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**Comp4280f2020 - Paper1(Minimalism) & Paper2(Iconography)**

**Paper 1 - Minimalism**

Minimalism is a technique used in design which focuses on the principle of removing and reducing unneeded elements in a design to prevent distraction and allow a user to focus primarily on its necessary elements. The key is to have a viewer/user be able to perceive the design and, in minimal time, be able to comprehend the meaning, purpose, or functionality of the piece. The minimalist art style was said to have formally *“...emerged in the late 1950s when artists such as Frank Stella, whose Black Paintings were exhibited at the Museum of Modern Art in New York in 1959, began to turn away from the gestural art of the previous generation.” (ART TERM: MINIMALISM, Tate,* [*https://www.tate.org.uk/art/art-terms/m/minimalism#:~:text=Minimalism%20emerged%20in%20the%20late,art%20of%20the%20previous%20generation*](https://www.tate.org.uk/art/art-terms/m/minimalism#:~:text=Minimalism%20emerged%20in%20the%20late,art%20of%20the%20previous%20generation)*).* Around this time, artists began to transition to this simpler art style because it was more user-friendly due to its simpler and less-overwhelming design thus it became appealing to the general masses and we now see this art style widely used in today's society ranging from UI design to “clean” marketing and branding.

To dive in further, the use of Minimalism in design and interfaces is said to have significant benefits towards the user experience whether they are simply perceiving an art piece or using an application. The primary reason as to why Minimalistic designs are often better is because they are considered “*...less ‘visually complex’”* and are considered more attractive “*...because low-complexity websites don’t require our eyes and brain to work as hard to decode, store, and process information.*” (*Why Simple Website Designs Are Scientifically Better*, Tommy Walker, CXL , <https://cxl.com/blog/why-simple-websites-are-scientifically-better/>). By having this benefit of simplicity which reduces cognitive load, a user can understand what an art piece is communicating without having to put significant effort in trying to memorize, associate, or comprehend the purpose or functionality of the art piece or interface. The term “cognitive load” is defined as the amount of energy one’s brain must allocate in order to comprehend a subject. If a design is complex, the cognitive load increases which slows productivity and comprehension because the user must intake and learn the purpose of more elements in the art piece or UI in order to grasp a full understanding of it.

In Minimalism, these following principles are essential in its development: *“A minimality of means, minimality of meaning, minimality of structure, use of patterns, involvement of the recipient in the work of art.”* *(Minimalism in Art and Design: Concept, influences, implications and perspectives*, Cedric VanEenoo, University of Technology Sydney, Australia, <https://academicjournals.org/journal/JFSA/article-full-text-pdf/3A668BC6040>). To further elaborate on these terms, a minimality of means can be interpreted as using minimal elements in order to communicate a message in an art piece, or using minimal UI elements to provide functionality in an application without excessively limiting the user’s actions. A minimality of meaning can be interpreted as having the purpose or meaning of the art piece or UI be straight forward and not an overly-complex concept. For example, if we were to create a photo editing UI, we would state the minimal meaning to be the straightforward task of photo editing, and we would ensure that the means to edit the photo were minimal such as the UI having minimal steps for the user to execute while still maintaining the full functionality of being able to upload, edit, and download the photo. The term, “minimality of structure”, also ties in to the idea of minimality of means, because this means that we use minimal elements in the design structure in order to not deviate the user’s focus with excessive and unnecessary elements to ensure a fast learning curve when the user first perceives the piece. The use of patterns in minimalism also contributes to the reduction of learning curve or cognitive load because pattern recognition is an innate human ability that can be implemented in a UI in order to improve user recognition of element functionality. For example, in a UI, if all the upload buttons are colored green, and all the download buttons are colored blue, then, through pattern recognition, a user could deduce the functionality of a button without needing to see a label on it. They can make the deduction simply based off the pattern of colors the buttons use. The last main principle, as mentioned above, is the importance of the involvement of the recipient of the work of art. This can be interpreted as the importance of gauging the effectiveness of the art’s minimalistic qualities by analyzing how users engage with it and if they are able to comprehend the purpose or functionality of the piece in little-to-no time.

Overall, by using Minimalism in art and UI design, an artist or developer can ensure that the recipient of the piece will experience a reduced cognitive load in the learning/comprehension process when analyzing the piece. For improved usability of a site or comprehension of a piece, the artist or developer must “*Think of what’s necessary to the content and function of your website. Then focus on only those things, and omit anything that doesn’t directly contribute to either the content or function.”* and the artist or developer must remember that *“...certain design and graphical elements will directly affect the readability or usability of your website.”(Principles Of Minimalist Web Design*, Cameron Chapman, <https://www.smashingmagazine.com/2010/05/principles-of-minimalist-web-design-with-examples/>*).* The use of simple designs and patterns have been proven to increase the readability and usability of a website thus proving that, for efficiency and productivity, minimalism is an important design style because of its reduction of distracting elements and its reduction of cognitive load on the user.

**Paper 2 - Iconography**

In graphics design, Iconography is the use of simple shape elements composed together to “...*help to transmit a clear message and a memorable image”.* It is important that the design includes “...*necessary details to recall the object they represent. If they don't, your message might become confusing.”* (*Marks, Icons & Symbols in Graphic Design: Application & Examples*, David Juliao, <https://study.com/academy/lesson/marks-icons-symbols-in-graphic-design-application-examples.html>)*.* By using basic shape elements to form a minimalistic, designed image (an icon), a message can easily be conveyed without the consumer having to use a significant cognitive load to comprehend the meaning of the image. For example, when driving, the usage of street signs tends to involve significant amounts of iconography due to the fact that they are a more universal way of communication because they do not rely on language, and they reduce cognitive load because the user can look at and comprehend the basic icon image instead of having to read a sign with text which involves the distinguishment of characters and word meaning. While driving, like with other tasks, it is important to reduce the cognitive load that is used by other elements which can be distracting like instructional street signs.

To further define Iconography and provide background, it is said to be “*...both a method and an approach to studying the content and meanings of visuals. Originally devised in the context of sixteenth-century art collecting to categorize the particular visual motifs of paintings.” (Iconography and Iconology as a Visual Method and Approach*, Marion G. Müller, <https://methods.sagepub.com/book/sage-hdbk-visual-research-methods/n15.xml>*)*. Iconography was initially used as a method of symbology or basic design to convey a meaning such as art piece genres. For example, in older, religious art pieces, a cross icon may have been used to depict that the genre of the piece was religious, or, in royal family art pieces, an icon or insignia containing the family’s royal crest may have been used in order to label that the art belonged to that particular family. Through these icons, artists were able to clearly convey the category of an art piece.

Studies have shown that Iconography is an effective method of conveying messages with little cognitive load. A particular study “*...investigated the effects of users’ familiarity with the objects depicted in icons on the cognitive performance of icon identification.”* And the study found that icon usage was indeed quicker when it came to the users understanding the message. The study concluded that, *“When creating new icons for time critical user interfaces, icons should be kept as simple as possible and employ familiar, commonly used, graphics.” (Effects of Users’ Familiarity With the Objects Depicted in Icons on the Cognitive Performance of Icon Identification*, Zhangfan Shen, Chengqi Xue, and Haiyan Wang, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6024531/>*).* In order for icons to be effective, they must properly use shapes and color that appropriately convey its message. Otherwise, an icon can be misleading and depreciate a UI’s readability/usability by adding confusion as opposed to enhancing it by adding clarity with minimalistic design. The objective of the icon is to *“...employ visual metaphors to speed comprehension, by transferring properties from something we already understand.”* so that we can navigate an art piece or UI quicker, with little-to-no learning curve, instead of having to deal with lengthy, language-constrained text or distracting typography because, instead, icons can be used primarily to *“...help us find our way around physical and digital spaces.” (Foundations of iconography: Definition, purpose, and benefits*, Helena Zhang, <https://uxdesign.cc/foundations-of-iconography-f95d7233a3e6>*).*

The major principles to developing good icons are as follows: “*Findability: Can people find the icon on the page?Recognition: Do people understand what the icon represents? Information scent: Can users correctly guess what will happen once they interact with the icon? Attractiveness: Is the icon aesthetically pleasing?” (Usability Testing of Icons*, Aurora Harley, Nielsen Norman Group, <https://www.nngroup.com/articles/icon-testing/>*).* To further elaborate on these principles, we can define findability as the composition of icon placement, color, and sizing which allows the user to easily perceive the icon without excessive effort or risk of overlooking it. Recognition is the use of common societal themes or elements in an icon which allows a general user to effortlessly recognize the purpose or message conveyed by the icon. Information scent is directly associated with the expectation of responsiveness of an icon in a UI. For example, if you click a button that is an icon of an arrow pointing towards the right, you may expect that button to either scroll right, or scroll to the next page. Attractiveness is also a very important quality because it is necessary in the scheme of visual appeal and marketing. If you place icons on an art piece or interface, you want to ensure that the design is attractive so the user is compelled to either notice or interact with the icon instead of the icon being an element that can easily be missed, ignored, or overlooked.

Studies show that, after conducting usability tests on UI’s with icons integrated, the results were as follows: “*Lightning-fast learning curve, Goodbye messy collaboration, Get work done faster, Make better decisions, Find answers faster, See the whole picture.”*

*(How to Conduct Icon Usability Testing (and Do Icons Even Improve Usability?)*, CXL, Shanelle Mullin, <https://cxl.com/blog/icon-usability-testing/>*).* The fast learning curve was a result of the icon usage needing less of a cognitive load for comprehension. The reduction in messy collaboration was due to the icons providing a more universal level of understanding unlike language-constrained text. Because of the reduced cognitive load and increase in universal understanding, work was able to get done faster thus proving that icon usage in UI’s can increase productivity. The benefit of making better decisions is because the icons conveyed functionality more clearly than the sole-use of excessive, distracting, or lengthy text labels which require more of a cognitive load to comprehend which can cause users in a time-critical environment to “rush” or “skim” over text and click on a feature without having the full knowledge of what that feature is supposed to do. The final aspects of finding answers faster and seeing the whole picture is produced by the effect that icons have by improving user navigation in a UI and providing a more clear, easier-to-learn method of conveying information on a universal level beyond the restraints of language and hard-to-read typography.