An Exploration of Social Influences on User-Interface Design with Cross-Discipline Focus

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I am currently researching the realism of Virtual Reality (VR) effects in VR video games and how that can impact design choices that game companies make when creating future VR games or applications. This technical area of my research inspired me to further explore the idea of design decisions and how that connects to the larger world. In order to understand the connection between human and technology, especially with user-facing design, I am exploring Mediation Theory's analyses of human culture and anthropology and how that has affected the technology we interact with. Readers will learn how every design choice that we have interacted with today, however minute it may be, can have extensive thought processes put behind them that materialized into the final design a human user will see.

After experiencing what it was like to conduct research with real human subjects first-hand, I am interested in investigating the user interface-oriented part of computer science and software development. Front-end engineering is an area of software development that requires an abundance of creativity, which I felt was something I had a natural affection for. I have been devoting myself to artistic endeavors such as painting and drawing since a very young age. As I grew older, I was more interested in how my art could elicit responses from the audience. I think investigating UI/UX design is an essential integration of my two interests in both the artistic and technical fields. After this research, I hope to gain more insight on how to create and design more user-oriented projects, not just in video games or entertainment, but also for everyday technological applications.

Growing up in the age of the Internet as well as the turn of a new century, I have witnessed drastic shifts in what society values in culture and aesthetics. These changes have bled into every aspect of our lives, from more traditional trends such as in fashion to the changing of aesthetics on the Internet. In my research, I will analyze these trends focusing especially on the Internet and digital products, and how the User Interface and Experience (UI/UX) designs for our generation today have evolved as a result of any outside factors and world-shifting events that we have collectively experienced. The exploration of this topic also ties in concepts from Mediation Theory. I wish to explore how Mediation Theory's analyses (Verbeek 2015) of human interactions with society and culture is related to the changing designs of technology that was and is being built by humans. This relationship is worth analyzing, especially in today's era and environment where we are constantly bombarded with technologically advanced marketing that seeks to maximize our short-term gratification. It is important for us to analyze where these marketing and design choices come from and how our societal interactions have shaped mainstream product designs throughout the years.

This research will inform anyone who is not yet aware of the enormous psychological impacts modern UI design can have over our consuming habits and dopamine levels. By understanding the intricacies of relations between human and technology, and how every design choice was made with intention, people will grow to be more conscious consumers and general

members of society, make informed decisions in not only their buying power but also everyday choices where the influence of emotions are the most effective: political elections, entertainment consumption, philanthropy, etc.

From my experience as a research assistant in the VR study at UVA, I have learned firsthand how seemingly unimportant design choices are all scrutinized over in the design of consumable media, such as video games. In my research, we recruited participants mainly from the UVA undergraduate psychology department, since as undergraduates, psychology students were required to participate in UVA-affiliated research as part of their course requirement. Participants were surveyed about any fears or phobias they may have, and based on the survey results, asked to experience a VR scene associated with their phobia. The four VR scenes currently developed have phobias related to height, sharp objects, confined spaces, and trypophobia. Participants were also asked to measure their heart rates during the VR experience by wearing a heart-rate monitor, and their movements inside the VR experience were also recorded by the VR headset itself. By analyzing the effects of the VR experience based on the aforementioned metrics, we will be able to obtain a better understanding of how effective and realistic VR scenes can be, and from our results, influence real VR game and application companies to develop future applications while keeping in mind the impact it will have on its human users.

We should first examine a short excerpt from Verbeek (2015) on what Mediation Theory entails, as mainly explained from a philosophical standpoint: “of the ‘mediation approach’ in philosophy of technology, humans and technologies should not be seen as two ‘poles’ between which there is an interaction; rather, they are the result of this interaction [...] in many cases the relation between humans and technologies is in fact part of a larger relation, between human beings and their world, in which technologies play a mediating role.” This concept is crucial to understand before analyzing the shifts in UI design throughout the age of the Internet. We should recognize that design concepts and societal influences have always been interconnected, and that the seemingly miniscule details in design are all borne out of cultural influences, societal trends, and socioeconomic factors. However, this idea of Mediation Theory requires in-depth research in both the humanities, such as anthropology, sociology, psychology, etc., and the sciences, such as information technology and software and hardware engineering. Although significant work has been made in the recent years to bridge the gap between these two “polar opposites” in academia, and there have been numerous research investigations conducted which incorporated multiple disciplines, much of the difficulty in expanding such research still lies in the fact that researchers who become deeply involved in either of these two fields do not often cross disciplines into the other. Furthermore, our society has more so made a distinction between the STEM fields, and those who are stereotypically attracted to them, versus those who are stereotypically the “humanities” kind of learners. With my STS investigation, I hope to help eliminate some of these traditional assumptions that were shaped by previous social factors, and treat the subject of UI design as an exploration across multiple disciplines. I will relay that research should, more frequently, be about exploring academic endeavors outside of one’s

expertise, and not just shoehorning one's academic journey solely as a purely empirical, scientific product.

My research is an STS-centered piece in the sense that it encompasses all factors of "science, technology and society" in its content, especially focusing on the social interactions and influences that we experience with our technological artifacts. Technology and society are inseparably connected and this interaction should be studied as a connective. I am approaching this research as a review of the ethics and values placed behind decisions of user design. Throughout the 21st century, UI/UX centered researchers have placed increasing attention on how their design choices can affect the populations who use their products. For example, with the activism of disability groups, we have made progress on accessibility and usability in technology and user design, with products such as text-to-speech; in terms of intersectionality, UI researchers have been researching into the effects of cultural-conscious designs and how usable they are for people across different cultures. This work is important because technology should be made accessible to everyone, and it is not acceptable to deny someone a product because the designer did not think of accessibility features, or because of cultural differences that made it difficult to understand a product's interface. Ultimately, this is how Mediation Theory is of critical importance in understanding this subject and improving our future developments of this subject as well; in order to design products that are accessible to as many people as possible, we need to first examine how technology is playing a role in our lives and how this role has evolved over the course of its development. By understanding how we interact with technology everyday, we can design user interfaces that make those interactions function more smoothly, or interfaces that enable others previously unable to access a product to be able to use it. This is in alliance with the idea of STS in STEM studies, especially computer science, because a large part of why we study empirical science is to use the knowledge to benefit society; not only that, society is also changing because of our knowledge on science. Mediation Theory is thus a term for the connection between the two, and helps us realize that the development of society and the development of science are intertwined. I will investigate this subject by literature review, and examine a collection of literature which contains reviews, historical analyses and experimental research.

There are potential limitations to my research. My field of scope is obviously limited as I am only studying the previous work done by others and not conducting research or interacting with any participants on an equal basis to gain a deeper understanding of the results. I am also limited in my knowledge of the subject at hand, because I have not done any academic research into the social sciences, and have only a limited perspective as a more traditionally taught STEM student. My knowledge of STS research methods is also limited, and I have only a surface knowledge of what has been taught at my classes of some of the most popular methods, but are unknowledgeable of others and even more unknowledgeable of how to conduct studies or research that are done with those methods or principles. To offset these imbalances, I will try to sample a wide variety of literature, not just those following the traditional research paper guidelines; and of research projects that were carried out with STS-focused methods, while being

more careful in my analyses of research experiences that were done with obvious researcher-participant power imbalance, where there are limited input from the participants on the research. Moreover, I will also keep in mind the STS research methods when reading every research paper that I come across to assess its credibility in regards to the research-participant relationships that I have learned in STS classes. This will help me when I am conducting my own research to eliminate as many of the potential biases I may carry as a traditional academic researcher as possible.

References

Verbeek, P. (2015). Beyond Interaction: A Short Introduction to Mediation Theory. ACM.org. https://interactions.acm.org/archive/view/may-june-2015/beyond-interaction