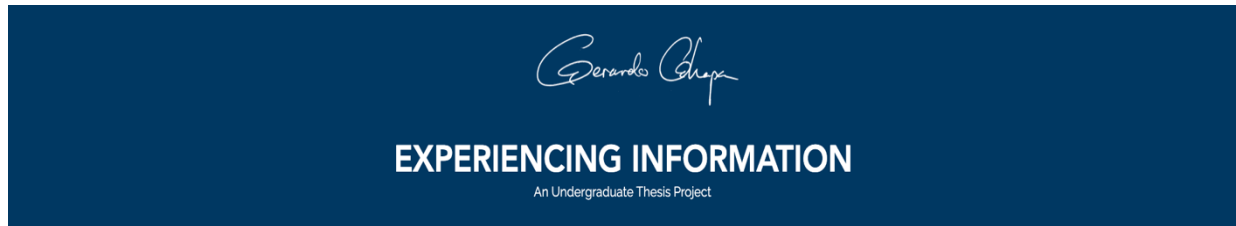


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HONS 4370.01
Dr. Loewe
10 December 2018

Honors Thesis Proposal



Please Visit gerardo-chapa.com for My Thesis Proof of Concept

1. Working Title

- ***Experiencing Information: Attempting to find a meaningful intersection between User Experience, Information Interpretation, and Work Systemization.***



2) Introduction (~500 words)

[\(About Page In Website\)](#)

ABOUT THE PROJECT

As a part of the St. Edward's Honors Program Curriculum, a final project in the form of a senior thesis is assigned with the intention of engaging an undergrad in independent research that is reflective of their individual passions and interests.

Deeply interested in the intersection between my two majors, Finance and Computer Science, I have always wished to find new innovative ways of seeing how these two can benefit from each other, and how concepts native to one field each can be applied to the other. Prior to deciding what my thesis project would be, I was already certain that I wanted to focus on the two things that I am the most passionate about from each field:

User Experience and Work Systemization.

Hoping to find a way in which I could meaningfully connect the two, I set out to look for ways of conceptualizing a project that would allow me to explore this intersection.

One of the central ideas that drives my thesis is examining the way information is shared and presented, and the different ways in which different types of media can be used to present complex concepts in ways that are more effective than from the use of text only. Because of this, I quickly realized that I would not be able to explain these concepts effectively if I had to be limited to a traditional research paper, given that to try to explain the benefit from *staying away from text* with more text would have been a fatal contradiction.

I wanted to make a project which not only talked about the concepts of *user experience, information interpretation, and work systemization* theoretically, but that also addressed my research question, **how could I create a tangible product that could show how these concepts can work work together?** As I got closer and closer to finding a medium that would be able to do this, It dawned on me that a textual description of complex non-verbal concepts and information would always, in some way, come short to a direct experience with the force itself. If I truly wanted to communicate what I wished to get across, my final product had to be something that an end user would *have to experience directly.*

Experiencing Information

The concept of experiencing information came about from the intersection between the three of my areas of focus:

User Experience, Information Interpretation, and Systemization.

As proposed by Don Norman in *The Design of Everyday Things*, I knew that User Experience (UX) was not limited to a website or an interaction with a computer, and that this concept could be used to describe an individual's experience with any product. For some time, I had perceived that in this way, UX could also be used to describe things like an end user's interaction with a display of information (such as a diagram or a chart), or how an employee interacted with a business process.

Because I realized that part of my final product had to be *experienced directly*, I grasped that, in other words:

there was information from my final product that had to be interpreted through the user's experience with that information.

Taking the concept of Interpreting Information, and framing it in the context of interpretation as an experience,

I understood that information can be communicated to an end-user non-verbally, and when it comes to describing and explaining non-verbal concepts, these have to be experienced directly, in some way, in order to be fully perceived and understood.

Taking this into consideration, my final project has taken the form of a website, aimed at allowing an end user to experience information either through traditional methods, such as reading or seeing, but also *through their interaction and user experience of the website.*

Bringing the three concepts together, the website also attempts to analyze how decisions to present information are made, with the hope of seeing how principles and processes can be set in order to replicate and continually improve content creation. The challenge of being able to convey to an end user the complex, self-referential focus of my project lies the proof of concept for the effectiveness of being able to present complex information through ways in which people can directly experience concepts.

3) Review of Written Sources (~3000-4000 words)

The sources used so far represent a variety of different angles in which the research question is explored. The first cluster of sources revolves around the concept of user experience and the field of human computer interaction. As a part of this cluster, *The Design of Everyday Things* is used as the foundation for the content and theory behind this aspect of the project. To support it, *The User Experience Team of One*, and *A brief history of user experience* are used to provide historical context and additional points of view. In the second cluster of sources, which focus on work systematization and mental models, are *Principles* as the foundation for work efficiency, algorithm creation, and work systematization, *Poor Charlie's Almanac* to explore mental models and for reference of how to explain complex information in simpler, and Netflix Culture slideshow, in order to present examples of robust high level materials that are used to aid in decision making across different business sectors. The third and last cluster is made up of an array of sources that are used to provide examples and research on the visualization of information through different methods. In this case, *Envisioning Information* is used as the main foundation for the methods that can be used for displaying information. From an exhibit standpoint, this source will be used to extract multiple examples of the ways in which scenarios

of data utilization have been used. From a methods perspective, this source is good at showing ways in which I can physically present the findings of my research. Additionally, inspiration for graphics and presenting information is extracted from image heavy sources such as the *sticks n' sushi menu*, *ropes at Disney*, and the *Valve Handbook for Employees*.

Beginning the analysis of the several sources that were gathered, a *brief history of user experience* is the source that begins to outline the historical implications of the research question. The main focus of the source is to delineate the fact that user experience is something occurs whenever we interact with any business product or environment, showing examples from the Industrial Revolution and the early proponents of design thinking and connects them to the nature of modern computer user experience with operations management in business. Prior to the analysis, the Industrial Revolution had already come to mind as a time in which similar studies between workers and tools had been done. It was a time where not only were new technologies such as industrial machines and steam generated power introduced, but where reconceptualizations of the way that people worked, such as the proliferation of the assembly line and the development of concepts such as scientific management, reimagined and created many precedents in the way that business is still done today. On the surface, drawing parallels between the way in which laborers interacted with industrial machines and the processes they followed, and the way modern workers interact with computers now was generally not hard to conceptualize. What seemed to be an easy distinction, however, has proved to be a much more diverse inquiry of its own, given the level of complexity of computer systems. To address this complexity, *The Design of Everyday Things* is relied on heavily for creating a base to be able to talk about the interaction between humans and computers. Much of Norman's work revolves around advocating for a greater focus around user-centered design. His books all have the

underlying purpose of furthering the field of design, with implementations ranging from doors to computers. Don Norman provides a holistic view of product design by showing how and why innovations in design come about, often making the crucial distinction between incremental and radical innovation (279). He states that most radical innovations fail, and even when they do succeed, they can take multiple years or decades to be accepted (268). His most important takeaway is that with the passage of time, the tools and objects in the world that people use will change, however, the psychology of people will remain the same (298). So far, the interaction that a worker had with a specific tool, and analyzing the way in which a worker followed a list of steps in order to achieve a task that will accomplish a business purpose (a business process), had only been mentioned as a unit. The next step in addressing the question was understanding how these two related to each other. Again, a broad distinction was made that both the tool and the business process were designed. Meaning that both of these were deliberately created with a set purpose in mind. Before diving into the challenges that emerge from comparing a physical object and a concept under the same scope, it was still possible to hold on to the previous distinction while also going a step further in saying that the interaction, or experience that an individual had with both a tool and a process could still be observed under the same light. The field of design, therefore, provided an opportunity to talk about both a tool and a process at the same level, given that emotionally and cognitively, using a tool or following a business process both generate a quality of interaction between the user and the thing, whether this is subconscious or conscious for the user.

In the field of computer science, User Experience (UX) is sometimes used to narrowly define the overall experience that a person has while using a product (within a computer system) such as a website or computer application, especially in terms of how easy or pleasing it is to

use. The definition is sometimes taken a step further, used to describe a person's perceptions of a computer system as it relates to the function, value, ease of use, efficiency, and appearance of a product or software more generally. In this realm, the concept is well known, almost always talked about in conjunction with User Interface (UI). The user interface is the space and the points of contact that the user has to the computer system. It is the interaction between the user with a program's User Interface that produces a user experience of that program. Yet, aside from its considerations on just the field of computer science, the design of a User Experience was not, and is not limited to only the interactions between a human and a computer. Going back to analyzing a user's experience as it relates to a tool and a process. A broader definition of User Experience is established. One that comes to mean "a person's perceptions and responses that result from the use or anticipated use of a product, system or service". In this way, the connection between a business process and the use of a computer system could both be reconciled by a unifying factor: **Focusing on the end user, and their *experience* as a main driver of how something is to be created and designed.** In this way, a Human Centered Design (HCD) approach could be followed, one that "puts human needs, capabilities, and behavior first, then designs to accommodate those needs, capabilities, and ways of behaving."(DoET, 8) There are various areas in which connections could be preemptively seen in which the combination between the fields of computer science and business could benefit mutually to create significant synergy. The use of design as the intersection between the fields of business and computer science addresses the initial question of how workers interact with computer systems, and the way in which these systems are used to promote a business mission, in a way that presents the opportunity to think of a work process not as a concept, but as a *designed product*.

Earlier it was mentioned that there are certain limitations for drawing parallels between a concept and a product under the same scope, given that it limits its comparability. Therefore, it helps to try to conceptualize a business process away from just a concept, and reimagine it as a product that is deliberately created and designed. Much of the way in which business processes was conceptualized as an object early on can be directly traced to the influence that Ray Dalio's *Principles* had on thinking about the relationship that workers have with work process as a physical interaction with a tangible system of operating and decision making. By writing down decision making and past mental models of the way things are carried out in step by step lists, algorithms are essentially followed that are directly appendable and improved upon. Through the use of his principles to structure the culture and business model of Bridgewater Associates, Bridgewater has delivered the biggest net profit of any hedge fund firm ever, since billionaire Dalio founded it in 1975 through the end of 2018. Bridgewater, which has over \$150 billion in assets under management, led the list of performing hedge funds with a net \$8.1 billion gain in 2018 for its Pure Alpha, Pure Alpha Major Markets and Optimal Portfolio strategies, following a gain of \$300 million in 2017. The firm overall has delivered a gain of \$57.8 billion for these strategies since its founding. Unlike other academic works, most of Ray Dalio's *Principles* are based on his biographical experiences at Bridgewater associates. Formed by decades of research across many different resources, such as Bloomberg and news outlets that provide market information. The primary value for the source is that it provides evidence for how a structured list of principles can be compiled and used as a reference for decision making. Unlike a big business plan, the principles are structured like a decision making framework to reference when situations requiring these skills arise. This source provides substantive evidence on how a product can be created that is used like a direct reference guide to decision making. It provides a

very succinct example of how algorithms (a set of detailed and methodical instructions) can be created for humans to reference. The materialization from concept to a written principle takes away a layer of abstraction, allowing for a process to be more easily seen as an object whose user experience can be *designed*. The materialization of a business process also adds another dimension of design into consideration, in that when it stands as a tangible object, it presents the opportunity for the designer to design a User Interface with the process. As opposed to thinking of a concept abstractly, the creation of it as a product also gives creative opportunity in creating a way of interacting with these processes in a way that impacts the experience of carrying out these list of steps. Designing an interface of a list of instructions considers the design aspects of aesthetic, placement, and artistic considerations of a physical, graphical product that were not there before. To provide an example, there is a different interaction to be had from material that promotes readability and usability, while considering aesthetics and presentation. Rolf Tufte's book, *Envisioning Information*, provides an opportunity to explore how “enhancing the dimensionality and density of portrayal of information” can be explored. The work conducted by Tufte seeks to delineate the general principles that have specific visual consequences on the interpretation, analysis, and creation of data representations. The display of complex data is analyzed through the media that have been historically successful for interpreting data, such as “techniques exemplified in maps, the manuscripts of Galileo, timetables, notation describing dance movements, aerial photographs, the Vietnam Veterans Memorial, electrocardiograms, drawings of Calder and Klee, computer visualizations, and a textbook of Euclid's geometry”(9). By doing so, it allows the reader to see why some displays of complex data are objectively better than others. The culmination of these concepts into one could be culminated in a manual that creates a tangible representation of one or many business process, resulting in the transference

from business process as a concept into the physical product of our aim. The representation of complex data in visually striking and intellectually engaging forms is one of the aspects that on a foundational level drive my research. This book is great for presenting the ways in which different scenarios of complex data visualization take abstract approaches for these to cope with the restrictions of showing a three-dimensional subject through a one-dimensional medium. This source will be a combination of exhibit and method source. From an exhibit standpoint, this source can be used to extract multiple examples of the ways in which scenarios of data utilization have been used. From a methods perspective, this source is good at showing ways in which I can physically present the findings of my research. To support the structure of *Envisioning Information*, additional sources, such as the *Sticks n' sushi* menu, the *Valve Handbook*, and the *Ropes at Disney* are all used as exhibit sources to show more ways of presenting information. The *Valve Handbook* is of particular importance among these information visualization sources, in that it presents an intersection between process oriented documents and documents that are visually appealing. The main focus of the guidebook is to establish the working structure of the company, which values creativity and individuality. It serves as a pseudo manifesto on how they differ from a normal company. Among their distinctions they claim that “**hierarchy is great for maintaining predictability and repeatability. It simplifies planning and makes it easier to control a large group of people from the top down, which is why military organizations rely on it so heavily. But when you’re an entertainment company that’s spent the last decade going out of its way to recruit the most intelligent, innovative, talented people on Earth, telling them to sit at a desk and do what they’re told obliterates 99 percent of their value.**”(4)The reason that Valve cites for their unique approach is that they “**want innovators, and that means maintaining an environment where they’ll flourish. That’s why Valve is flat. It’s our shorthand way of saying**

that we don't have any management, and nobody "reports to" anybody else. We do have a founder/president, but even he isn't your manager. This company is yours to steer—toward opportunities and away from risks." As a company, Valve tries to work like a conglomeration of creative forces as opposed to a company with rigid structure, giving the employees complete freedom to produce their products. The most important takeaway from this source it provides an example of a modern, friendly, and innovative handbook that employees can use in order to navigate the business environment. Its use of imagery and design concepts make it much easier to understand and interact with than a standard black and white text manual. These concepts highlight the value of design and graphics when integrated with a part of the business process.

4) Method (~400-500 words)

Going down the rabbit hole of how information is interpreted, and the levels of understanding that are associated to it, I wanted to not only be able to teach my audience about my areas of focus only on a theoretical level, but I also want to be able to show them a tangible example of how these concepts can be applied, and in part have them experience some of these forces at work for themselves. As a result, I am choosing to analyze and research these concepts and a multifaceted website that explores them in different levels. On the most fundamental level, my website will still contain a deliverable thesis that presents findings and analysis from having researched the 3 concepts that I have chosen to focus on. This type of research will focus on first introducing the main concepts that are traditional for each of these areas, followed by analysis of how these concepts can be taken out of the constraints from one discipline and applied to other disciplines. Secondarily, the thesis theory will also present a large part designated for the application of these concepts in real examples of work that I create. By having created different examples of work that considers the concepts such as aesthetic and design decisions that are

prevalent to User Experience and Information Interpretation, part of this section will also involve reflections and analysis of how I came to pick these decisions and why. On a third level, as we get closer away from theory and more directly into application, I wish to apply the concepts of creating workflows and processes directly when I design my website, while also cataloging and recording all my progress, in addition to reflection of how the project is developing. Ultimately, I wish to present different ways of learning about these concepts through theory, through examples and analysis, and ultimately by having the concepts be what lead the decisions behind the content and creation of my website altogether.

5) Limitations (~300-400 words)

Briefly mentioned in my method, I am choosing to stay away from wanting to find a definite, ultimate, definition for some of the concepts that can be used to describe things subjectively. Such as trying to find what something like “beauty” is definitively. There is a nuance between being able to talk about concepts that describe emotions as a whole, and although these can be to an extent described and talked about within a certain degree, there would be many pitfalls (in fact this would be almost certainly impossible) to have a project that could definitively say what something like beauty is, or what an emotion like being happy means exactly, the answer is: *it depends*. Another of the things that I am trying to stay away from is having to do a study or test that scientifically analyzes how a subject group might interpret a positive user experience, by doing something like a research study or a questionnaire, given that these would not be very useful or successful, given the scope of my project. As a result, in part I am truly attempting to frame the project as more of an exploration from these concepts, that allows an end viewer of my project to:

- 1) Become familiar with the concepts,

- 2) Be able to concretely see the *relationships* that I describe between the concepts
- 3) See examples of how these concepts can be seen at work in products, objects, or graphics.
(From examples of work that has done this, as well as my own)
- 4) Be able to interact with these concepts on an experiential level (Through the use of my website, through getting an understanding the processes behind making my website)
- 5) Be able to better understand how these concepts are perceived, how they as an end user are influenced by them, and how they themselves can take the concepts and apply them themselves, what the limitations of this project were and what can be done with further research

Although there might be weaknesses from not having proprietary scientific evidence that I acquired, I set up subjectiveness as an area that can be used as a delimitation for this, given that even if I tried to have a test group the answers would most entirely be qualitative and subjective given the nature of the topic. My goal is to be able to provide people with a subjective account of my exploration of these concepts, in hope that they might have something to take away from it, in addition to evaluating how well I am able to communicate complex concepts through the use of my methods. Additionally, I'm hoping that one of the take aways from my experience is that people themselves can go and start exploring for themselves, and are able to begin spotting these forces working.

6) Possible So-What of it All (~300-400 words)

Exploring the intersections between the concepts and resources that are used to frame the research question, the main focus that the research question and the thesis that is to be developed seek to augment how the concepts of User Experience, Information presentation/interpretation

and work optimization and process can work together to consistently increase the quality of products and processes. Combining the concepts of User Experience design and work process systematization, the main goal is that this will provide opportunities for a self-serving synergy in the projects and products where the considerations of these fields are applied. The implications of the research are to explore if a cyclical and iterative framework can be developed that creates increasingly greater output and iterations as the business process is improved upon, and as processes are applied to create increasingly better and more sophisticated products. There is great benefit that can be drawn from the application of User Experience and other concepts which are typically reserved for computer science into the field of business if this crossover can be achieved. It is predicted that in a situation where these two are intertwined, such as when the business is focused on making software or computer systems, even greater synergy can be theoretically achieved and garnered, given its increased cyclical and self-referential nature of developing better development processes.

In my ability to convey to an end user the complex and self-referential focus of my project lies what I hope will be the proof of concept behind being able to present complex information through ways in which people can directly experience them if this can be achieved. I have decided to launch my website 6 months in advance from the expected date of my completed thesis in May of 2020, with the hope that being able catalog and see the progression of the website will provide some value of its own to the final project.

7) Calendar for Completion

EXPERIENCING INFORMATION WEBSITE & THESIS TIMELINE

Stage 1: Landing Page December 1, 2019

Minimum Viable Product of Website is launched. Containing a published under construction landing page for the website and an about statement about the project that will be developed.

Stage 2: Proof of Concept (Thesis Proposal) December 10

Proof of concept for a UX and Systemization website that presents the potential uses and structure of having this be the medium in which the thesis is done.

Stage 3:

- Complete First Draft of Website and Thesis
March 15th
- Complete Revised Draft
April 1st

Stage 4:
April 8th: Complete
symposium full draft
April 21st: Symposium
presentation

Stage 5: Complete Final Website & Thesis May 1, 2020

Full Completed Website showcasing interaction between UX, Information Interpretation, and Systemization. Contains Traditional Theory Portion of Thesis (Final Thesis), in addition to work systemization and cataloging conclusion and analysis from website development over past 6 months.

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8) Questions for Advisor

- Do you have any suggestions in how to set up limitations for researching concepts that represent how a person subjectively feels about something?
- How do I deal with the fact that technically, a website is never “finished”, in that it could always be added to and changed? Where could I draw the line
- If my project has the potential of showing a negative finding as its conclusion, (in that it could show that the processes how I used them were not significantly useful) how do I do this where it won't just seem like an easy way
- Because my thesis focuses more on my exploration and application of the concepts, as opposed to a traditional research paper, how can I frame my findings so they are still relevant?
- Having mentored other computer science students in creating a product for their senior project, what are some common pitfalls that you have seen that I could avoid?



9) Working List of References

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