

E X P M

R I W N C

I N G I S

B E L I E

V I N G

EXPERIENCING IS BELIEVING

**Bringing connection and understanding to people
in different perspectives.**

by
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EXPERIENCING IS BELIEVING

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The advancement of technology allows people to experience more collective activities and conversations than ever. Diversity issues surrounding gender, race, and age are frequently voiced and actively discussed in contemporary society. While rapid information transmissions seem to increase the fluidity of communications between groups or individuals, sometimes this process does not represent understanding, merely noticing these issues. The role of designers today is not limited to problem-solving and formal considerations, but creating more possibilities and facilitating communications between different groups. Under this premise, factors like empathy and an understanding of each other become more crucial than ever within the design process. This study will mainly focus on closing the gap between young designers and the elderly community through empathic design. It will provide a methodology to raise people's awareness of individual differences, and use participatory experiments to provoke empathy. By means of experiments revolved around one of our primary senses—vision, this thesis will generate personal experiences to create deeper insights that motivate and encourage people to comprehend things from different perspectives.

“Everything
we hear
is an opinion,
not a fact.
Everything
we see
is a perspective,
not the truth.”

- Unknown

We all have those days when nothing is going right: getting sick before an important conference speech, being stuck in traffic of a bad weather, arguing with clients back and forth, spilling coffee on your laptop.... We may think no one can really understand our feelings in that moment. There are all kinds of frustrating situations that happen in life every once in a while. However, imagining a life that is full of difficulties, in which opening a simple bottle cap can be a challenging task, just moving to a foreign country to accommodate different culture, or where reading the text on a menu becomes a hard thing to do.

Globalization and the advancement of technology allows people to experience diversity about regions, genders, generations, and cultures today. Although we can easily interact with diverse groups of people, sometimes we are not ready to embrace all these different voices, and still adhere to our own thoughts. In the past, the lack of exchange of information was a crucial issue when it comes to human activities. While today the lack of understandings has become a concern in society. For instance, a healthy person will not truly understand the life of a visually impaired person, an adult may not understand the feelings of a baby who cannot express itself well yet, locals are not aware of the culture shock immigrants feel. Our unique personal experiences cause us to have diverse ways of feeling and thinking. Without really putting ourselves in another's shoes, we may fall into prejudice and stick to our own ego. The goal of this thesis is to invite people, especially designers, to be aware of the “experience gap” among different groups or individuals. By using empathy as a method to bridge the differences or miscommunications.

Through experiments that simulate different visual perceptions of the target groups, empathy can be provoked in the audiences' minds. After having their own personal experiences, the audience can get similar feelings and thoughts, then reshape their attitudes and actions towards the different community. This process can build up both emotional and rational relations between participants. The aim of the thesis is to break disparity and further facilitate understanding and communication among different communities. The empathic mindset will become a significant capability for designers to communicate messages between individuals or groups in a society full of diversity.

LITERATURE REVIEW

- **Diversity and design**
- **Empathic design**
- **Aging**
- **Visual Perception**

Diversity and design

A research report Global Diversity Rankings by Country, Sector and Occupation, mainly commissioned by Forbes Insights and conducted by Oxford Economics mentions the ranking of employee diversity across different economies, industrial sectors and occupations, and it also provides a look at gender and ethnic diversity. One of the concepts in this study is to reveal that diversity can drive innovation. It encourages people to build and embrace a society that supports different communities, and additionally, to be aware of the difference of regional level. For instance, aging population and generational issues may be concentrated in Europe, while gender rights is the primary concern in Turkey (Forbes Insights 6).

Diversification can bring more opinions and ideas, but it may also raise disagreements. John F. Kennedy, 35th president of the United States said: "If we cannot now end our differences, at least we can help make the world safe for diversity." In an attempt to create a society that supports various groups to coexist, everyone should take responsibility and participate in taking awareness to action. In the book Diversity and Design, edited by Bet Tauke, Corydon Smith, and Charles Davis, it brings up three subjects to look at the influence of diversity, which are race, gender, and age (18). Among the issues, this thesis will focus on the aging population to encourage and invite people, especially in the design industries, to consider liabilities in bringing connection and understanding to people in different perspectives.

In the field of design, it requires skills such as innovation, creativity, and social responsibility (Salama 77). When it comes to social responses of design, Abeer A. Hasanin claims that the current design education system leads to a lack of human and cultural aspects during the design process because the egos of professionals isolate designers from connecting with users. Conventional design solutions tend to use advanced technology and focus on formal considerations from the perspective of design preferences (99). However, as people can experience more diversity among different

regions, genders, generations, and cultures today, designers who care about social responsibility should be aware of how to create and facilitate communications in our society. Therefore the empathic mindset will become a significant capability for designers in order to communicate messages between unlike individuals or groups.

Empathic design

Empathic design is a relatively new term in design. It used to be categorized as one of the classifications of design; nevertheless, according to the definition from the Stanford d. school, it is more likely a design thinking method. To take a look at how empathy works, Katja Battarbee mentioned that when people engage in empathy, it changes people's feelings, thoughts, and actions. It is a cognitive process, and the experience will "brings feeling of connectedness" (Battarbee, par. 5). Among the existing design thinking methods, empathic design should be considered to be a subset of human-centered design. It overlaps with the idea of participatory design, which requires strong connections with users. The co-design process of participatory design invites stakeholders to collaborate with designers. Under this approach, designers are able to better understand the inner thoughts of the audiences, creating corresponding outcomes of design (Binder and Brandt 116). The fine edge between participatory and empathic design is that the former views users as partners, while the latter identifies designers as users.

This thesis will argue that empathic design is a "pre-stage" design thinking process. The primary focus is to prepare the mindset of designers and before they jump into the problem-solving development, as well as users in participatory design project. The attempt of understanding is a significant ability for people to face the diverse society today. Battarbee mentioned that empathy is an "out-of-ego-experience" (Battarbee, par. 7). The term was first used in the article Empathy on the edge (4). We have to step out of our own opinions first in order to have spaces to accept others' point of view. Using a metaphor to describe it, empathy is like a threshold, which provides a gentle transformation betwixt two different perspectives.

Aging

The Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat released a report in 2013 that estimated the global aging situation. According to the estimation, there will be 714 million people over the age of 65 in 2020, and this number will continue to grow in proportion to world population, reaching 21 per cent by 2050. This means, the number of people over the age of 60 will reach more than 2 billion in 2050. This study indicates that the increase of the aging population will cause social and economic influence. For example, the fiscal pressures on support systems for the elderly, especially in the developing countries. However, on the other hand, the number of elderly who can live independently are increasing in most countries as well. They can support themselves and even make net financial supports to younger members in the family (xii).

As the population of the elderly expands, their preferences become a considerable influence that affect the world in many aspects. While the report points out the consequences to society and the economy, whether and how the circumstances will influence the field of design has not yet been explored. Anticipating this growth in world population will influence the field of design as well, it is important to look at how designers can respond in a proper way.

A previous essay in architecture emphasized the transformation of senses while aging. As people age, the function of our body and mind decrease steadily (Mazuch, 109). The study indicated that the quality of our life can be influenced by these changes. Mazuch investigates the basic five senses—vision, hearing, touch, smell, and taste—and explains how they alter as aging. For instance, the impairment of vision—which is known as the primary receptor—can cause problems in depth perception, sensitivity to color, sensitivity to glare, and a restricted field of vision. One result can be relate to sleep issue for older person. Because of reduction of light penetration through their eye, the elderly may sleep at wrong times. Mazuch suggested that by reform some elements such as full-spectrum lighting, color contrast and articulation can all help to improve life and prevent dangerous situations for elderly. Beside the five common senses, there are actually 21

other senses that influence a person's perception. This includes the sense of pain, time, balance and space, all of which are impacted by the aging process. Although all the senses play important roles in human's life and need to be cherished, most studies agree with that vision is the one most closely joined with cognition.

Visual Perception

Vision has always been considered as the most important sense of humans. In fact, there are approximately 70 percent of all the sensory receptors in our whole body are in the eye (Moini, 213). By perceiving stimuli through our eyes, people are able to establish judgement and preference. A lot of words regarding understanding are related to sight. For instance, "insight," "illumination," and even the simple sentence "I see." A study by Few proposed that through the optimization of visual elements, people can understand information more easily. In his investigation, data visualization was used to prove the power of visual perception (30). By using design as a means of representing information, patterns and relationships among data can be better comprehended. In addition, several basic attributes can be perceived without a great deal of attention needed, called pre-attentive attributes. The recognition of these attributes can be organized into four main groups: form, spatial position, color, and motion (Ware, 163).

A previous essay investigated different aesthetic responses from the perspectives of generation and gender toward popular illustrations. This demonstrated that there are many differences of aesthetic response exist between generations. A total of 254 adolescent and adult volunteers, with a mean age of 16 and 40, participated in the research. According to the analysis, the significant difference of rating between adults and adolescents can be seen on the following factors: Beauty, Activity, Emotion, Pleasure, Warmth, Familiarity, and Complexity (Lin, 33). Although the study revealed that there exists a discrimination of aesthetic preference among different age groups, it only represents the subjective feelings of the participants. Therefore, this study will focus on observing one objective visual element: Color, which is also one of the main pre-attentive attributes that have mentioned in the previous paragraph.

With advancing age, the preference of color in adulthood can slightly alter as well. A study by Dittmar collected color preference data from 842 adults, age 19-90 years, at Mainz, Germany in 2011 (119). The results demonstrated both young and old age groups chose blue as the most preferred color and yellow as least preferred color. However, the preference for blue decreased steadily with aging, whereas the preference of green and red increased. In addition, it suggested that one reason why this could have occurred is the change in pupils' biological condition through aging. The crystalline lens in human eyes will yellowing as we age and influence our color vision. For older people, it will cause difficulty in perceiving low-saturation colors and the blue end of the spectrum in the late adulthood. Several elderly subjects also confirmed that their most preferred color now is different than they did when they were young. In this study, verbal descriptions of color names were used to test participants, which means instead of seeing visual color pictures, the subjects are imagining color by their own. The benefit of this methodology is it can exclude the influence of factors such as hue, brightness, and saturation.

A psychophysical experiment also presented that each generation has different color preference judgements. It suggested that the determinate for color preferences were chroma and lightness attributes of elder and younger groups. There were 80 observers who took part in the experiment. 50 subjects aged between 18 and 30 years old and 30 observers aged between 56 and 84 years old. The results demonstrated that elder people like the colors related to joyful events; and they prefer high chroma colors. On the other hand, young people like the comfortable and bright colors. Both elder and young people agree that they didn't like dirty colors, such as brown (Gong, 14).

A number of studies have pointed out that visual preferences can be different across groups or individuals. People will not have the exact same perception as one another. The truth is, the unique personal experiences usually distinguish us and cause us to have diverse ways of feelings and thoughts. Without really putting ourselves in another's shoes, we may fall into prejudice and stick to our own ego.

HISTORICAL AND CONTEXTUAL FRAMEWORK

- Seeing is believing
- Perceiving is Believing
- Experiencing is Believing

Seeing is believing

There are a variety of sensory perceptions that influence how people feel and understand the external world. Among the five primary and common senses: sight, hearing, taste, smell, and touch, vision is the one most closely joined with cognition in the majority of studies. However, as people age, their sensations decrease in ability. While every sense may be confronted with degeneration, it is important to look at how our sight transforms because it is a relatively valuable receptor to most people.

Vision is a significant sensation that provides information for us to recognize the external world. The fundamentals of optics comprises a light source, object, and observer in the process of sight (see fig. 1). Through seeing, people gain knowledge of physical surroundings. The observed evidence becomes the essential perception and sensory input.

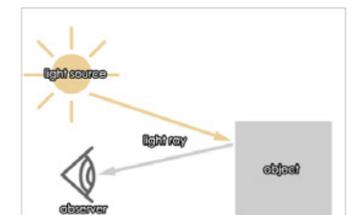


fig. 1.
Zagrobelna, Monika. Color-fundamentals-value-1.
Digital image. Envato. N.p., 17 Apr. 2014. Web.

Lighthouse Guild is a non-profit organization which specifically focuses on vision and healthcare. They assist people who are blind or visually impaired, providing multiple professional services for people in need. They not only have medical support, such as vision rehabilitation, health plans, adult day care, and training, but are also devoted to education and advocacy. The first model of the organization was founded by the sisters Winifred and Edith Holt as Lighthouse Free Ticket Bureau in 1903. Over a hundred year, the organization has transformed and developed different supporting institutes and comprehensive systems to help visually impaired people, such as the New York Association for the Blind in 1906, The Filomen

M. D'Agostino Greenberg Music School in 1913, and The Ethel and Samuel J. LeFrak School in 1967. Lighthouse Guild continues to work on increasing the function and independence of their patients. Integrating their services and the community creates better lives for people in need. Even though the organization may not provide services that are related to aesthetics, creating comprehensive services for people is also considered an essential part of design.

**Perceiving
is
Believing**



fig. 2.
McNeill, Caitlin. *The dress*. Digital image.
Internet Archive. N.p., 17 Apr. 2014. Web.

“The dress” is a photographic meme that was widely propagated in February of 2015. It caused fierce debate across social media over whether the dress was black and blue or gold and white (see fig. 2). In a study released by the scientific journal *Current Biology*, 57 percent of 1,400 participants saw the dress as black and blue; 30 percent saw as gold and white (Lafer-Sousa et al., R545). While there is still no solid scientific study which demonstrates the real reason that causes a range of responses, the case shows that the same object can lead to contrasting visual perceptions among different people.

In addition, the way that people see things may change as they age because of the decreased efficiency of biological functions. It can cause differences of visual perception across age groups. To see how people’s preferences shift as they age, a study by Dittmar demonstrated that color preference in adulthood can slightly transform over time. The results demonstrated both younger and older age groups chose blue as the most preferred color and yellow as least preferred color. However, the

preference for blue decreased steadily with aging, whereas the preference of green and red increased. In addition, it suggested that one reason why this could have occurred is the change in their pupils’ biological conditions through aging. The crystalline lens in human eyes yellows as we age and may influence our color vision. For older people, it causes difficulty in perceiving low-saturation colors and the blue end of the spectrum. In this study, verbal descriptions of color names were used to test participants, which means instead of seeing visual color pictures, the subjects are imagining color on their own. The benefit of this methodology is that it can exclude the influence of factors such as hue, brightness, and saturation.

**Experiencing
is
Believing**

Designers in every field need to consider how to assist aging communities in the future. Visual stimuli is one part that can be improved to fit the needs of elderly groups. By promoting appropriated visual elements, the elderly with decreasing visual abilities will be able to access external information more easily. Synesthesia is another field that designers can also work on. Since one dominated sensory may no longer function, using another supportive sense can be a solution for people to maintain a quality life.

However, the most essential factor to motivate a thoughtful design is whether the designer has the ability to understand certain disabilities in terms of elderly populations. According to the demographics of U.S. Bureau of Labor Statistics in 2017, the median age of employed designers is 43.9. Over 91 percent of

them are age below 64 (U.S. Bureau of Labor Statistics, 2015). Because the industry is dominated by younger generations, the experience gap between different generations can cause a lack of consideration for the disabilities of the elderly. An essay concentrated on the apparel color choices made by young designers at an average age of 21 years old, who were asked to select color palettes for elderly female customers. The results showed that young designers were unaware about how the aging eye changes people’s color perception. (Hegde, 2011) In the study, designers chose the opposite color palettes which conflicted with previous study results. Designers tend to choose soft color palettes for the elderly while according to studies, the elderly are likely to perceive low saturation colors as shades of gray.

On the other hand, an example of a younger designer with sensitivity toward such vulnerable groups is a graduate Croatian designer Zrinka Horvat. Her 2015 thesis project, Wondrous World was a tactile picture book for blind children. (see fig. 3) Although the project was mainly designed for born-blind children, it can also apply to children with or without visual impairment issues. By using different materials, structures, sounds, and interactive mediums, the tactile book provides stimuli for children to explore the world through the senses of touching and hearing. The storytelling of the book is a poem which each picture can be replaced and ordered according to personal preference. The extension of choices is also helpful for developing creativity. Horvat accompanied blind and low vision children at the Vinko Bek Center, an institute focused on blind and low vision children at Zagreb. After prototyping and testing with the group directly, Horvat was able to get more information and understand the issue better and further improve her design.



fig.3.
Horvat, Zrinka. Tactile Picture Book for Blind Children. Digital image. Behance. N.p., 29 Jan. 2016. Web.

As the example by Horvat, designers should spend time and effort on interacting with their audience to understand their needs. This process will also help reform prototypes or other artifacts. To comprehend the situation of vision perception in the elderly communities, it is necessary to pay attention to physical changes.

Although most people may not fully understand a certain situation of another community, technology may provide assistance for experiencing. BabySee App is an educational application launched by REBIScan, Inc. in 2015. The infant vision simulator allows people, especially parents, to experience infants’ sight (see fig. 4). Research has shown that vision of a newborn baby is restricted. By knowing how things will look like through a baby’s eyes, people can get a better understanding and be aware of the interaction between infants and environments.

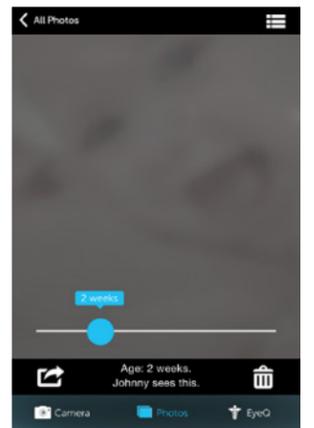


fig.4.
REBIScan, Inc. BabiSee App. Digital image. Victor. N.p., Apr. 2015. Web.

DELIMITATIONS

The thesis argues that empathy is a significant quality that can drive good design. It aims to encourage people:

- To prepare the appropriate mindset before the design process, NOT just concentrate on formality of design.

- To experience others' perspective in person, NOT just guess it through research.

- To build up relationship and intimacy, NOT just short-term communications.

The experiment of this thesis is based on vision but not other human sensations. Because sight is the foremost way to receive external information and stimuli, it influences our reactions and feelings more directly.

PROCESS AND METHODOLOGY

- Experiments
- Methodology
- Capstone Project

PROCESS AND METHODOLOGY

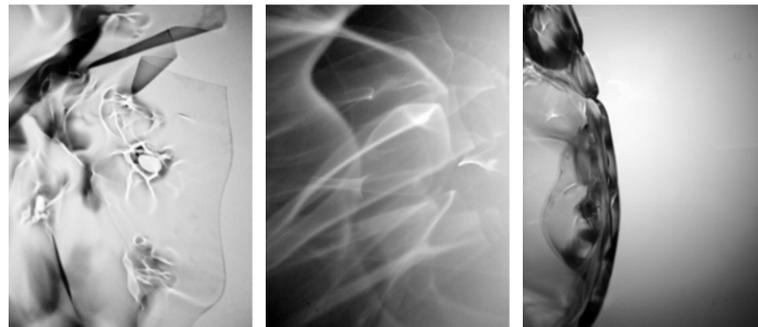
The definition of empathy is the ability to know and understand another's feelings by considering their circumstances. By means of imagining and assuming what someone else will think and feel about a situation, a person can produce similar reactions. However, it is always difficult to understand a situation we have never experienced before. In order to provoke empathy and further drive people's desire of understanding, the study will start with visual experiments that can simulate experiences that are similar to the physical differences for audiences. This thesis seeks to design tools that are not for "improving," but "decreasing" one's own abilities in order to understand others' difficulties. The assumption is that the participatory method can be a crucial starting point for people to gain awareness and understanding.

The first and second experiments aim to show the unanticipated consequences after changing one's original point of view. The third experiment conveys the idea that designers are responsible for being a bridge between unlike individuals or communities. In the capstone project, it demonstrates how personal experience can become an essential impetus of empathic design. Through providing tools that simulate different visual conditions such as age-related eye diseases and other species, people can experience diverse perspectives and further extend their original understandings.

Experiments

a. Collaborative projection posters

In such a diverse world with a lot of different opinions, arguments and voices, people should be more open-minded and consider about others' perspectives. This project presents the concept that sometimes what we see or hear may just a part of the whole picture. Also, the same thing may be viewed differently from each person's aspect therefore in the contemporary society, getting connection and gathering others' experience or point of view is important. The first phrase is to play around the relationship between light and shadow by using the same one artifact made by transparent sheet to project a variety of unexpected images. Second phrase is to create several individual transparent posters, but people can only understand the complete message after put and project all images together. Through inviting people to interact with the artifacts, people can gain the experience and idea of the significance of being open-minded to understand hidden connections and consequences.



a - Phrase 1





a - Phrase 2

“WE ARE
ALL
PART OF
SOME-
THING.”

- Dominique Falla

Experiments



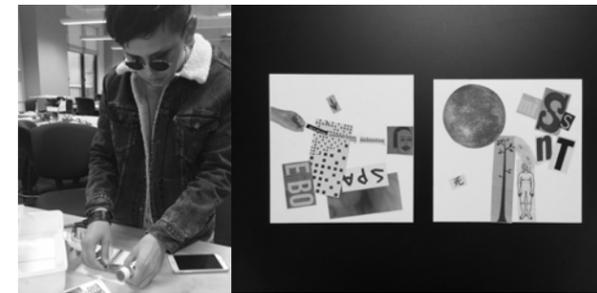
b. Visual tool kit

The visual tool kit offers a pair of glasses with different lenses. Each pair of lenses is related to certain eye disease which commonly happens in the late adult hood like yellowing crystalline, cataract, and age-related macular degeneration. In the first phrase,

designers were asked to put on the glasses and make collages. During the experiment, they experience limitation of decreasing eye sight and difficulties of making process.



In the second phase, people were asked to following instructions in order to experience different feelings and interaction with objects and environment. For example, walk around and touch things with the glasses on to experience the space, do color tests and read small-text articles. After the experiment, people filled out feedback sheet about their feelings and thoughts regarding life of the elderly. The intention of this experiment was to provide opposites for people to really “put ourselves into someone’s shoes”. Unlike most design aim to support better life experience, the project creates tools that not for “improving”, but “decreasing” one’s abilities for understanding others’ disabilities.



b - Phrase 1



b- Phrase 2

Experiments

c. Designers as junction

Designers as junction is a prototype of educational pop-up cards. The purpose is to demonstrate designers’ role in the present and future world. As mentioned before, the role of designers today is not limited to problem-solving, but creating more possibilities and facilitating communications between different groups. In the project, each card displays a scene that people in misunderstandings or disagreements. The participant will use a little figure that represents designer to interact with the pop-up cards. During the process, the participant who plays the role as designer will either help the characters in the scenes to solve the problem or understand perspectives from both sides.



Methodology



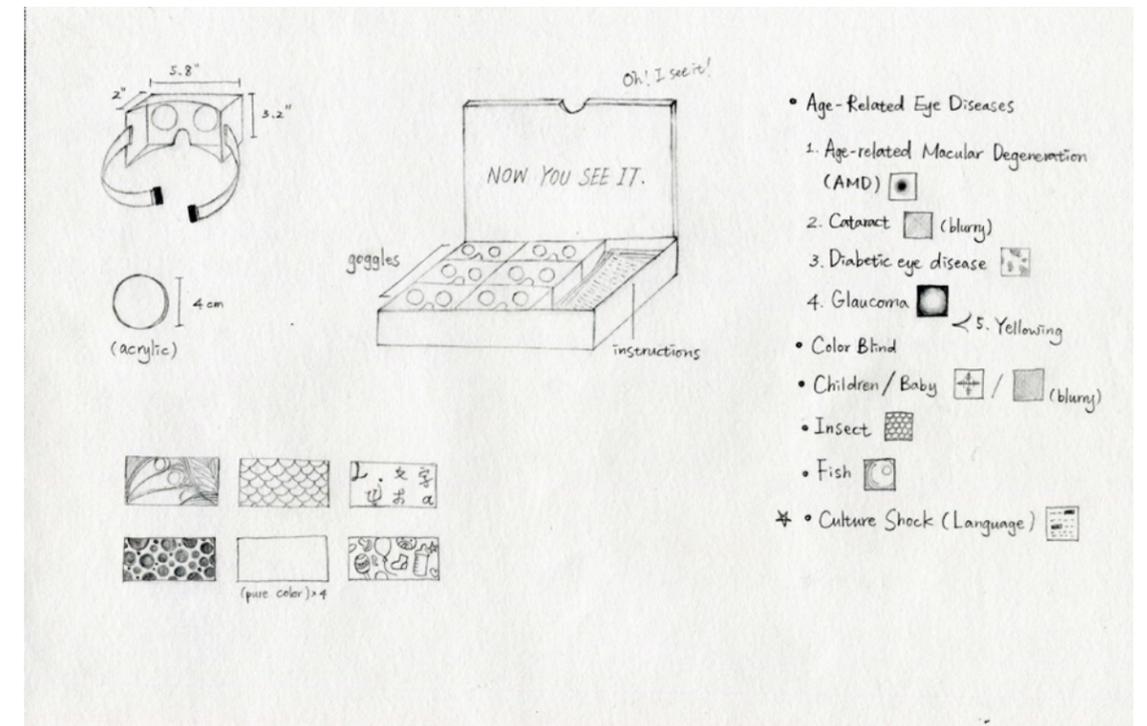
There are already a lot of existing methodologies of design process. For example, in the study Spark Innovation Through Empathic Design, Leonard and Rayport brought up five steps of empathic design, which are: 1. Observation 2. Capturing Data 3. Reflection and Analysis 4. Brainstorming for solutions. 5. Developing prototypes of possible solutions (108). The main argument of this thesis is that experiencing is believing. It means without really experiencing the situations, people will not gain the feelings of one another. Personal experiences form thoughts; every different cognization will further affect our actions and behaviors. If we keep continuing and repeating behaviors, the habits will consequently generate either positive or negative results in our lives. Based on this assumption, experience is the crucial start of reshaping one's attitudes and actions. Therefore, in terms of other observation methods, this study focuses on how to create participatory experiments for people to experience an intimate understanding of a specific viewpoint.

Capstone project

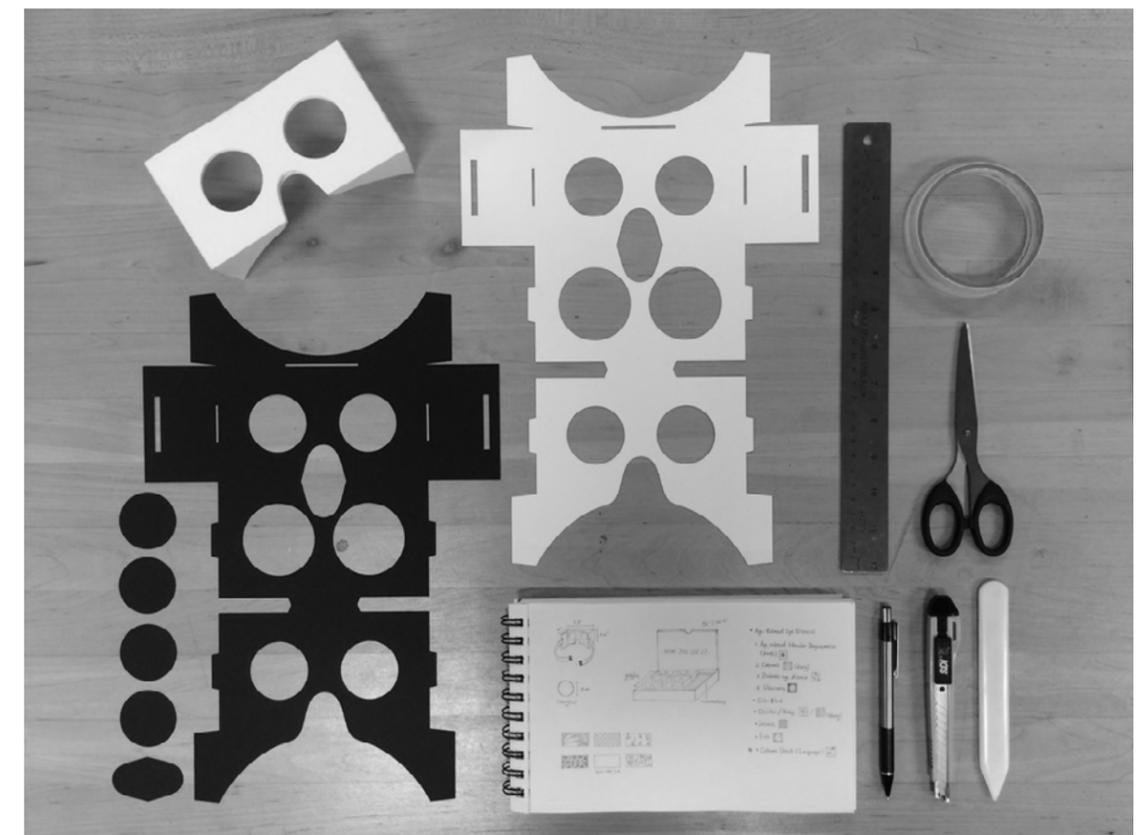
Now you see it

Now You See It is an enhancement of the Visual Tool Kit experiment. In order to convey the idea that empathic design cannot only be applied to aging populations, but also other fields. The capstone project extended the set of lenses with more varieties, for example, colorblind and the vision of different species such as fish and insects. Moreover, one pair of goggles named “culture shock” presents the concept that a language barrier can also be a difficulty that needs to be solved with empathy. When people go to learn new languages in another country, the words they do not understand may seem just like blurry codes to them. By hindering vision with question marks, users can get the ideas of how being impeded by different languages feels. Overall, the initiative is to create scenarios that simulate the visual conditions of various eyesights; it provides different visual goggles and instructions for people to experience diverse perspectives.

Participants in this experiment were asked to wear certain goggles and pick up an “action card”. Each card has different instructions such as draw a picture, write a paragraph, go find certain items, walk around the environment, read an article, and recognize color blocks. After finishing the task, they wrote their feedback regarding any design solution that might have come to their mind, or any thoughts and feelings they had after the experiment.



Sketch



Making Process



Final Prototype
W 21.75 x L 16 x H 3.25 in



Test Record

CONCLUSIONS AND FURTHER DIRECTIONS

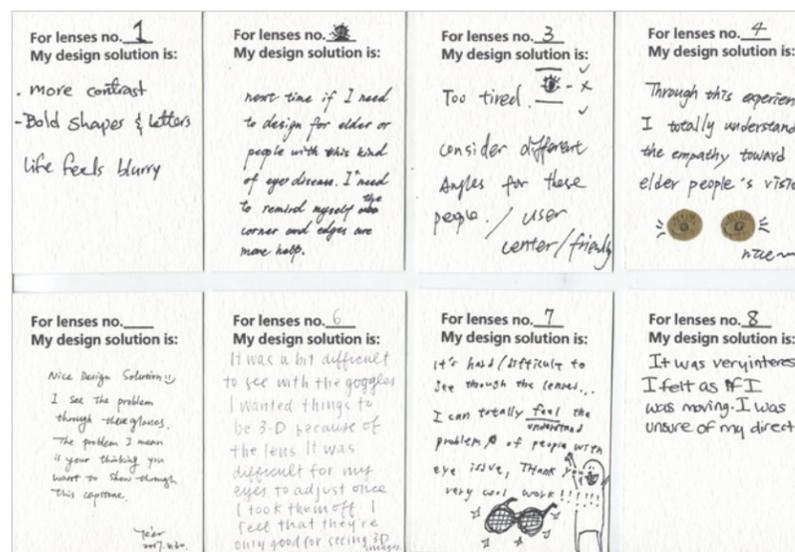
CONCLUSIONS AND FURTHER DIRECTIONS

The study explores the possibility of how to provoke empathy in the design process. Although the prototypes of the experiment may not present exactly the same visual perspectives of certain groups, the experience successfully altered most of the participants' thoughts. The feedback sheets show that people were surprised to see and act via a different angle of vision they had never experienced before. It caused them to consider about how their lives would be if they were in another person's position. In regards to further improvement of the experiment, it could increase the number of shareholders and generate more data to reveal behavior patterns. In terms of the quality of the tools people to use in the experience, it can always keep improving as this technology is continuously enhancing. Additionally, vision is the sense that is being discussed in this study, but there are other senses can be used to create more comprehensive experiences.

This thesis draws the conclusion from the research and design project that empathic design bridges miscommunications or misunderstandings. It is about:

1. Getting rid of one's own egos and perspectives.
2. Building up relationships with each other.
3. Reshaping people's mindsets to understand something they have never experienced before.

The capstone project proved that experience is a key point to shift people's attitudes towards individual differences. This thesis indicates the concept that the first thing in a design process is not about audiences but designers themselves. Skills, techniques and tools may change over time, but consideration of the heart never fades. Perhaps the next step to think about is how other existing design skills, products, or services can be used to provoke empathy.



Feedback

CONTRIBUTION STATEMENT

CONTRIBUTION STATEMENT

Creating a suitable visual language for target groups should be the fundamental capability of a designer in every field. However, designers' duties are no longer limited in design formality today, but also forming a communication, bridging two standpoints, and bringing connection and understanding to people in different perspectives. The thesis aims to promote the idea that empathy toward the circumstances of audiences can drive more relevant designs in each field. In order to achieve the goal, people should gain personal experiences to provoke motivation of empathic design.

Theoretically, the study emphasizes that the ability of understanding, or even the willingness of understanding, is a crucial part of humanity. This thesis takes the global aging population as a field to look at. There are a number of researches that showed the "experience gap" between different age groups can lead to miscommunications. Practically, the capstone project demonstrated how to use empathy as a methodology into the design process. The experiment holds up a notion of "experiencing is believing," which argues that our thoughts and feelings can be changed through simulated experiences of certain conditions.

The hypothesis can be applied to not only designers and customers, but general life experiences between people, for instance, parents and children, employers and employees, or doctors and patients. As technology is continually improving, our sensations are able to be extended and gain more unique experiences. Technology such as virtual reality can be conducted beyond entertainment but for more educational purposes. Eventually, the goals of this study are to draw the design industry's attention to the shifts of designers' duties; to encourage people (especially designers) to be more considerate of the differences among one another; and providing a methodology which anticipates the experience process to generate similar mentalities and drive empathy in people's minds.

BIBLIOGRAPHY

Battarbee, Katja. "How empathy works." *Medium*. <https://medium.com/@katjabattarbee/how-empathy-works-d664d61f6f25>. Accessed 18 Jan. 2016.

Battarbee, K., J. Fulton Suri, and S. Gibbs Howard. "Empathy on the Edge: Scaling and sustaining a human-centered approach in the evolving practice of Design." *IDEO*. http://www.ideo.com/images/uploads/news/pdfs/Empathy_on_the_Edge.pdf (2014).

Binder, Thomas and Eva Brandt. "The Design:Lab as Platform in Participatory Design Research." *Codesign*, vol. 4, no. 2, June 2008, pp. 115-129. EBSCOhost, doi: 10.1080/15710880802117113.

Dittmar, Manuela. "Changing colour preferences with ageing: A comparative study on younger and older native Germans aged 19–90 years." *Gerontology* 47.4 (2001): 219-226.

Few, Stephen. *Now you see it: simple visualization techniques for quantitative analysis*. Analytics Press, 2009.

Insights, Forbes. "Diversity & inclusion: Unlocking global potential—global diversity rankings by country, sector and occupation." *Forbes*, New York, NY (2012).

Gong, Sin-Min. "The Age Factor for Color Preference." Department of Industrial Design, Tatung University, 2010.

Hasanin, Abeer A. "CULTURAL DIVERSITY AND REFORMING SOCIAL BEHAVIOR: A Participatory Design Approach to Design Pedagogy." *ArchNet-IJAR* 7.2 (2013).

Hegde, Asha L., and Gwendolyn Hustvedt. "Young Designers and Design Sensitivity to the Aging Eye." *Design Principles & Practice: An International Journal* 5.1 (2011).

BIBLIOGRAPHY

Lafer-Sousa, Rosa, Katherine L. Hermann, and Bevil R. Conway. "Striking individual differences in color perception uncovered by 'the dress' photograph." *Current Biology* 25.13 (2015): R545-R546.

Leonard, Dorothy, and Jeffrey F. Rayport. "Spark innovation through empathic design." *Harvard business review* 75 (1997): 102-115.

Mazuch, Richard. "Sense-Sensitive Design for the Ageing." *Architectural Design* 84.2 (2014): 108-111.

"Median Age Of Workers By Occupation And Industry." U.S. Bureau of Labor Statistics, 2015. Web.

Moini, Jahangir, Julie Feeny, and Cosette Hardwick. *Introduction to Pathology for the Physical Therapist Assistant*. Jones & Bartlett Learning, 2013.

Salama, Ashraf. *New trends in architectural education: Designing the design studio*. Arti-arch, 1995.

United Nations, Department of Economic and Social Affairs, Population Division (2013). *World Population Ageing 2013*. ST/ESA/SER.A/348.

Ware, Colin. *Information visualization: perception for design*. Elsevier, 2012.

Yen-Ching, Lin, and I. Bin. "Generation and gender differences in aesthetic responses to popular illustrations." *Visual Arts Research* 37.72 (2011): 30-41.

