voice recorder only saved the audio files in MSV format. Microsoft Word and Express Scribe were used for transcribing. Express Scribe is a digital transcription audio player software. The benefits of using Express Scribe were the 'hot' keys, which were able to control the playback while using other software (e.g. MS Word). After transcribing the interviews, entering codes was the next step. For this process, software called TAMS (Text Analysis Markup System) Analyzer (TA) was used. It is an open source software for text-oriented qualitative research. New themes emerged while reading and re-reading the data (interview transcripts). It was an iterative process of checking and applying the themes throughout the database. This identifying of context and data codes continued until the interviews were not generating new themes.

3.5.2 Coding scheme

Coding is a way of transforming raw information into data. Single word, a sentence, or a whole paragraph can be coded. They can receive multiple codes and they can be sub-coded. Below is an example of coded passage (See 'Appendix C' for the full coded transcripts):

`{memoryPractice>postIt}` I have yellow post-it notes. I write myself notes of places on those yellow sticky notes. `{/memoryPractice>postIt}` `{keep>why}` `{memoryPractice>memorizing}` Memorizing songs... the songs that I sang with my old choir, I try to learn the words, so that I can have them with me during the day. `{/memoryPractice>memorizing}` `{/keep>why}` `{memoryObject>card}` I leave cards up that people sent to me. That's Christmas. I've got Valentine's on the other door. `{/memoryObject>card}` `{memoryPractice>photo}` I have my photos around. `{/memoryPractice>photo}`

Codes are colored texts in bracket. 'postIt' is a sub-code of 'memoryPractice' and 'memorizing' is another sub-code of 'memoryPractice.' The quote, "Memorizing songs... the songs that I sang with my old choir, I try to learn the words, so that I can have them with me during the day" is double-coded under `{memoryPractice>memorizing}` and `{keep>why}` because the interviewee is explaining one of her memory practices, memorizing songs, and the reason she is doing it.

In the final code set, there were topics that were already familiar from the beginning of this research (e.g. memoryPractice, memoryType, memoryObject). Also, there were atypical topics that emerged during the coding process (e.g. association, simplicity, repetition), which were not expected to come up. However, both typical and atypical topics made this set of codes more complete. Below is a list of high-level codes and their description and/or sub-codes (See 'Appendix A' for the full list of codes):

- [MemoryObject]: A tangible object that conveys meaningful memories of the past
- [MemoryPractice]: An action for memory purpose
- [MemoryType]: Type of memory, either informational or personal
- [Characteristic]: Characteristics of elderly/single/couple/retired
- [Gender]: Male/Female
- [Cues]: What being a visual/taste/tactile/smell/sound/place/text cue?
- [Trigger]: What did it trigger? In what way did it trigger?

- [Forget]: What do people forget? Why do they forget? Where do they forget? etc.
- [Keep]: What do people keep? Why do they keep things? Where do they keep things? etc.
- [Usage]: Usage of electronic devices such as a cell phone or computer

3.5.3 Data Analysis Tools

Analysis is a process of finding out what information is in the data and what that information means. Also, it is a process of taking codes and finding out the patterns they form. To find these patterns, TAMS Analyzer was used to turn the raw interview materials into searchable database. There were three operations that were needed to do with the coded database: searching, sorting and selecting.

4. Findings

4.1 Memory Types

“Something that helps me to remember either informational or positive memories...Appointment...I have a lot of appointments to keep. And memos and notes. Things that I am interested in studying and learning. Trainings that I’ve taken...Times with my family, moments with friends, places in nature, artworks that I’ve done. I used to weave. I do a lot of photography, handmade papers, cards. All those are positive memories.”¹

The term ‘memory’ can be defined in many ways from various disciplines. In general, memory is something that you remember from the past. There are several ways to classify memories. One well-known method is a classification based on the duration of retention: short-term memory and long-term memory. Short-term memory allows you to recall something from several seconds to as long as a minute without rehearsal. In long-

¹ A grammatical error, mistake or specific formatting in a quoted section has not been corrected; it is as it appears in the original transcripts.

term memory, you can store much larger quantities of information for potentially unlimited duration. According to Anderson (1983), long-term memory can be divided into declarative (explicit) memory and procedural (implicit) memory. While procedural memory is primarily employed in learning motor skills or ‘how to’ knowledge like riding a bicycle, declarative memory deals with factual knowledge independent of time and place (semantic memory) as well as personal experiences, theoretical knowledge of a specific moment in time and place (episodic memory).

Interviewees were asked about the memories they needed to remember or they wanted to remember. It was surprising that all of their stories fell under declarative memory; both semantic and episodic memory. No interviewee mentioned a procedural type of memory. It may be the fact that procedural memory is often not verbalized or does not necessarily involve memory cues to recall back. In contrast, declarative memories can generally be put into words, and often many objects around people become reminding cues just by being there.

Based on the interviews, memories could be divided into two types. First, there were informational memories like phone numbers, passwords and schedules – things that people might put on a corkboard or mark on a calendar.

“My schedule, an outline for an independent study that I’m running, books that people have borrowed, phone numbers of the staffs that I call a lot, a calendar, html special symbols, the administrative information for the course that I’m teaching in this semester plus the lab sections, next year’s schedule, Karen’s phone number...”

Second, there were personal memories. People seemed to remember positive memories more clearly and frequently than negative memories. Positive memories often involved memories with families, special events like marriage and graduation, childhood and youth, or what people would describe as ‘the best thing happened’ in their life.

“I remember the first time that I appeared in the stage. And I heard that wonderful applause that I got. “WOW! This is for me!” and I’ve been involved in ever since because there’s so much joy, getting involved with the group that brings you joy.”

In sum, people do collect memories. If we categorize those memories into types, they fall under declarative memory, both semantic and episodic. In general term, people used ‘informational memory’ and ‘personal memory’, terms which will be used in this paper from now on. Sometimes, there is no clear borderline between informational memory and personal memory, and other times, one changes to another as time goes by. However, depending on the types of memory, people employ different memory practices or objects, which will be covered in the next section.

4.2 Memory Objects

“I have my baby book, from my parents. When my parents, when they moved and taking out some of the old stuffs, so the baby book was part of it. And I also have some photographs. When Karen and I got married, that was nice experience, and we have photographs. In particular, the photographs of the service and environments... Old newspaper clippings that I was in... Other gadgets... that’s probably bunch of things relating to when I first lived on my own. I can’t think of anything from college, but graduate school, I still have cooking utensils from graduate school.”

Interviewees were asked if there were any items that remind of their past memories. These items are referred as ‘memory objects’. If something is to be called a memory object, it has to call up some memories, and the owner should think of them as meaningful. Photographs of friends and family were the most frequent memory objects but not necessarily the photos that they took or photos of themselves. For example, the photos were given to them by request, or they found the photos after their parents passed away. When the interviewees were asked about the oldest item they have, they often showed me photos of their parents when they were young. These were photos of parents’ weddings or photos of newly married couples holding a baby.

People also mentioned things from their childhood as their memory objects: a box of memories from childhood, high school and graduate school, drawings from childhood, books that their parents used to read to them, patches from Boy Scout and a lot more. Memory object from childhood holds snippets of what the interviewees were like back then and people liked to cherish those, as mentioned in the following quote:

“Little things from my childhood, knowing this is what I was like then, and how I’ve developed to what I am now. Sometimes it reminds me of how I’ve improved from then, and sometimes it reminds me of that there was something special back then that I don’t want to forget about and that I want to continue as a person.”

Beside photographs and childhood items, many people came up with various answers. Posters from exhibitions or souvenirs from previous trips were also common items: *“This is for memory. I was in Hawaii with my family. We went to that volcano, and when we came down, I bought this poster.”* But sometimes posters and photographs on the wall were not so much as to remember things but more so to appreciate the contents. For example, one interviewee had Eliot Porter’s poster hanging on the living room and said that it was one of the very first pieces that she had bought and had framed. For her, finding Eliot Porter was a discovery and it was hanging there clearly for appreciative purposes. However, if she had some memories attached to the piece, for instance, if she had been to one of Eliot Porter’s exhibitions, now the piece becomes a memory object which will from time-to-time remind her of the exciting moment when she saw the original piece. Posters, artworks (done by either by famous artists or their acquaintances) and souvenirs are the memory objects that people fetched from the outside world. These are what people chose to keep either for memory purpose or appreciation, sitting or hanging all over the house. However, things like ‘teaching awards’ are very special memory objects, which can be frequently seen on the wall of professors’ offices. But in contrast to posters and artworks, awards and certificates cannot be bought.

Letters, Cards & Gifts: “One of the things that’s really special is that I have a letter from my mom to my dad on the day that I was born. My mom wrote to my dad about what she’d hoped that I would be...she hoped that I would have the qualities of my father and yet she wanted me to have my own quality. I didn’t know about this letter until my parents died. They had a box of letters and I found this letter among them. I thought this is very special. So I do save that.”

People give and receive gifts and cards on special days like Christmas and birthdays. Even though little gifts and cards are not necessarily expensive or sometimes functionally useless, people save them because they are meaningful. People display cards in their living space and they leave them until there is an occasion to move along - people

might need more space, for instance. Some people keep them in a file cabinet, drawer, or a box in a basement, not knowing when they are going to read them again, while others just throw them away. Things can be considered meaningful and useless at the same time. This ironical reality makes people confused.

“We keep some of the cards that are extra special. And then we throw others away. And they get up on a stack, and we have problems with stack. I don’t know what to do with the things that are considered meaningful. We want to save it, but I don’t know whether we’d put in a box or...”

Other items: A few people mentioned their old clothing triggers the period of time they used to wear them. They did not wear them anymore because they were out of fashion, but they still kept them. One of the interviewees was born in Holland but came to the U.S. when she was little. She had memory objects that remind her of Holland, like the plates which had been given to her from her grandparents in Holland. Another interviewee used to be a Boy Scout leader, and he still had a bottle of ashes from a special campfire event called the World Jamboree. Books and collections of writings, resources of study were very important possessions of people especially in academia, but they were not necessarily for memory purposes: *“So, books – I don’t much care how I got them, it just helps to know something about what’s in them.”* An interviewee mentioned music pieces as her memory object because it reminded her of the time she sang the piece with the choir. An interviewee, whose current job is an architect, saved drawings and sketches of ideas for future works. Phone books, an old piano, newspaper clippings, sculpture, tickets and interestingly, everyday items like a cell phone, mug, and toothbrush were also referred to as memory objects.

In contrast, one of the interviewees said that he just threw out 20 years of calendar books. His office was moving to a new place and since there was not enough room for these, he thought it was time to throw them out. He said that he felt freer afterward. Another interviewee said that he had not been too attached to things because both his wife and he were not “gadget people.”

Intangible objects can also be memory objects. According to the definition of a memory object, intangible object such as a certain tastes, smells, tactile or auditory cues

remind people of something that had been forgotten for a long time and suddenly takes us back. For example, to our childhood days, times when we were traveling or Christmas family dinner:

“Well, again, good memories usually have to do with eating, and with the food and the people that I was eating it with. And often, they are memories that can’t be recreated.”

Many people mentioned sugary snacks that mother or grandmother used to bake when they were young, which brings back comfort feelings. However, as people get older, they carefully watch what they eat due to different health issues, they lose their appetite, or their favorite restaurants close down. So some experiences cannot be recreated just as they had when they were young. Even if they can be recreated, people cannot have the same experience because it is the people themselves who have been changed (e.g. lost appetite).

“So when I very young, a lot of my relatives died. So I would go to the rites. And there were always a lot of flowers. So for the longest time, I associated floral sense with coffin. So I was backpacking once in Europe, and there was a gorgeous field of some sort of flowers, very floral sense, and instantly I flashed back a coffin. And that’s not to say that it was negative thing, it was just an association that I had.”

Smell is such a strong cue and broadens one’s world: the smell of spring, fall, and rain, the smell of fish cooking and bakeries, the smell of the metro in Paris, the smell of Piers in San Francisco, or the smell of lake in Geneva. However, one of the interviewees said that she was having trouble with smell; as she got old, she became much more chemically sensitive, so she started to feel sick when she was around people’s cologne, perfume and powder. So some smells are toxic or uncomfortable.

“When my nieces were little and they called me up and leave messages or something, I tape recorded the message of the phone. I’ve got a whole tape of family messages and I keep adding on their little messages. So someday I will just play those back and remember.”

People have favorite songs they like to listen to. If you haven't heard them for a while, they may transport you back to a time long ago when you used to listen to it often. People mentioned the golden oldies, Christmas music, choir music, teacher's voice, or music that they listened to while taking a road trip. According to the interviewees, songs reminded them of their teenage days or days in their twenties, while taste generally reminded them of the childhood days. Music triggers the memory of the specific time, the atmosphere and the people they listened to it with.

There were numerous items that people regard as memory objects. Most of them had their personal memories embedded, not so much as informational memories. Memory objects are things that remind of a specific time, place, or people (photographs). These are meaningful but not always useful (cards). There are things you can never buy (teaching award) and there are things you can buy from a store (poster, souvenirs). Memory objects are all very different from each other and they hold different memories, but from a functional aspect, they are a container of a memory and/or a reminder of a memory.

Also there were different forms of memory objects: tangible and intangible. The greater part of them was tangible objects but intangible items could also be a memory object. Examples of intangible memory objects were a certain taste, smell, tactile impression, or sound. They were less frequently mentioned than tangible memory objects but they were very strong memory cues. The difference between tangible memory objects and intangible memory objects lies not only in its physicality, but also in its function. While a tangible memory object can act either as a container or reminder or both, intangible memory object can only act as a reminder since there is no substance.

What makes memory objects so special and what makes people want to keep them? Memory object is not just a thing but a thing with emotions and memories attached to them, and often it is the latter that makes a memory object special.

4.3 Memory Practices

“My mother used to do it, and I've seen other people do it and I do it once in a while, like...she's got a load of wash going, and she's in another part of the house, she'll put an object out of a place so that it will catch her eye to remind her, ‘Oh,

yeah. I've got to put that in the dryer...', something like that. I do that once in a while, just put something out of a place and oh, yeah, that reminds me to do something."

By definition, 'memory practice' is a custom that people do regularly for remembering either informational memories or personal memories. Questions regarding memory practices took up the biggest part of the interview. Interviewees were asked to come up with specific examples of memory practices to hold the meaningful memories that we have covered in the previous sections. There were numerous ways to remember things in their everyday life let alone a great number of things that they need to remember. One thing to point out is that in contrast to memory object, people mostly talked about informational memories, not so much as personal memories.

4.3.1 Writing Notes

"My friends, we see every two weeks because we practice something with each other. Then I bring my calendar book so that we can set the next date. That's because I can't remember everything. So I have good support systems...It's one of my worst fears of missing one of those"

The most common memory practice was writing notes on the calendar. Some of the interviewees used a calendar book or a pocket calendar while others used a regular calendar hanging on the wall where it was highly visible. Specifically, people wrote in events, meetings and appointments, time, place, phone numbers, and people's names, put a little asterisk or circle to highlight important things, and clipped extra information such as business cards or flyers. It was often described as a 'crisis' to lose a calendar book. For those who were using the calendar book, it was in their habit of checking and carrying it with them always. Other things that people wrote in were people's birthdays, anniversaries or people's days of death. Two interviewees mentioned a 'birthday calendar', which is a calendar specifically designed for remembering important days. It is narrow and long, and has dates and a square for each day so that you can write in people's names.

Some people kept a to-do list on a separate paper. They wrote down things to be done at some point, crossed them off when they were completed, and started a new list when it got messy. For those who were retired, keeping a to-do-list was more like ‘getting myself organized for the next day’, not to waste the free time. Grocery shopping lists were often on the refrigerator or in the pantry, but only for those who cooked for themselves.

There were people who kept a journal. But it was not for memory purpose but for looking back and seeing ‘when did a certain event happened?’ There was one interviewee who usually wrote down tones of notes at workshops. It was partly because she could look back later and partly because she needed to use as many senses as possible to get information; listening to the speaker, looking at the slide, and writing something down.

‘Highlighting’ is a sub-category of ‘Writing notes’: *“I usually draw a line down the margin, and mark the section, and I put a box around keywords and underline around them. I put a piece of paper in the book. I do use a bookmark.”* To differentiate useful information from other things or to find entries easily later, people highlighted entries with a highlighter, bookmark, or post-it notes. It may be a catalog item that they are considering for purchasing or the due dates on bills that need to be paid. Some people made a note on a sticky post-it and put those around the edges of computer, on the wall in front of a desk or place where eyes are drawn naturally: *“I put them on the bathroom mirror to remind myself something. So I wake up at 9 and see ‘Oh, don’t forget something tomorrow morning to do something.”*

4.3.2 Hanging

“A lot of things on the wall have memories.”

Interviewees were particularly asked what is hanging on the wall of their home including on the side of a refrigerator. There is an assumption behind this question that people may hang something meaningful on the wall with an intention that they want to look at it often. People who did the interview at their house willingly gave a short tour of the house and showed me what items were hanging and told me interesting stories behind each item.

There were posters, artworks, photos, souvenirs, plates and many other things that could be called ‘memory objects’, but there were also things that were hard to call a memory object, like a grocery shopping list on a refrigerator with a small magnet, calendars, corkboards, big clocks, maps of the world, and a table of Spanish irregular verbs. A corkboard, white board, and the face of refrigerator were another kind of walls to post information. A running list of movies, grocery shopping list, and to-do-list were common items on the boards. The popular place to hang a board was a study or office area.

4.3.3 Organizing

“Sometimes I find them, sometimes I don’t find them in the same spot... and I’ll be looking and looking... So what helps me is to make sure that I put things back or put them in a systematic way so that I can remember.”

There are different organizing strategies for different items. ‘Keeping things at the same place’ was a common strategy for locating common items like keys, wallets, cell phone and glasses. Putting effort into organize things saves time when you need to find those items later. Many interviewees had a designated spot for these items, whether they were at home or in the outside. Examples of common spots were the bedroom dresser, the inside of a drawer, a pocket, a purse, and the dining room table.

“They (keys, cell phone) all live permanently in my purse. There is a pocket for each of them. Once in a while the keys fall out of the pocket and it’s not there where it should be and I panic, but usually they are in the bottom of my purse. Either there, or in my office when I’m working, I keep my keys in my pocket. But at night I put it back to my purse. So I have a system. It saves my anxiety.”

But remembering to put the item back in a certain location was more information to remember if a person had not formed a strong habit to do so: *“I try to always put my keys back in one place as I come in the door, but every now and then I forget. It’s a little bit of a humorous exercise because then I have to remember what did I do - Did I go straight to the bathroom? Did I go straight to the kitchen?”*

Books were organized by topics, authors or alphabetical order. Papers or writing sources were organized with a labeled files or cabinets. Slides and photos were organized

in chronological order, which was also the case to the electronic photos on the computer. One of the interviewees had thousands of slides. He organized them by giving them a title, like a location, date, or a subject matter. Each box had 36 slides and he would label the box as what the activity was. Little boxes were placed in a bigger box with a chronological order and they were sitting in the basement. It was also important to know what each picture was about. Other interviewee put short text on the album around the photos, like people's names, ages, dates and places.

4.3.4 *Having Things within Reach*

“Turn right here, left here, even though I think I'd remember, I keep the little list in my car. So when I'm going to their houses, I pull out the list, and oh yeah, oh yeah, turn here, turn there, this street, that street...”

People with a good spatial sense are good at remembering directions but not everyone is like that. According to the interview, most of the interviewees had their own way of finding directions to a certain place. What they had in common was to keep the directions inside the car whether it was a map, a page printed out from MapQuest / Google Map or a written-down piece of paper. Before they leave the house, people looked on a map to check the address and location but in case they forget, they took the directions with them.

Interviewees were asked how they organize bills. Bills come with a lot of junk mail. Junk mail were usually thrown away into the trash, but bills were placed on a dining room table, in a section of a desk, or by the door. When it came time to pay the bills, people sorted through the piles. People often piled things up that are unread and kept them within reach. Piles of things were a constant reminder. Interviewees were also asked how they remember to take medication in a timely manner. One interviewee said that he used two little trays that have seven days of a week – one was for mornings and the other was for evenings. If there were still medicine in there, it meant that he had forgotten to take it. However, a more common practice was to keep the bottles within reach, like the bills. If people needed to take medication, they placed the bottle within their eyes reach. Common locations were dining room table, bathroom shelf and bedside table: *“I take a couple of medications. There's something I need to take it every night, so I have it on my*

desk in my bedroom, because that's where I am at the end of the day. So that's right there, and I know I have to take it about half an hour before I go to bed. It physically reminds me."

4.3.5 Relying on Others

"Well, right now, when I learn something new, I usually teach it to my secretary, so that when I forget it, I can ask her."

It is not always a good strategy to rely on other's memory but it may be useful to distribute the information to a close person before you forget, just in case. Someone next to you may have a better idea on what you are looking for, so why not just ask that person? Among the people I interviewed, there were two people living with their spouse and one of them talked about how he relies on his wife's memory:

"We remember different things... I say, 'Hmmm', then she says 'What? What's wrong? Are you missing something?' And I say, 'I can't find something...' and she says, 'What does it look like?' and she helps me. She is my memory device."

However, those who were living by themselves didn't like the idea of relying on other people's memory. If they were traveling with someone, they might ask their company about the itinerary or directions, but in a daily life, they tried to keep their life independent as far as they could. In contrast to relying on other's memory, some people mentioned "memorizing" as one of their memory practices, a way to remember something by heart to hold those with them at all times. Those were things like important dates, family phone numbers, a lovely poem, or a prayer.

In sum, memory practices could be categorized into five groups depending on the commonalities of the actions. They are 1) writing notes, 2) hanging, 3) organizing, 4) having things within reach and 5) relying on other's memory. People had different systems to back them up in various contexts. More than 200 memory practices were stated during the interviews.

Often at the end of the interview, the interviewees were surprised by a number of memory practices that they have been already performing in everyday life. Some of the

practices were such natural behaviors that interviewees hesitated to call it a memory practice (e.g. putting something by the door so that you step over it). Also, some of the practices have become their habits (e.g. keeping things at the same spot). In fact, they were very effective involuntary memory practices. In contrast, there were also voluntary memory practices that convey people's strong intention to remember things.

Memory practices often involved tangible objects. However, memory objects should be differentiated from memory practice instruments, which are tools to capture memories. A note, diary, medicine tray, camera, tack board, post-it, bookmark – these are instruments, not memory objects. However, an instrument can be turned into a memory object if special emotions or memories are attached to them.

Memory practice is an input action to make the recall process easier. To make this input action more effective, people take advantage of tangible instruments while performing memory practices. Tangible instruments, which are listed on the above paragraph, stimulate mostly visual and tactile senses but they sometimes stimulate auditory and other senses as well. People may not necessarily go back and look at what they have captured or written down, but the action itself leaves an imprint on people's mind so that it will help them to remember things in the long run.

Memory practice is also an action to place a constant and reliable reminder for the things people should take care of. Writing notes, organizing, having things within reach, hanging – in all these memory practices, memory objects or instruments serve as a tangible reminder. To-do lists, a bottle of vitamin, and piles of bills – they physically remind people.

4.4 Elderly People's Use of Electronics

“I do better in paper and pencil. Well...it's what I grew up with... I love computers but I don't like managing a lot of electronic stuff. I like the calendar, it's just so easy to erase and change, only take two seconds.”

Interviewees were asked about their experience on electronic devices such as a computer or cell phone. More specifically, they were asked whether they own a computer, have an email account, or own a cell phone. They were also asked how many times they access

email account per day, how they use a contact list in a cell phone, and whether they have experience in using electronic calendar or hand held device.

Surprisingly, more than half of them did not have a cell phone because they felt they did not need one. People who owned a cell phone used it mainly for emergency calls. They did not like to give out their numbers because they did not want to be called at any time. They thought it was an intrusion: *“That’s just one more thing to keep us busy. And I’d rather have downtime, quiet time.”* People liked the idea of speed dial (each number is mapped to a frequent use phone number) but they rarely update or use a contact list. Most of them still have a phone directory or a phone book where they update acquaintances’ phone number or address and use it frequently.

In contrast to a cell phone, there was a wide range of computer users, from computer science professor to those who did not have an email account. However, none of them used hand held device for scheduling. There was one interviewee who had used a Palm Pilot but he gave it up for many reasons; the battery went dead once and lost everything, he did not have a place to carry it, and it was inconvenient having to use the stylus rather than a pen and ink. But at the same time, many people mentioned that their life is not that complicated and they do not need an electronic scheduler.

In sum, there were two recurring themes that emerged during the interview conversation regarding elderly people’s use of electronics. First, elderly people do not like a complicated interface. To be more specific, elderly people had difficulty handling a small screen device, for instance, typing in words, or browsing a menu. Also, they did not like the extra effort and time to access a device. As we have already observed what memory practice they use, an old-fashioned way of writing notes was the most popular one. Second, they did not want to change the current system that they are using. Elderly people described their life as ‘pretty routine’ and they felt electronic calendar was too much. It is not that they do not need a calendar. In fact, a calendar was the most popular memory instrument. They were satisfied with the current system so there was no need to learn a new system. After many years of using the same system, it might also be very difficult to change the custom. Looking at why elderly people do not use a certain system is very important because it gives us an idea of how the future memory aid should be

designed. So how these findings can be incorporated in designing a memory aid for the elderly? Implications of the findings is discussed in the next section.

5. Discussions

Most interviewees did not realize how many memory objects and practices they already have in their everyday life, both voluntary and involuntary. They collect both informational memories and personal memories using various memory objects and practices. However, while memory objects reflected mainly personal memories, memory practices were performed largely for keeping informational memories. It implies that elderly people are in need of remembering and being reminded of informational memories. Therefore, memory aid for the elders should be designed in a way to help with informational memories rather than personal memories, focusing on the ‘capture’ of images, audio or video of events.

However, people often forget to use the memory aids, or do not use them due to the additional workload they impose. Considering the potential users of memory aids may be elderly people who are concerned about memory loss, a memory aid must be easy to use. It is not enough that elders can use the system, but they must want to do so routinely. Many memory practices from the empirical study involved tangible memory objects or memory practice instruments. That is because they stimulate different senses and physically remind people. Familiar everyday objects and highly tangible interfaces that allow users to interact with will probably be the most appropriate interfaces for elderly people’s memory aid. The key principle is that memory aids for elders have to be tangible.

However, interviewees were less fond of electronic devices even though the devices were tangible and they had experience (e.g. landline, computer, etc.) with them in the past. Being tangible does not mean equal to being easy to use. Interface for the elderly should be easy and should not require much learning. There is less motivation for elderly people to learn a new system to do what they can already do with an existing system.

Memory aids for the elderly should have an intuitive and simple interface, something they are already familiar with in their everyday lives.

Also, other sensory cues such as taste, smell, touch, or sound were also strong memory cues. The memories that have been actively collected using different senses were easier to be recalled. Memory aid for the elderly should encourage them to use different senses in the process of keeping and recalling memories.

6. Conclusion

An empirical study of elderly people on their memory objects and practices showed that how a tangible object becomes a container of memories, a reminder, and an instrument of memory practices in different contexts. Two memory types were identified: informational memory and personal memory. Personal memories and informational memories were embedded or represented in various forms of memory objects such as tangible memory objects and intangible memory objects. These memories were remembered and recalled using numerous memory practices, which could be categorized into five groups: 1) writing notes, 2) hanging, 3) organizing, 4) having things within reach and 5) relying on other's memory. Memory practices often involved tangible objects as instruments, which are tools to capture memories. Some memory practices are involuntarily performed in everyday life and people do not recognize a certain behavior as a memory practice. Memory practice is an input action to make the recall process easier and an action to place a constant and reliable reminder around them.

Elderly people were less fond of using an electronic device for memory purposes because the interface was complicated and there was little motivation to learn a new interface. These two findings should be carefully incorporated in the design of memory aid for the elderly to avoid creating a device that do not reflect how they interact with technology. Using a familiar everyday object as a metaphor of a new interface or involving tangible memory objects or memory practice instruments will help the elders easily interact with the memory aid interface.

Bibliography

- Anderson, J. R. (1983), *The architecture of cognition*. Cambridge, London: Harvard University Press.
- Bush, V. (1945), As We May Think, *The Atlantic Monthly*, 176(1), July 1945, 101-108
- Cavalier, A.R. / Ferretti, R.P. (1993), The use of an intelligent cognitive aid to facilitate the self-management of vocational skills by high school students with severe learning disabilities, *RESNA '93 Annual Conference*.
- Cogent, I. (1998), Equipping people for independence, Cogent Systems Inc.
- Gemmell, J./ Bell, G./ Lueder, R./ Drucker, S./ Wong, C. (2002), MyLifeBits: Fulfilling the Memex Vision, *ACM Multimedia '02*, December 1-6, Juan-les-Pins, France, pp. 235-238.
- Gemmell, J./ Williams, L./ Wood, K./ Lueder, R./ Bell, G. (2004), Passive capture and ensuing issues for a personal lifetime store, *Proc. 1st ACM workshop on Continuous archival and retrieval of personal experiences*.
- Holmquist, L.E./ Redstrom, J. / Ljungstrand, P. (1999), Token-Based Access to Digital Information, *HUC '99*, Springer-Verlag, LNCS 1707, 234-245.
- Hurst, A./ Zimmerman, J./ Atkeson, C. / Forlizzi, J. (2005), The Sense Lounger: Establishing a Ubicomp Beachhead in Elders' Homes, *CHI '05 extended abstracts on Human factors in computing systems*, 1467-1470.
- Intille, S.S. (2002), Designing a Home of the Future. *IEEE Pervasive Computing*, April-June 2002 pp.80-86.
- Kautz, H./ Fox, D./ Etzioni, O./ Borriello, G. / Arnstein, L. (2002), An overview of the assisted cognition project, *AAAI-2002 Workshop on Automation as Caregiver: The Role of Intelligent Technology in Elder Care*, AAAI Press.
- Kern, N./ Schiele, B. / Schmidt, A. (2007), Recognizing context for annotating a live life recording, *Personal and Ubiquitous Computing*, 251-263.
- Kirsch, N.L., et al. (1992), Computer-assisted interactive task guidance: Facilitating the performance of a simulated vocational task, *Journal of head trauma rehabilitation*, 7(3), 13-25.
- Levinson, R. (1997), PEAT: The planning and execution assistant and training system, *Journal of Head Trauma Rehabilitation*, 12(2), 769-775.
- LoPresti, E.F./ Friedman, M.B. / Hages, D. (1997), Electronic vocational aid for people with cognitive disabilities, *RESNA '97 Annual Conference*.

- Mann, S. (2004) Continuous Lifelong Capture of Personal Experience with EyeTap, *Proc. of CARPE '04*.
- Mihailidis, A./ Fernie, G.R./ Barbenel, J.C. (2001), The use of artificial intelligence in the design of an intelligent cognitive orthosis for people with dementia, *Assistive Technology*.
- Mynatt, E.D./ Essa, I. / Rogers, W. (2000), Increasing the opportunities for aging in place, *CUU*.
- Napper, S.A. / Narayan, S. (1994), Cognitive Orthotic Shell, *RESNA '94 Annual Conference*.
- Nilsson, M./ Johansson, S. / Hakansson, M. (2003), Nostalgia: An Evocative Tangible Interface for Elderly Users, *SIGCHI Extended abstracts on Human factors in computing systems*, 964-965.
- Pollack, M.E. (2002), Planning technology for intelligent cognitive orthotics, *6th International Conference on AI Planning and Scheduling*.
- Wilson, B. A. / Watson, P.C. (1996), A Practical Framework for Understanding Compensatory Behaviour in People with Organic Memory Impairment," *Memory*, 4:5, 465-486.

Appendix

Appendix A. Code Sets

Code	First Sub-Code	Second Sub-Code
association		
attention		
characteristic	couple	
	elderly	
	retired	
	single	
cues	place	
	smell	
	sound	
	tactile	
	taste	
	text	
	visual	
designIdea		
forget	lost	
	throwAway	
	what	
	where	
	why	
gender	female	
	male	
keep	what	
	when	
	where	
	why	
memoryObject	card	
	everydayItem	
	fromParent	
	gift	
	meaningfulMemory	souvenir
	oldestItem	
memoryPractice	board	
	book	
	calendar	
	common	
	cooking	
	diary	
	direction	
	hanging	
	list	

	medication	
	memorizing	
	nameFaces	
	noteTaking	
	notUse	
	organize	
	phone	
	photo	
	piling	
	postal	bills
	poster	
	postIt	
	relyOnOthers	
	shoppingList	
	uncommon	
	watch	
memoryType	informational	
	personal	negative
		positive
name	Ishmel	
	Janet	
	Mark	
	Meg	
	Ryan	
	Sara	
repetition		
simplicity		
tangibility		
trigger	reminder	
	what	
usage	cellPhone	
	computer	
	electronicCalendar	

Table 2: Code Sets used for data analysis by TAMS

Appendix B. Interview Guideline

1. General Information and Informed Consent

Hi! My name is Eun Kyoung Choe. Thank you for participating in this interview. I am doing this interview for my master's thesis, "Design and Technological Values in People's Memory Practice." The purpose of this interview is to hear your stories on how you keep and recall memories using different memory practices and means. This interview will take about 45 minutes. During this interview, I will take notes and with your permission, I will audio record so that if there's something I miss, I can go back and listen. First, I need to get the informed consent form signed. Please take one copy and give me the other. If you have any questions, feel free to ask me.

(Get the informed consent form signed)

Now, I will explain more about what I am doing for my research. I am interested in what people want to remember in their everyday life, and how people remember and recall them later. If there are interesting memory practices that people use, I'd like to hear that as well. Since it's going to be a qualitative study, interview is the most important part of the study. So again, thank you.

Well, it's not complicated at all. I just want to hear your story, ideally in your home setting, because lots of things in your home will "remind" you many stories. However, coffee shop near Berkeley campus works just fine for me.

2. Warm up discussion

So just give you a little bit of sense... I brought this book. This is a book that I bought about six years ago, from a used bookstore near my high school. It has been quite a while, but I exactly remember when and where I bought this book because whenever I buy a book, I write down date and name of the store.

- **So can you think of an item that reminds you of your past memories?**

3. Main Interview

Emphasize that the story is about memory practices at "**home environment**", using "**tangible artifacts**"

- **What comes to your mind when you think of a "memory object"?**
- **Could you give me an example of your memory practice?**
- **Tell me about time when you had to remember something but you couldn't.**
- **Tell me about time when you use "reminder" or "reminding cue"**

Check if you had any experience forgetting the below items:

1. Directions
2. Location of common items (keys, wallet, cell phone)
3. Location of uncommon items (cooking items, small gadgets)
4. Cooking (recipes, ingredients, etc)
5. Reading (what previous story/chapter was about, or stopping point)
6. To do list
7. Grocery shopping list
8. Making and keeping appointments, schedule info
9. People's names, faces, past conversations, phone #
10. Taking medicine
11. Important dates, people's birthday
12. Informational postal mails, catalog

Check if you use any of these items for memory practices:

1. Calendars
2. Diaries
3. Alarm / watches
4. Whiteboards, tack board
5. Hanging something on walls, attaching something on a fridge
5. Photo album, photo frame, slide
6. Post-it notes, memos
7. Hand-held electronic schedulers (iPhone, Palm...)
8. Electronic calendars or other electronic reminder program
9. Relying on other's memory

- **Can you go through the first list and explain about how you organize these items in order not to forget?**
- **Can you go through the second list and explain how you use these items for memory practices?**
- **Tell me about the oldest item that you own?**
- **If you can leave only one item to your closest person, what would that be?**
- **What triggers your memory beside visual cues? (Smell or auditory cues?)**

4. Wrap up

- **Do you have any questions about me?**
- **Do you have any questions about this research?**

- **Can I take some pictures of your memory objects?**
- **Could you think of anyone who might be interested in this interview?**
- **Please fill out the demographic information form.**

Thank you.

Appendix C. Coded Transcripts

(Interviewee 1) Ryan – 03/03/08 2:00–3:30pm @ Strada

Eun Kyoung(E): Can you think of any item that reminds you of your past memories?

Ryan(R): I think we have many things. {association}Our whole family keeps too many things, not only do they have {keep>why} usefulness {/keep>why} but because they also {keep>why} remind us of a {trigger>what}time{/trigger>what}, and {trigger>what}place{/trigger>what}{/keep>why}. They might not have date on them, but their {trigger>what}association of what, and where something has been worn in different places{/trigger>what}, or something like that.{/association}

E: Can you think of any specific items?

R: I have some {memoryObject}booklets{/memoryObject} from my children that they made for father's day, probably 20 years ago. {memoryObject}{trigger>what}They made a dice in father's day, they colored the six sides different, so when I was making choices for coloring buildings or materials, then I rolled a dice and I knew what color to make it. And that reminds me of them (children) at their particular age. So I saved that. It's sitting at my home.{/trigger>what} {/memoryObject}

As memory kinds of things – {memoryObject}Photographs{/memoryObject}, I keep of course. {memoryObject}{trigger>what} I have clothes that are from a long time ago, I have a Nero shirt, it's from 1968. It's named after Nero of Egypt, it was popular for one year, and I had it, because I thought it was pretty neat. So I saved it. I wear it for Halloween. I don't wear it otherwise – because it's out of fashion, but it reminds of that period of time{/trigger>what}.{/memoryObject}

I have {memoryObject}patches from Boy Scout{/memoryObject} – as an adult leader, too. {memoryObject>gift}People have given me little gifts, and they are {keep>why}usually not that expensive, but meaningful, so I save those{/memoryObject>gift}{/keep>why}. And {memoryObject>meaningfulMemory}from a special campfire, like...we went to World Jamboree in Holland, in 1995, they saved the ashes from the campfire of... scouts from different countries. And we all got a little container of ashes – so I've saved those kinds of things as memory.{/memoryObject>meaningfulMemory}

{keep>where}We have some boxes that we should throw away, but then ... we have a box of {memoryObject}books that we used to read to my children{/memoryObject}, we put them in boxes. {keep>why}We have to give them to our grandchildren.{/keep>why}{/keep>where}

E: So do you live with your children right now?

R: No, They are in Uganda (PeaceCorps) right now, but before that, they lived nearby. (Walnut Creek, and East Palo Alto) Chris [his wife] and I live in a same house. We built our house. Yes, you missed the Christmas party! And we invited you over Thanksgiving, too!

E: Can you go through the first list and explain about how you organize these items in order not to forget?

R: I can say, 'yes' to probably all of these, and {memoryPractice}I have my own ways of organizing things on this list.{/memoryPractice} {forget>what}I don't usually forget simple tasks, but if I do, I do have instructions when I forget something.{/forget>what} {memoryPractice>notUse}I don't do diaries usually. I have sometimes, but not very good at writing all of these.{/memoryPractice>notUse} {memoryPractice>notUse} I don't have whiteboard to keep things on.{/memoryPractice>notUse} {memoryPractice}I wear watches.{/memoryPractice} {memoryPractice>list}Usually I write lists of "To do" tasks.{/memoryPractice>list}

Actually {memoryPractice>piling}I don't really pile things up around me, sometimes I do, I just put things aside, then I'd remember.{/memoryPractice>piling} {memoryPractice}But {association}I have uncanny way of seeing something elsewhere that triggers my memory... It may not be at home, but for some reason I have an association which has association which has....association... that's what you need to do.{/association} {/memoryPractice}

E: What are some of the examples?

R: {memoryPractice>postal>bills}{keep>where}They might be answering a letter, or paying a bill, so put a bill on a spot, sometimes the things...I put by the door, so I step over it...usually by the door is one spot. It might be on the dining room table.{/memoryPractice>postal>bills}{/keep>where}

{memoryPractice>list} I write a list, usually at home, not at work as much. {/memoryPractice>list}For the things I have to do at work are usually large things, so I know what I have to do. And my company provides me with information of what I need to do. {memoryPractice}They (company)'ll use email at the office, but that's more informational, I sometime left email windows open, and I keep it there so that I have that coming up.{/memoryPractice} {memoryPractice>calendar}I also use calendar a lot; mark on the calendar.{/memoryPractice>calendar} {characteristic>elderly}My life is not that complicated.{/characteristic>elderly} {memoryPractice>notUse}I don't need a scheduler.{/memoryPractice>notUse} {characteristic>elderly}For today, what I do for today is pretty routine.{/characteristic>elderly} And so, {memoryPractice>calendar}{memoryObject}all I had to write down was that I was gonna meet with you (on the calendar){/memoryObject}{/memoryPractice>calendar}.

{memoryPractice>notUse}I don't use electronic calendar, probably because then

I have to turn on the computer to look those things up. `{/memoryPractice>notUse} {usage>computer}` I don't check email once or twice at the most because for the kind of work that I do either at the office or at home. `{/usage>computer}` In the office, I draw. `{usage>computer}` I don't need to refer to the computer that much. Unless I'm writing a letter or something or looking up for something, I'm not always on the computer, and I don't play computer games. Researching something, that might be a reason for using, or writing letters, putting up photos. `{/usage>computer}`

E: It seems that you are writing many letters.

R: No, we write letters just to Chris's parent. And right now we are writing letters to Emily in Uganda, weekly bases. We type it on the computer, and print it out. `{usage>computer}` Sometimes we could do it by handwriting, too, but sometimes some things that we are telling to one person, we might copy that will save some time. `{/usage>computer}`

E: Do you use electronic calendar?

R: `{memoryPractice>postIt}` I use post-it notes sometimes for memory devices; I don't put them on the computer like most of the people... putting them around the edges of computer because that's not my workstation. `{/memoryPractice>postIt} {memoryPractice>postIt}` I don't really use post-it notes often, but if I do, letter or a piece of mails that we got, if there's some action we have to do, either to highlight them with color or make a note on them to whatever, it might be a `{trigger>what}` catalogue item that I'm considering for purchasing `{/trigger>what}`. `{/memoryPractice>postIt}` So we don't use them too often. `{memoryPractice>watch}{attention}` I use my watch a lot; I pay attention to my watch when I have something to remember. `{/memoryPractice>watch}{memoryPractice>watch}` We set the timers in the morning, but I usually wake up right before alarm rings. `{/attention}{/memoryPractice>watch}`
`{memoryPractice>direction}` As far as checking for directions; I write that down when people tell me. I might look at up MapQuest for directions, but usually we look at maps for directions. `{/memoryPractice>direction}`
`{memoryPractice>direction}` Otherwise, I might call if I'm calling a store that I need to go to, I might ask them and get directions, and I write those down. `{/memoryPractice>direction}`

`{memoryPractice>common}` And location of common items, keys like that, I put them in a same spot all the time. I locate my keys - `{keep>where}` I have a spot in my backpack, daypack that I carry with me for work `{/keep>where}`, and at home... I have it `{keep>where}` in my dresser in my bedroom `{/keep>where}`. `{/memoryPractice>common}`

`{forget>what}` What I don't remember very well are the things Chris has organized in the kitchen. `{memoryPractice>uncommon}` Like ... maybe the garlic press - small item. When I'm cleaning the dishes, I put it in the wrong drawer. `{/memoryPractice>uncommon}` `{forget>why}` Because I organize... I'm

thinking, “That’s probably over here because it’s similar to this item...”, but Chris would say, “That’s not”`{/forget>why}` or she would say, “Yes, I did that in the last place that we lived, but that was 20 years ago”. And she re-organizes. So I do forget those kinds of things.`{/forget>what}`

`{forget>why}`Even though I should remember, I don’t why...because I don’t place enough importance on where things go. `{/forget>why}`

E: How about cell phone?

R: `{usage>cellPhone}`We don’t lose our phone because we don’t have cell phones`{/usage>cellPhone}`

E: How about wallet?

R:`{memoryPractice>common}` `{keep>where}`I keep my wallet on me, and I also put it in my dresser. It’s a little wooden tray that holds my wallet and key. So whenever I’m home, I automatically put it there. If I don’t make it up there to do that, then I would put them on the stairs, because our bedroom is upstairs. So if I just come to the living room, and I don’t go upstairs to put it away, then I’ll just put it on the stairs. `{/keep>where}{/memoryPractice>common}`

Cooking recipes... `{memoryPractice>cooking}`I remember where recipes are...that’s not a problem. I don’t remember how to make something without following the recipes. We have cookbooks. And I don’t cook that much.`{/memoryPractice>cooking}` Ingredients are the things that I... sometimes I find them, sometimes I don’t find them in the same spot. But I do have my own things like my artwork that I’m trying to find. If I am careless, if I’m working and place something down, and later think about where I placed them, then later on, I’ll look for where it is, and I’ll be looking and looking...

`{memoryPractice>organize}`So what helps me is to make sure that I put things back or put them in a systematic way so that I can remember.`{/memoryPractice>organize}` Or the way I finding it is... I say “Hmmm”, then Chris says “What? What’s wrong? are you missing something?” “I can’t find something...” And she says, “What is it look like?” and she helps me. Chris is my memory device.

Making and keeping appointments and schedules...`{memoryPractice>calendar}``{cues>visual}`I have a mental image of the calendar, so I just place things into the calendar and I know I have so many days to do something so I know to back up by knowing what tasks I need to do beforehand.`{/cues>visual}{/memoryPractice>calendar}``{memoryPractice>notUse}` I don’t go writing out a flowchart, I should do that whenever my life gets too complicated, and I’ll do that if my life gets too complicated, writing, highlighting on the calendar and using post-it notes.

`{/memoryPractice>notUse}``{characteristic>elderly}``{memoryPractice>calendar}``{simplicity}`But otherwise just for simple kind of things, you know, my life is pretty routine, then I have a pretty good memory about what’s on the calendar because they stand out.`{/simplicity}`

`{/memoryPractice>calendar}{/characteristic>elderly}`

E: How about shopping list?

R: `{memoryPractice>shoppingList}`We have an ongoing shopping list for a grocery store, when we notice a certain item is ran out of, it is posted in the pantry. So we know where to find that list. And Chris organizes it by the grocery stores, so if she needs flour, she will put it down further on the list spatially, because she knows how the store is arranged. She'll have a group of things that she has to buy in the first aisle as opposed to the whole store. She goes to aisle by aisle.`{/memoryPractice>shoppingList}` I don't know the store that well. I don't remember aisle by aisle. I know what's at the beginning, what's at the end, but I don't know the middle. That's how she remembers.

`{characteristic>couple}`We remember different things. She has a good memory. I remember a lot of tasks, and she remembers numbers extremely well.`{/characteristic>couple}` She has a certain things that she remembers very well. `{forget>what}`Me with the numbers... I am terrible at remembering numbers. Sizes and anything with the numbers... I remember the digits in the number, but I might forget what power of ten it is. And it is embarrassing as an architect. I remember our house is 2,300 square feet. But I used to tell people that it's 23,000 square feet. I was off by a power of ten. I should remember these things... so I have to write these down. I do that all the time. When I listen to the radio report, I don't remember the national debt; not so much the digits...`{/forget>what}`

People's names, faces, and past conversations;

`{forget>what}{memoryPractice>nameFaces}`I used to forget people's name all the time, but I have made it a practice to remember people's name; usually if I know their first name and their last name, it's so much easier than to say, their first name only. If it's Bill, then it could be Bill, it could be Tom, it could be some simple easy name like... but if it's Bill Young and I'll remember Bill Young, and I'll associate those two names with the person's face rather than just a simple name.`{/memoryPractice>nameFaces}{/forget>what}` And two, `{trigger>what}{memoryPractice>phone}{memoryPractice>nameFaces}`I like to have a phone directory. Because when I look over the phone directory, I see their name then it will trigger their face. So if I'm coming to a place that I haven't been to for a while, if I keep their directory of the people that usually attend that kind of meeting, then I'll look it over, and I'll remember their faces. So by the time when they are here, I'll see them and I'll be able to respond by their names. `{/memoryPractice>nameFaces}{/memoryPractice>phone}{/trigger>what}`

E: How do you usually make a phone call?

R: `{forget>what}{memoryPractice>phone}`I usually remember the first three numbers and then the next four. I can usually remember for short term; it's just that after a while, when I have a conversation later on, I'll get even numbers mixed up or get the power of 10 off; immediately it's okay, but it's just long term

memory... because I don't have sense of value of number than people.
{/memoryPractice>phone}{/forget>what}

E: How do you organize your postal mails?

R: {memoryPractice>organize}{memoryPractice>postal}I guess our mail comes as either a junk mail, which we immediately throw away, or bills, which we've been put together in a spot in the kitchen. And then we also have letters from people, which are not too many. Informational letter- those things get sat on the dining table with a note that we have to do this or whatever.
{/memoryPractice>postal}{/memoryPractice>organize}

E: How about Christmas cards, or something you want to keep for long period of time?

R: {memoryPractice>organize}We are not very good at how to organize those letters.{memoryObject} We keep some of the cards that are extra special.{/memoryObject} And then we throw others away. And they get up on a stack, and we have problems with stack. It's problem there, I don't know what to do with the things that are considered meaningful. We want to save it, but I don't know whether we'd put in a box or...{/memoryPractice>organize}

E: Is it because you don't know when you'll read them again?

R: Yeah. {keep>why}Sometimes we don't want to throw them, but we don't really go back and re-read them until we happen to just look for something else, and find them. I guess I feel safer to keep them. I don't like throwing those.
{/keep>why}

E: What are some of the important things - either informational or personal - that you want to remember?

R: {memoryObject}Well, photos are important, and letters - we don't have many letter, because we are around each other most of the time.{/memoryObject}
{memoryObject}{keep>why}I save my drawings and sketches of ideas that I've done{/memoryObject} - I like to refer back to those. I always save the one that I really feel good about. With the intention that even though we won't able to use that for the particular building, it's good idea for the future. But I never ever seem to use that idea-they usually becomes a springboard for another idea, it becomes a part of continuation. {/keep>why}

{memoryObject>meaningfulMemory}I think it's important to know my history as well as to have memory of other people. What I mean by my history is that ... knowing my ideas and how they've changed and how I've developed that ideas.{/memoryObject>meaningfulMemory}{keep>why}{memoryObject>meaningfulMemory} Also even little things from my childhood, knowing this is what I was like then, and how I've developed to what I am now. Sometimes it reminds me of how I've improved from then, and sometimes it reminds me of that there was something special back then that I don't want to forget about and that I want to

continue as a person. `{/memoryObject>meaningfulMemory}{/keep>why}`

E: How do you keep your personal histories?

R: `{memoryPractice}{repetition}`I guess, since I don't write diaries, I guess it's partly by retelling stories to others, to our children.`{/repetition}{trigger>what}{memoryObject>meaningfulMemory}` And then the other things are the artifacts, like photographs or objects like... some people save tickets to a place... I don't save those, but there's other things that are meaningful and reminds of that time.`{/memoryObject>meaningfulMemory}{/trigger>what}{/memoryPractice}`

E: Do you have some items that you consider are meaningful?

R: ...Yeah, I do remember. `{memoryObject>meaningfulMemory}`One of the things that's really special is that I have a letter from my mom to my dad on the day that I was born. My mom wrote to my dad about what she'd hoped that I would be...she hoped that I would have the qualities of my father and yet she wanted me to have my own quality. I didn't know about this letter until my parents died. They had a box of letters and I found this letter among them. I thought this is very special. So I do save that. `{/memoryObject>meaningfulMemory}`

`{memoryObject}`I'm trying to remember now... that I have a box of memories from my graduate school and high school, and also from Boy Scout.
`{/memoryObject}{memoryObject}`Also I have my drawing from when I was a boy – My parents saved those drawings.`{/memoryObject}`

E: If you can give/leave one of your items to your closest person, what would that be?

R:`{memoryObject>meaningfulMemory}` The things that I think are meaningful to me may not be meaningful to them, and the things I don't think are meaningful are things that they do feel meaningful. It's like...to write something special for their graduation. Often times, they are nice, but... they are not that meaningful. I don't think very much of, but they treasure. I won't know. I can't really say.`{/memoryObject>meaningfulMemory}`

Other memory devices: other things that are not visual.

`{cues>smell}{trigger>what}`Like smells. I can feel the air, I find sometimes, the humidity or the lights reminds me all of a sudden of a particular times, a long ago memory.`{/trigger>what}{trigger>what}`And maybe smells in the air...when I go to an apartment building and if I smell something cooking, then I'd say "Boy, I haven't smelled that for a long time", that reminds me of a place or time and I think those are also good memory devices.`{/trigger>what}{/cues>smell}`

`{trigger>what}{designIdea}`How one might do that? I don't know. If you can record smells, it could be recording smells of cooking, smell of grass, spring smell is different from fall. In the spring you smell the flowers and in the fall you smell the decayed leaves. I think those things are really triggering my

memories.{/designIdea}{/trigger>what}

We've been talking about visual devices to help me out, but {trigger>what}{cues>sound}also, sounds can be that too. People have favorite songs they like to listen to. There might be a song that you haven't heard for a while. They may transport you back to a long ago time. An Golden Oldies, or it could be Christmas music. Especially in California, where it's really hard to have spirit of Christmas, it's not cold and it's not snowy, so Christmas music is a one way of get in the mood of Christmas.{/cues>sound}{/trigger>what}

E: What's hanging on the wall or on the fridge?

R: {memoryPractice>notUse}We don't put things on the refrigerator, because Chris didn't feel like to do that so we haven't done that.{/memoryPractice>notUse} {memoryPractice>photo}We have a photo album.{/memoryPractice>photo}{memoryPractice>notUse} {memoryPractice>hanging} We do have a tack board, but we don't really use them. {memoryPractice>list}We have a running list of movies that we want to see, so we keep that on the tack board.{/memoryPractice>hanging}{/memoryPractice>list} {/memoryPractice>notUse}

E: Do you have any system that reminds you to take medications?

R: {memoryPractice>medication}I have an injury right now, so I am taking a medicine for nursing my leg three times a day, so I remember that by taking it at meal times. That's how I do it. And I'm also taking some allergy medicine - so {keep>where}I take that twice a day, so I placed my little medicine bottle in the bathroom, and I see it and I remember it. Vitamins, I put it on the dining room table.{/keep>where}{/memoryPractice>medication}

E: Do you ever rely on other's memory?

R: {memoryPractice>relyOnOthers}Chris(his wife) is usually a reminder.{/memoryPractice>relyOnOthers} {memoryPractice>relyOnOthers}Colleen [the music director at the Newman Hall] will remind us of what we are doing.{/memoryPractice>relyOnOthers} {trigger>reminder}I try to remember without the reminders.{/trigger>reminder} {forget>what}But if I forget, ... I usually don't forget what to do as much as where I may put something.{/forget>what}

E: How do you organize photos?

R: {memoryPractice>organize}{memoryPractice>photo}The ones on the computer are easy to organize. I organize them by giving them a title, like a location or a date, or a subject matter or date. I have slides that I've photographed. {memoryObject}The ones that contain arts, I put into a slide, in a catalog of my artwork.{/memoryObject} And I have all those slides dated, dimensions, and subject matters... And things that are particular places... then

I'll put them in a box of slides, and put what the subject is... I organize them(box of slides) chronologically. Special things... like if we go on a vacation or we have a weekend trip, then we have photographs of those, and recently, we have been using a digital photographs, but in the past, we took slides, not paper photographs. Each comes 36 slides in a box, and then I would label the box what the activity was. Then I would place them in a bigger box with a chronological order, so if I'm looking for a trip to the Southwest, I'll look back when I went the trip.{/memoryPractice>photo}{/memoryPractice>organize}

E: I asked all the questions that I have. Thank you

-End-

{/name>Ryan}{/gender>male}

{gender>female}{name>Meg}

(Interviewee 2) Meg - 03/08/08 2:00-3:30pm @ Meg's House

Eun Kyoung(E): Can you think of any item that reminds you of your past memories?

Mary(M): {memoryPractice>photo}Definitely photographs. I've got... see all those albums, and I've got more pictures and boxes that I haven't sorted yet.{/memoryPractice>photo} {keep>what}Those are mainly my nephews and nieces, I have 6 nephews and nieces, so as I've been starting to collect their pictures over the years, I've created albums of each of them, so definitely, photos are important for me.

{/keep>what}

E: Do you have a specific time of the year to organize those photos?

M: Not yet. No. {memoryPractice>organize}Sometimes, I go through the boxes and keep adding to the albums. {/memoryPractice>organize}

E: Do you add some texts beside the photos?

M: {memoryPractice>photo}{keep>what}I try to write their names, ages, dates and places.{/keep>what}{/memoryPractice>photo}

E: I also see many posters on the wall. Did you bought these posters when you went there?

M:{memoryObject>gift} A friend gave me that as a gift.{/memoryObject>gift} She and I went to the Yosemite many times. And {memoryPractice>photo}{memoryObject>gift}that's the picture that Colleen took actually. She does beautiful photography. Umm. That was a gift.{/memoryObject>gift}{/memoryPractice>photo}{keep>why}{memoryPractice>poster} This is for memory. I was in Hawaii with my family. We went to that volcano, and when we came down, I bought this poster.{/memoryPractice>poster}{/keep>why}

{memoryPractice>poster}{memoryObject>meaningfulMemory}{keep>why}Another one ... of Yosemite. Yeah, some of them are for memories. That black and white print is from another trip to Hawaii with another part of families on a different island. I haven't thought of the whole memories, but lot of things on the wall have memories.

{/keep>why}{/memoryObject>meaningfulMemory}{/memoryPractice>poster}

E: What comes to your mind when you think of a "memory object"?

M: {memoryType}Something that helps me to remember either informational or positive memories. {/memoryType}

E: So can you tell me more about what would be in informational memory?

M:{memoryType>informational} Appointments... I have a lot of appointments to keep. And memos and notes.{/memoryType>informational}
{memoryType>informational}{keep>what}Things that I am interested in studying and learning.{/keep>what}{keep>why}{keep>what} Trainings that I've taken. I usually write down{memoryPractice>noteTaking} tones of notes at workshops{/memoryPractice>noteTaking}, partly because I can look back and partly, I need to use many senses as I can to get information, so I'm looking at the speaker, looking at the Powerpoint and listening to them and writing, so I can figure more.{/keep>what}{/keep>why} So those are all informational (memories). {/memoryType>informational}

E: How about positive happy memories?

M: How do I hold those, or what would be contained in it?

E: Yes. (The latter)

M: Umm...{memoryType>personal>positive}Times with my family, if it's just us getting together, or if it's special events{/memoryType>personal>positive}. Positive memories... Choir that I was in... So I haven't thought about it, but {memoryObject}I bought two of the (choir) books that we used.{/memoryObject} One is the Messiah, and another one is the red book like a lot of the music came out of those books.{keep>what}{memoryObject} I've got a guitar music book that we used to play and sing together. {/memoryObject}{/keep>what}{memoryType>personal>positive}So it's moment with friends, moments with family, places in nature, artwork that I've done.{/memoryType>personal>positive}

E: Do you paint?

M: No, {memoryType>personal>positive}when I have time, I used to weave. I do a lot of photography, handmade papers, I make cards, so all those are positive memories. {/memoryType>personal>positive}

E: Can you give me an example of memory practice to hold those either good

memories or informational memories?

M: Like taking a note?

E: Yes, that's a great memory practice.

M: {memoryPractice>calendar}I have a calendar that I write in.{/memoryPractice>calendar}

E: Do you mark on the calendar?

M: Yeah. {memoryPractice>postIt}I have yellow post-it notes. I write myself notes of places on those yellow sticky notes.
{/memoryPractice>postIt}{keep>why}{memoryPractice>memorizing}Memorizing songs... the songs that I sang with my old choir, I try to learn the words, so that I can have them with me during the day.{/memoryPractice>memorizing}{/keep>why} {memoryObject>card}I leave cards up that people sent to me. That's Christmas. I've got Valentine's on the other door. {/memoryObject>card}{memoryPractice>photo}I have my photos around.{/memoryPractice>photo}

E: Was there a moment when you had to remember something but you forgot?

M: Oh sure. ... I can't remember... {forget>what}Well, this morning, I took a car to the mechanic, and they always want to know the mileage on a car, but I forgot to put that in my mind until I got into the office and filling out the form, and I knew "Oh, yeah. I need that", and I went back to the car and looked at it.{/forget>what} {forget>what}I was talking to two friends last night, and there was something I was gonna say but I forgot. But things that I need? or anything?{/forget>what}

E: Do you sometimes use a reminder or a reminding cue?

M: So like the yellow post-it?

E: That could be one.

M: {trigger>reminder}I have note that says, "set the clock tonight", so some of the practices and cues overlap because my calendar is a big cue for me.{/trigger>reminder}

E: What kind of note do you write down on the calendar?

M: {keep>what}{memoryPractice>calendar}I write the time and the person's name, the events, sometimes I write in other things like the date library books due.{/memoryPractice>calendar}{/keep>what}

E: Do you use electronic calendar or software?

M: {usage>electronicCalendar}{usage>computer}{simplicity}No, if you consider

an alarm clock electronic...I do better in paper and pencil. Well...it's what I grew up with. That's one. I love computers but I don't like managing a lot of electronic stuff. I like the calendar, it's just so easy to erase and change, only take two seconds. [{/simplicity}{/usage>computer}{/usage>electronicCalendar}](#)

E: But you seem to use computer a lot. How many hours per day do you use computer?

M: [{usage>computer}](#)Email – once a day. I have two computers – there's one at the school that I work. So I have to check that every morning for business. And I have my own at home for personal and professional stuff, so I do that at night. So I'd say, in the morning, I check professional stuff for about fifteen minutes, and then at night, it could be an hour – it's a way that I relax. [{/usage>computer}](#)

E: I created this list of memory objects and memory practices. Please check if you ever had trouble with remembering these memory objects. And check if you have used these memory practices.

M: Lot of these, I have systems to back me up. (Direction) [{memoryPractice>direction}](#)If it's a place that I haven't been... like a friend's house. If it's a new place, I usually google it and print out a page. If it's a place I've been two or three times, I usually kept a sheet in a file that says 'maps to friends' houses or places'. Then there's a time that I think, 'Oh, I've been to a hotel for a class. I knew where the place is', then I drive there and find the place. So usually I have a backup, but sometimes I think I know it but I don't. [{/memoryPractice>direction}](#)

E: Do you use a real maps?

M: Sometimes I do. Yeah. I go to a AAA office. [{memoryPractice>direction}](#)I got a whole set of maps in my drawer and in my car. [{/memoryPractice>direction}](#)

E: How about location of common items?

M: [{memoryPractice>common}](#)They all live permanently in [{keep>where}](#)my purse[{/keep>where}](#). There is a pocket for each of them. Once in a while the keys fall out of the pocket and it's not there where it should be and I panic, but usually they are in the bottom of my purse. Either there, or in my office when I'm working, I keep my keys [{keep>where}](#)in my pocket[{/keep>where}](#). But at night I put it back to my purse. At school, I have [{keep>where}](#)a book bag[{/keep>where}](#), so those keys are either with me during the day or end of the school day, they go back to my book bag. So I have a system. It saves my anxiety. [{/memoryPractice>common}](#)

E: Uncommon items?

M: Well, my place isn't too big, so there aren't too many places they can go. [{memoryPractice>uncommon}](#)Sometimes I end up going through the drawer, like it's got to be here, it's got to be here, and then I get really frustrated when I

can't find something because I try to be organized so that I don't have to put out that kind of energy. `{/memoryPractice>uncommon}`
`{forget>what}{forget>where}`I lost a blank check recently. And I talked to the bank, and I couldn't find it, so I canceled out the number and they said, "Oh, you should open a new account", and I said "Let me see,"... I think that is happened, but what bothers me so much is that I couldn't find the one check because I am pretty careful about that stuff. `{/forget>where} {/forget>what}`(Cooking)
`{memoryPractice>cooking}`I have a file of recipes, and a big binder of recipes. Those are all together. `{/memoryPractice>cooking}`

E: Something related to reading?

M: `{memoryPractice>book}`That's harder. I listen to CDs in the car, and if they are so good that I had to tell my friend the one thing that I learned, it's tough. A reading a book, I usually mark a lot of things so that I can skim back and get them. `{/memoryPractice>book}`

E: How do you mark?

M: `{memoryPractice>book}`I usually draw a line down the margin, and mark the section, and I put a box around keywords and underline around them. I put a piece of paper in the book. I do use a bookmark. `{/memoryPractice>book}`

E: Do you have your own way of keeping a 'To do list'?

M: `{memoryPractice>list}{memoryPractice>calendar}`I do. I've got on top of the calendar that I write by hand. `{/memoryPractice>calendar}{/memoryPractice>list}` I'll show you. [She brought her calendar book] So, this is my calendar. I got it at the school that I work. `{memoryPractice>calendar}` And it's got a square for each day. So I write in... the top half is `{keep>what}`appointments`{/keep>what}` that I have at school that I have committed to other people, and the bottom part is my clients. `{keep>what}` I put little things to the sides, things that I need to remember and circles. `{/keep>what}` And `{keep>what}`people's birthdays`{/keep>what}` at the top. So, in the beginning of the year, beginning of an academic year during the summer, I go through and I write in all the birthdays and all the anniversaries in red, so I've got those. And then I fill in the dates that I have. `{memoryPractice>list}`Then here's the to do list. Some of these are things like I'm gonna do it at some point and I write them down, and I cross them off and lately I recopy because I've been using quite and I just write over. This is ready to be recopied. And then sometimes, I have stuff that is more urgent, so I just write them here and cross them off. `{/memoryPractice>calendar}{/memoryPractice>list}`

E: Do you write down this 'To do list' in the morning?

M: `{memoryPractice>list}`Some days, like on a weekend, I might write the to do list. `{/memoryPractice>list}` And then I carry ... this is my address book... and these are schedules and things like that... `{keep>what}`Elephant Pharmacy (flyer);

maybe I'd go to a class so I'd look at it. And I just carry those (list of) talks that coming up that I might want to go...faculty lists, {characteristic>single}things reminding me of taking care of myself.{/characteristic>single} If I lose this, I'm in trouble. {/keep>what}

E: Do you always carry this calendar with you?

M: During the week. Not on the weekend. Unless I'm going ...like I'm going to see my friends that I see ever so often. {memoryPractice>calendar}My friends, we see every two weeks because we practice something with each other. Then I bring my calendar so that we can set the next date. {forget>why}That's because I can't remember everything.{/forget>why} So I have good support systems. {/memoryPractice>calendar}

E: And it seems that you have so many schedules.

M: {memoryPractice>calendar}I do have a lot of appointments. {forget>lost}Yeah, I write in the ones that I've committed that time with the people. Because that's one of my worst fears of missing one of those. And then I fill in other appointments that I make around those.{/forget>lost} {/memoryPractice>calendar}

E: How about people's names and faces? [At this point, the interviewee understood the questions and the stories that I was looking for, and explained all the organization system that she's using]

M:{memoryPractice>nameFaces} That's hard. That's probably... that remembering some of what I've read are the hardest one. Usually I can ... if it hasn't been long time and people haven't changed a lot, then I can remember the face, but I usually just say to the person that I remember you but I forgot your name, so please just tell me... you know... I just not to pretend, because I keep getting more uncomfortable and I can't focus on what they are saying. And at my schools, kids that I've taught, they come back in their 30s and say "You taught me", or "You taught me in another school," and it happens a lot, and their children are going to school and now I've taught them and see their children. It's wonderful, but I can't recognize them, and you know...and then they say their names and I begin to think about them and picture them as a 6th grader. But being introduced to somebody like at church, I have to struggle, trying really hard to remember their names, and by the end of the day, if I don't remember, I ask them again.{/memoryPractice>nameFaces}

E: So when people give you their name cards, how do you keep them?

M: I put them in a same pocket in my purse with my keys, and then{memoryPractice>nameFaces} I have a file for business cards, or depending on whether I'm gonna see them again, I add them in my address book.{/memoryPractice>nameFaces} These are the ones that I have to give referrals often, so if this could help to somebody I know, I write them on here so that I can remember.

E: If you have to make a phone call, how do you look for the phone number?

M: {memoryPractice>phone}{memoryPractice>memorizing}There are a few friends' phone numbers that I know by heart, and I know some of my families' phone numbers. Other than that, I just pull out the lists.{/memoryPractice>memorizing}{/memoryPractice>phone}

E: Do you have a cell phone, right? So do you ever use a contact list on your cell phone?

M: {usage>cellPhone}I don't have anybody entered except two people who've taken my cell phone and said, "I want you to have my number in here," and put their number in, but I still don't use it for a lot of reasons.{/usage>cellPhone} I don't know if you need these reasons...[Yes, of course!]
Reasons?{usage>cellPhone} I use my cell phone mostly for business. Like ... if I'm gonna be late for an appointment with somebody or if my car breaks down and then stuck, it's wonderful to be able to call AAA. But {memoryPractice>notUse}I have five offices, I've got four places that I can receive voice messages, three places that I can get mails, and two places that I can get emails, so I have 14 points of contact, and I don't wanna manage my cell phone in with that. I have enough points of contact. So that's why.{/memoryPractice>notUse} {/usage>cellPhone}

E: Do you have any system that reminds you to take medications?

M: I do. {memoryPractice>medication}I take a lot of vitamins. So I take a couple of medications. There's something I need to take it every night, so I have it {keep>where}on my desk in my bedroom, because that's where I am at the end of the day.{/keep>where} So that's right there, and I know I have to take it about half hour before I go to bed. It physically reminds me. {keep>where}I have a couple of things I have to take it every morning as I get out of the bed, so I have them right on my night stand, they are physically right there.{/keep>where} Then I have vitamins that I take after breakfast, lunch and dinner. On the weekends, I have a system...I have those bags. I lay out 21 of them, breakfast, lunch, and dinner for seven days, and I open the vitamins and I've got a chart, so I put all the ones for breakfasts - breakfast, breakfast, breakfast... and for lunch, lunch, ... and like that. So when I've done that, I just put them all in a bags, and every morning, I take the bags - three of them and put old bags away and put the three new bags so I take the vitamins during the day. I sometimes forget lunch. But I'm really good about breakfast and dinner.{/memoryPractice>medication}

E: So you do this every Sunday?

M: I do it on the weekend. Like, mostly Sundays. And it works for me!
So{memoryPractice>organize} I stay very organized and that helps me remember a certain category. {/memoryPractice>organize}

E: People's birthday?

M: I write them in my calendar, and I've got ... there's a German name for a calendar... umm... I can show it to you that I have in my bathroom.{memoryPractice>calendar} It sounds rare but... a birthday calendar. There's a lot of these in stores that... they are long and narrow, and then each page and month, I put in people's birthdays and anniversaries or days of death, so in the morning, when I am ready, I look at it and I think of them.{/memoryPractice>calendar} So in addition to one that you saw...

E: How about postal mails?

M: I have a system. {memoryPractice>postal>bills} On my desk, I've got this box that divided into six sections, so most of the mails – bills and stuff, I just stick in, standing up on one end. Usually I open them... I looked at the date lately, because the due dates are coming sooner, so I highlighted the dates. And I pay the bills twice a month – middle of the month, and end of the month – and that usually works. {/memoryPractice>postal>bills}

E: How about letters from your friends?

M: That's less, because I don't get that many letters. I don't get many letters that I have to answer. So usually those are more of treasures. So I kind of put them on the door. And that reminds me of them, but I don't get that many letters that I have to answer. And if I do, I keep them in the section behind the bill, and eventually, I call the person and thank them for the letter and take them for a lunch. When I have time, I write back. The ones that I have to answer, they are in the section behind the bills.

E: So when the next Christmas comes, how will you keep the previous cards?

M: (Pointing to the last year's Christmas cards that are hanging on the door) {memoryObject>card} That's the longest that I've had them, because I haven't had time and space, but usually I throw them out after.{keep>why} But because I'm making cards, some of them I use to recycle the covers and stuff; that's why they are still up. I don't keep a list of who sent cards to me; I keep the list of who I sent cards to because I just want to send cards to people I want to no matter what.{/keep>why} {/memoryObject>card}

E: You are so organized. Have you ever thought about all these memory practices?

M: No, this is fascinating. {memoryPractice>organize} I know that I'm organized person, and I know I need these structures to help me do all the things that I'm doing, but I didn't realize how many systems I had.{/memoryPractice>organize}

E: Can you go through the second list and explain how you use these items for memory purposes?

M: {memoryPractice>noteTaking} I take notes when I go to a

conference. {/memoryPractice>noteTaking} {memoryPractice>diary}Diaries...I have a gratitude diary; it's a practice that I've been doing for the last two or three years. I get in bed, and right before I go to sleep, this says 'end the day with something spiritual', because it helps to sleep better. So I've started writing down the things that happened to me during the day especially the ones that I feel gratitude for. So I just write bullets and put phrases basically. That's the only kind of diary that I keep. {/memoryPractice>diary}

E: Alarms and watches?

M: {memoryPractice>watch}I have an alarm clock that I set.{/memoryPractice>watch}

E: Every morning?

M: For six mornings a week. {memoryPractice>watch}I try not to set it on Saturdays. I just wake up when I wake up.{/memoryPractice>watch} I have a very simple watch. So I just watch my watch.

E: Do you use a whiteboard or tack board?

M: No. Because three of the offices, I share with other people. So I can't have anything out of my own. Umm...here, I don't have a tack board, but at school, my office doesn't have a lock, and somebody uses during the weekend, so I can't have things like that.

E: What's hanging on your walls and fridge?

M:
{memoryObject>gift}{memoryPractice>hanging}{memoryPractice>poster}Like the posters...those are all gifts from people.{/memoryPractice>poster}{/memoryPractice>hanging}{/memoryObject>gift} Umm...{keep>where}I definitely put things on the refrigerator.{/keep>where} You can come and see if you want. (We moved to the refrigerator to see what's on there) {keep>what}These are ideas about recipes.{/keep>what} {keep>what}These are artworks from my nieces. Photos of nieces - Clara and [I couldn't hear]. Postcards from friends-friend in my prayer group. They travel and they still send them. I love looking at them.{/keep>what} Do you wanna see my vitamin list?

E: Sure!

M: (Opens up the shelf, and points to the chart,) {memoryPractice>medication}So breakfast, lunch, and dinner, and then these are the vitamins, I lay out the 21 bags here, breakfast - lunch - dinner - breakfast - lunch - dinner, so that's the system. I didn't use to eat vitamins when I was younger, but my body doesn't make everything I need, so these are supplements.{/memoryPractice>medication}

E: Photo albums...?

M: Lot of those. {memoryPractice>photo}I have...{keep>where}around the mirror and in my bedroom,{/keep>where} I have umm...mirror like this big, and people give me their photos, so I just stick them all around the mirror.
{/memoryPractice>photo}

E: Do you ever use slides? Mount slides?

M: {memoryPractice>photo}And a slide projector? Yeah, I used to do that, I've got thousands of slides. Because I did a lot of traveling internationally, and that was my souvenir. So I've got... very organized, of course. {keep>where}I've got a whole box (of slides) in my closet.{/keep>where} {keep>why}And I used them, partly because when I was teaching, partly just to show my family, and some of them might get printed and make into cards.{/keep>why}
{/memoryPractice>photo}

E: Do you use them nowadays, too?

M: {memoryPractice>notUse}(Slide?) No, because it seems outdated technology, and I haven't traveled this much. {/memoryPractice>notUse}

E: So do you use a digital camera along with a film camera?

M: I don't own a digital camera, YET. So I have just a regular film camera. And I keep loading the film. Eventually, that won't be in existence anymore...

E: Do you use any electronic calendar?

M: No, {memoryPractice>calendar}just this (holding her calendar book). That's my memory. {/memoryPractice>calendar}

E: If there's something not on the list, you can tell me of your own practices.

M: Yeah, I'm trying to think. This one's funny, but my mother used to do it, and I've seen other people do it and I do it once in a while, like...she's got a load of wash going, and she's in another part of the house, {cues>visual}{keep>where}{trigger>reminder}she'll put an object out of a place so that it will catch her eye to remind her, "Oh, yeah. I've got to put that in the dryer...", something like that. I do that once in a while, just put something out of a place and "Oh, yeah", that reminds me to do something.
{/trigger>reminder}{/keep>where}{/cues>visual}Nothing else comes to my mind.

E: What's the oldest item that you have?

M: I think I have my {memoryObject>oldestItem}birth certificate{/memoryObject>oldestItem}. Well, but that's different because that's a document. I think my mom gave us. So I think I have that. Then

`{memoryObject>oldestItem}`I have a picture of my parents when I was a baby. So that's probably the next oldest item.`/{memoryObject>oldestItem}` (showing me that photo frame) My mom and dad, they were married and after two years, I was born. It was in the drawer, and I think I said that I wanted it.

E: If you can give/leave one of your item to your closest person, what would that be?

M: That would probably be photos.

E: Photos of yourself?

M: `{memoryObject}`I've got a lot of photos of them. That will be a photo of... if we are together, that's nice...but maybe I took a picture of them in that place, and I gave them the photo,,,`/{memoryObject}`

E: What we've talked about was mostly visual memories. Can you think of other sensory cues that trigger your memories?

M: Umm...`{trigger>reminder}{cues>smell}`smell is such a strong cue that takes us back. Probably fish cooking, which is really smelly. `{trigger>what}`It reminds me of growing up at home.`/{trigger>what}` `{trigger>what}`Bakery smells, like sugars smells reminds me of my mom.`/{trigger>what}` She always gave us a lot of sugar. Umm...at school, hot lunches every Tuesdays, and some of the smells come up through the school. So I have my favorite smells - chocolate chip cookies. That probably reminds me of mother when I was growing up. Umm...Right now, I'm having a trouble with smell, because I became much more chemically sensitive, so lately when I am around people's cologne and perfume and powder, I sometimes start to feel sick. Or I remember, this just happened in last month, that they just painted the bathroom under mine, and the smell came through my apartment and I felt really sick from it. So some smells are toxic to me rather than just neutral. `{trigger>what}`Baking graham smells reminds me of my grandmother.`/{trigger>what}` She used to make dumplings and breads. Sometimes when I smell ethnic foods, it reminds me of my travels. Well, in this apartment, you can smell things like ... obvious from other apartments, people cooking. So some of the spices. Or `{trigger>what}`if I am walking, here in North Berkeley, there are so many restaurants, and just walking up the street smelling all the food reminds me of all the travel I've gotten to do internationally.`/{trigger>what}` So it kind of broadens my world.
`/{cues>smell}{/trigger>reminder}`

E: How about other sensory cues, like sounds?

M:`{cues>sound}` Yeah, some of the songs that we sing in the choir remind me of the choir that I was in. `{trigger>what}`I had wonderful experiences, so it takes me back to those times.`/{trigger>what}` `{trigger>what}`Songs that I hear on the radio, older songs reminds me of when I was a teenager, and in my twenties, and a place where I was living and growing up.`/{trigger>what}` I still contact with couple of my graduate school teachers, so if I hear their voices, you know when I

am in a conference or some places, I should pay attention, but they are not talking to me, they are talking to somebody else, but that triggers to the days when I was studying and when I was supposed to pay attention when I heard their voices. Like the sound of rain...{/cues>sound}

M: One more ideas (while she was filling out the demographic information,) most of the time, I am the one who's interviewing people so it's very different from this side when I hear "Thank you for listening", what just came to my mind is that when the clients come into the office, it's like a drawer in my memory opens up, and I remember things are available to me that they've told me, and I don't know where that fits, it's maybe other, but it's interesting experience, I don't usually have it in the same way during my rest of daily lives, but I do with my clients, if that makes sense.

M: {cues>sound}I have one more auditory idea - when my nieces were little and they called me up and leave messages or something, {keep>what}I tape recorded the message of the phone receives and I've got a whole tape of family messages and I keep adding on their little messages.{/keep>what} {keep>why}So someday I will just play those back and remember.{/keep>why} {/cues>sound}

E: Thank you. I really enjoyed it.

-End-

{/name>Meg}{/gender>female}

Table of Contents

	Page
1. Introduction	1
2. Related Work	3
3. Methodology	5
3.1 Recruitment	5
3.2 Participants	6
3.3 Interview Procedure	7
3.4 Interview Questionnaires	8
3.5 Digitization of Data	10
3.5.1 Transcribing	10
3.5.2 Coding scheme	10
3.5.3 Data Analysis Tools	12
4. Findings.	12
4.1 Memory Types	12
4.2 Memory Objects	14
4.3 Memory Practice	19
4.3.1 Writing Notes	19
4.3.2 Hanging	20
4.3.3 Organizing	21
4.3.4 Having Things within Reach	22
4.3.5 Relying on Others	23
4.4 Elderly People's Use of Electronics	24
5. Discussions	26
6. Conclusion	27
Bibliography	28
Appendix A: Code Sets	30
Appendix B: Interview Guideline.	32
Appendix C: Coded Transcripts	35

Tangible Memories and Elders: Objects as Containers, Reminders and Instruments

Eun Kyong Choe

School of Information, University of California, Berkeley
eunyoung.choe@gmail.com

Abstract: This article reflects upon elderly people memory objects and memory practices in their home environment. A memory object is defined as a meaningful object that calls up memories. A memory practice is defined as a custom that people practice regularly for remembering memories. An empirical study of elderly people on their memory objects and practices showed that they use tangible objects as containers for memories and reminders, as well as instruments of memory practice in their everyday lives. Following a brief discussion of the memory aid design heuristics for the elders developed from the empirical study.

Keywords: memory, elderly people, tangible object, qualitative, interview