

AN EMPATHETIC APPROACH TO INFORMATION DESIGN

by

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This thesis was prepared under the direction of the candidate's thesis advisor, Professor Eric Landes, Department of Visual Arts and Art History, and has been approved by the members of his supervisory committee. It was submitted to the faculty of the Dorothy F. Schmidt College of Arts and Letters and was accepted in partial fulfillment of the requirements for the degree of Master of Fine Arts.

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ABSTRACT

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This thesis will explore the vital importance of empathy on the part of graphic designers when creating information graphics. Today's over-mediated public expects a rich user experience that is emotionally engaging, and multi-sensory by nature. To meet the public's need, graphic designers must accept the cognitive responsibility to be empathetic to the viewers' relationship to the information, and not just the surface issues of form, media, and content.

I will explore the evolution of the essential roles that designer empathy and user expectation play in information dissemination, by focusing on effective information graphics. First, I will start with the history of information graphics, and the parallel developments of technology and graphic design. Next, I will locate examples of new media that allow more sophisticated expressions and add more designer responsibilities. By pointing to watershed examples of information graphics that add empathy to create an

engaging user experience, I will further develop the connection between the two. Finally, to demonstrate the importance of this empathetic information design hypothesis, I will create an exhibition using various information designs addressing America's and my own problematic relationship with information related to sugar, one that has led to the highest incidence of obesity and diabetes in U.S. history.

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THESIS STATEMENT

My goal for this thesis is to explore the historical origin story of information graphics and trace the intersecting roles of technology and the effectiveness of graphic design. I will follow the rise of the image as a substitute for text-based communication and the rise of animation and motion graphics. I will also survey the latest science to unravel why information graphics work so well, and why, specifically, they are gaining relevance in the Digital Age.

By examining the many forms information graphics have taken, especially the newer ones, I will illustrate the relationship between form and function in regard to their effectiveness in communication. Finally, I will explore the role empathetic design can have to create a more powerful user experience by designing an information design exhibition, “Sugar Coated,” about the public’s and my own problematic attempts to understand information about sugar.

The story of “Sugar Coated” is designed to expose the propaganda, politics, and advertising used on the American public to encourage the ingestion of sugar. Additionally, it is also the story of our own culpability in the rise of obesity and diabetes to epidemic levels. The exhibition will be a test case for the use of empathetic design principles to create a more compassionate user experience with information design.

DEFINING TERMINOLOGY

Information design, user experience, and empathetic design are all evolved versions of their historical pasts. Information design is the evolved form of information graphics, and its predecessors: hieroglyphics, illustrations, Isotype, charts, and graphs. Information design advances this notion to include motion, sound, and all our senses in both time and space.

User experience (UX) is not a new field of design; its origins come from advertising and product design. American Institute of Graphic Arts (AIGA) lists UX designer in their 2014 jobs survey describing the position: “A designer with expertise in human factors that impact interactive experiences. Skills include: user analysis, wire framing, prototyping, architecture and interaction modeling, persona development, writing and graphic illustration.” A common task for the UX designer includes refining the navigational system of a website to make it efficient and elegant for the user while satisfying client’s goals for a functional site.

UX is also used in industrial design for products ranging from toothbrushes to car navigation systems to the iPhone. The process of designing user experiences starts with the designer asking how the user *feels* when using the product, not just positioning the buttons in an intuitive way. Does the iPhone design make the user feel empowered or privileged by association? Does the design make users desire the latest version because of this experience? The high-touch design of the iPhone and all Apple products creates an

almost cult-like status for the brand, which comes from thoughtfully simple design and countless studies of human interface design.

Apple products have this emotional engagement in part because of the brand story. Apple was founded by garage start-up pirates who bucked the system of “Big Brother.” It was originally the product choice of creative types and anti-establishment (IBM and DOS) users. Over the years, the company became known for its product innovation. The story was strengthened through the rise and fall and subsequent resurrection of Steve Jobs, and his untimely death at the pinnacle of the company’s success. Apple engages users by extending the idea of design to include awareness of the emotional state of the viewer. They craft a story and products that engage users on a deeper level based on their emotional interaction with the products.

Empathetic information design is a user experience process that privileges both the subject of a project and the experience of the end-user. Information design serves as a catalyst for information connections made on a mechanical level combined with an emotional one. I am proposing a deeper empathetic approach to the user experience design process. This approach pushes further than the mechanical functionality testing that we currently do, such as testing if scissors will work equally well for a left- or right-handed person or creating personas to test differing user group needs. Deeper empathy explores the emotional landscape of how people feel about a subject, for example, how an obese person would like to be *understood* rather than a presentation of data about obesity. Very few designers train in psychology and sociology and rely instead on instincts based on their role as consumers and creators of design; empathic design would benefit from an

education in both psychology and sociology so we might engage in authentically meaningful and empathetic information design.

THE HISTORY OF INFORMATION GRAPHICS

The origins of human language are pictographic and iconic in nature, such as the cave paintings of Lascaux, France thought to be from 30,000 BCE, or Egyptian hieroglyphics, thought to be from 3,000 BCE. Letterforms evolved from pictographic hieroglyphics and cuneiform symbols into the alphabets of every culture of the world. Alphabets allow for a more precise assignment of meaning. Dictionaries are a cultures' agreed-upon exchange of a word's value; however, the proliferation of many languages, and the poor distribution of the printed word keep images a dominant form of communication. Images have been a tool for communicating with the illiterate and those who could not afford books (most of the general public before the 19th Century). In churches, allegorical paintings tell the stories of the Bible, simplifying the biblical text, replacing reading with an image and a vocal interpretation. The trope that "a picture is worth a thousand words" comes from recognizing that an image is a mnemonic to memory. Paivio's theory of dual encoding postulates that reading text may eventually create a mental picture in the reader's mind; however, an image is that picture instantly present in the viewer's mind. The visual image creates a connection to the label of that object that is verbal, making images a more powerful means of communication and cognition.¹ Images are the vessel of such complexity of detail and layers of meaning that are beyond the power of a single word (or a thousand words) to capture. Information

¹ Thomas, Nigel J.T. "Dual Coding and Common Coding Theories of Memory." *Stanford University*. Stanford University, 2014. Web. 02 July 2015. <<http://plato.stanford.edu/entries/mental-imagery/theories-memory.html>>.

graphics were born of the recognition of the power of graphics to be more efficient communicators of complex information.

While the early use of visual representations might be classified as “graphics that are informative,” the first information graphic of modern history is credited to Playfairs’ publishing of “Commercial and Political Atlas.”² Playfair first used area and pie charts in 1801 to represent the economy of England in 1786. His early information graphics established a new language of visual representation involving a timelines, pie charts and bar graphs, and is still in use today.

In 1857, Florence Nightingale used a new form of chart that stacked bar and pie charts together to persuade Queen Victoria to improve military hospital conditions during the Crimean War. This chart design, first referred to as “Nightingale Rose diagram,” is now commonly called the Coxcomb. The Coxcomb and use of color-coding allowed Nightingale to represent the causes of war deaths each month. She presented deaths due to preventable diseases in blue, wounds in red, and other causes in black. The information was instrumental in motivating actions that resulted in lowering deaths from 50% to 20%.

As a result of the successfully implemented actions, Queen Victoria presented Nightingale with the Royal Red Cross.³ Nightingale’s original report of 836 pages was summarized into one data-driven graphic that built on Playfairs’ graphic forms, and extended the language of information graphic design.

² Playfair, William. "Image of William Playfairs' "Commercial and Political Atlas"." Wikipedia. Wikimedia Foundation, 1 Jan. 1786. Web. 10 Aug. 2014.

³ "Florence Nightingale." Wikipedia. Wikimedia Foundation. Web. 25 Sept. 2014. <http://en.wikipedia.org/wiki/Florence_Nightingale#Statistics_and_sanitary_reform>.

Similarly, John Snow, a mid-19th Century physician used information graphics to fight the cholera epidemic in London. In Snow's "Mapping Cholera" information graphic of 1854, he

...used a dot map to illustrate the cluster of cholera cases around a specific water supply pump. He also used statistics to illustrate the connection between the quality of the water source and cholera cases by showing that the Southwark and Vauxhall Waterworks Company were taking water from sewage-polluted sections of the Thames and delivering the water to homes, leading to an increased incidence of cholera. Snow's study was a major event in the history of public health and geography.⁴

Snow's use of data visualization in the form of a street locator map, with each death symbolized by a horizontal body-like line, also points out the power of visuals to illuminate patterns not easily discoverable with the use of text alone.⁵ While the horizontal marks were likely not intended to represent dead bodies, readers seeing this form related it to the human consequences of the horrible sanitation conditions.

Following the First World War, various organizations understood that the many languages of the world were a danger to the peace efforts as the world was becoming increasingly complex and interdependent. While attempts to create an international language like Esperanto (1887) were made, the cost of transitioning from many languages to one language led to Esperanto's doom.

In a world with over 100 languages, 5,000 dialects and many distinct letterforms, creating a universal communication system is a near impossibility. In 1949, Charles Bliss attempted to create a visually based language, *Blissymbolics* published in his text *Semantography*, that used over 100 semi-abstract symbols that could be printed using an

⁴ "John Snow (physician)." Wikipedia. Wikimedia Foundation, 8 June 2014. Web. 8 Aug. 2014.

⁵ Norén, Laura. "Graphic Sociology." Graphic Sociology RSS. W.W. Norton & Company Inc. Independent Publishers since 1923, 9 Feb. 2005. Web. 10 Aug. 2014.

interchangeable “Typewriter Golfball.”⁶ Attempting to create a symbol for every word, and the fact that people had to learn the meanings of each (literacy), proved to be overwhelming and undermined the adoption and success of Blissymbolics.

In a more focused effort to make simple symbolic illustrations universally understood, an Austrian statistician, Otto Neurath and his wife Marie, introduced a set of pictographic characters called Isotype (International System of Typographic Picture Education) that he hoped would become a universal visual language and help unify the world and better communicate social issues. As Neurath wrote in 1925, “words divide, pictures unite.”⁷ His universal symbols became the start of a new era of visual literacy (or “picture education,” as he called it). He created the first entries into the dictionary of symbols one that attaches precise meaning to precise form. The forms that his teams created were still very limited when compared to the nuance of written languages. Information graphics rarely rely on images, symbols, and icons alone, as both words and numbers are often still necessary, as are scale, size, and placement of objects in space to convey information.

⁶ Holmes, Nigel, and Rose DeNeve. "An Introduction to Pictorial Symbols." *Designing Pictorial Symbols*. Paperback ed. New York: Watson-Guption Publications, 1990. 9. Print.

⁷ Neurath, Otto. "Neurath: International Picture Language 1936." *Neurath: International Picture Language 1936*. Kegan Paul, Trench Trubner & Co., Ltd., 1 Jan. 1936. Web. 13 Aug. 2014.
<<http://imaginarymuseum.org/MHV/PZImhv/NeurathPictureLanguage.html>>.

THE NEW INFORMATION GRAPHICS

The evolution of information graphics and the forms they take developed out of necessity. The need to explain economic trends, or deaths caused by city sanitation conditions or wars, or the vital need to communicate in a world separated by language, created an environment in which designers serve as the visually literate translators of words to pictures. The methods and processes by which we make these graphics has evolved, as has the forms they take, as illustrated though a historical review. Some forms evolve with advances in technology, like the merger of sound and video, or the medium of the communication, like the Internet. Likewise the forms they inhabit, television, computer, smartphone, or tablet, might necessitate a responsive design approach, so that the information is appropriate to the medium.

The growth of animation and the use of storytelling techniques have expanded the many forms that information graphics can take. A beautiful example is Dennis Dutton's "Darwinian Theory of Beauty," which is presented as a line art drawn series of cartoon figures. The figures, created by animator Andrew Park, depict the words being spoken by Dutton on his theories of beauty.⁸ Park's use of visuals synchronized with spoken words enhances the storytelling power: "'Cognitive' is a term that describes the process people use for remembering, reasoning, understanding, and using judgment; the ability to think and make sense out of what is seen, heard, felt, and experienced, in order to solve

⁸ Dutton, Dennis. "A Darwinian Theory of Beauty." Denis Dutton: "A Darwinian Theory of Beauty" TED Conferences, LLC, 1 Feb. 2010. Web. 12 Aug. 2014. <http://www.ted.com/talks/denis_dutton_a_darwinian_theory_of_beauty>.

problems.”⁹ Like data visualization, the storytelling animation is about conveying complex ideas in easy-to-understand ways. Animation’s further power lies in the ability to communicate through emotions, shared experience, and narrative motion. Sound, motion, a beginning, middle, and an end, strike primal chords in everyone, because storytelling is a vital part of the human condition and vital to our evolution.

One emotionally engaging example is “The Girl Effect,” a video animation put out by the Nike Foundation. This video explores the life of a young girl in a third-world country, as she grows into adulthood, alternatively with and without the benefit of an education and medical assistance. The stick figure and text animation evoke a visceral response from the audience. The audience feels compassion, but also the implicit message that they can make a difference. This propaganda for good does not use big data to sway the audience’s logical intellect; it uses storytelling power to invite the audience’s emotional response for the common good.¹⁰

Edward Tufte the Da Vinci of Data

No discussion of information design or data and statistical visualization would be complete without exploring the work of Edward Tufte, the so-called “Da Vinci of Data.”¹¹ His seminal books; *The Visual Display of Quantitative Information* (1983), *Envisioning Information* (1990), *Visual Explanations* (1997), and *Beautiful Evidence* (2006), are the foundation textbooks for anyone studying the art. His work with NASA,

⁹ Park, Andrew. "A Short Story About Storytelling." A Short Story About Storytelling. Cognitive Media Ltd, 1 Jan. 2013. Web. 12 Aug. 2014. <<http://www.wearecognitive.com/videos/storytelling>>.

¹⁰ Foundation, Nike. "The Girl Effect: The Clock Is Ticking." YouTube. TheGirlEffect.org - Nike Foundation, 13 Sept. 2010. Web.

12 Aug. 2014. <<https://www.youtube.com/watch?v=1e8xgF0JtVg>>.

¹¹ Bissantz, Dr. Nicolas. "Ivy League Rock and Roll – A Day with Edward Tufte -- »Me, Myself and BI«." *Ivy League Rock and Roll – A Day with Edward Tufte -- »Me, Myself and BI«*. Bissantz & Company GmbH. Imprint, 23 Mar. 2007. Web. 02 July 2015. <<http://blog.bissantz.com/a-day-with-tufte>>.

and IBM, his presentations at hundreds of seminars to Fortune 500 companies, and his appointment by President Obama to the independent panel that advises the Recovery Accountability and Transparency Board, only hint at his position in the field.

“Tufte’s philosophy is simple but powerful: get rid of ornamentation (what he calls “chartjunk”) and let the data speak for itself.”¹² His disdain for PowerPoint presentations and charts overfilled with data and numbers is countered with a clear interest in an analytical, statistical, and quantitative approach to information with a clear evidence of accountability and transparency.

Tufte’s information visualizations are a product of the data-intensive information he is tasked with simplifying. If a statistician’s job is to measure the effects of numbers on people, such as job losses from reduced political spending, or the effects on families and communities from cancer deaths, the raw numbers are important for accounting purposes only; Tufte’s clarity of data would fail. In these situations, an empathetic visual approach might reveal the real human costs and benefits of different political actions. A humanistic approach to information design asks not just, “what are the tangible numbers of deaths?” but “what are the intangible effects of those numbers when thought of from the perspective of the humans they represent?”

Tufte’s process of design was made for the early digital age and has been a part of the design thinking that journalism has adopted as its foundation of numbers and statistics, but it falls short on the intangible compassion that might come from a more empathetic approach. Exceptional examples exist such as the photos and biographies of

¹² Romano, Andrew. "How Master Information Designer Edward Tufte Can Help Obama Govern." *The Daily Beast*. Newsweek/Daily Beast, 09 Mar. 2010. Web. 02 July 2015. <<http://www.thedailybeast.com/newsweek/blogs/the-gaggle/2010/03/09/how-master-information-designer-edward-tufte-can-help-obama-govern.html>>.

every victim of 9-11 printed on the pages of the New York Times, and gathered for an interactive web site.¹³ However, far too often the numbers are abstract and difficult to comprehend, so users remain blind to their true impact on our lives.

Information Graphics and Journalism

In the 20th Century, types of information graphics have expanded to include locator maps, timelines, illustrations, size comparisons, flow, area, and bubble charts, polar area, waterfall, radar, cartographic, enumeration, and even photo illustration-based information graphics. Additionally, the “who, what, when, where” questions that are the backbone of journalistic enquiry are part of same process of designing an effective information graphic; so, the information graphic has become part of the journalists’ toolkit.

Journalism’s job—to explain the complex news of the day in the simplest of terms to the widest audience—made journalism the incubator for innovation in information graphics. In this incubator, the information graphic form developed from “Commercial and Political Atlas” in the 19th Century to what we see today, mostly due to the arrival of the personal computer.

From the 1980s through the 1990s, information graphics use surged due to the availability of color reproduction and other features now available with the personal computer. The design goal for this information hungry audience was to make complex ideas simple.

¹³ Staff, New York Times. "Portraits of Grief." The New York Times. The New York Times, 24 Dec. 2014. Web. 11 July 2015. <http://www.nytimes.com/interactive/us/sept-11-reckoning/portraits-of-grief.html?_r=0>.

Computers and Information Graphics

As computer tools evolved, designers abandoned hand drawing on separate sheets of acetate in favor of the much quicker process allowed by the computer. Libraries of clip art and reusable maps and icons simplified complex projects. For example, when I worked at the *Miami Herald* in the early 1990s, I saw the 15-person art department shift from laborious hand-drawn graphics to using the vector drawing program Adobe Illustrator to produce at least 10 information graphics a day. When the space shuttle Challenger exploded in 1986, the staffs of four Knight-Ridder newspapers collaborated by phone and dial-up modem to produce five full-color pages of information graphics that incorporated photographs, exploded views of the of the shuttle's inner workings and how a faulty O-ring was to blame for the accident.

The use of information graphics has increased in newspapers and magazines over 400% since 1990, with a 9,900% increase in use on the Internet.¹⁴ Tweets and other social media containing graphics are 30 times more likely to be liked and shared. Zarrella, a social media-marketing expert, found a 94% increase in re-tweets if the tweeter used images.¹⁵ Producing information graphics is getting ever more sophisticated, as David McCandless¹⁶ demonstrated in his TED (Technology, Entertainment and Design) talk of 2010. McCandless talked about the influence of an ever-changing database of information about the efficacy of dietary supplements and their prominence, published in medical journals. He then generated a visual representation in real time on a

¹⁴ Alleyne, R. (11 Feb 2011). Welcome to the information age – 174 newspapers a day. The Telegraph

¹⁵ Zarrella, Dan. "Use Images on Twitter to Get More ReTweets." Dan Zarrella RSS. Dan Zarrella, 13 Oct. 2013. Web. 25 Sept. 2014. <<http://danzarrella.com/use-images-on-twitter-to-get-more-retweets.html#>>.

¹⁶ McCandless, David. "The Beauty of Data Visualization." David McCandless: The Beauty of Data Visualization. TED Conferences, LLC, 1 Jan. 2010. Web. 12 Aug. 2014. <http://www.ted.com/talks/david_mccandless_the_beauty_of_data_visualization?language=en>

website. The form of this information is what he termed a “balloon race,” where the height and size of the balloons reveals the number of times the subject is mentioned in the journals and the positive or negative tone of the mention.¹⁷ Having a database-driven web site constantly updated with new information adds time value to the users’ experience and to the visual lexicon of information design.

The Biology of Information Processing

The biology of information processing explains why the latest advancements in technology have sped up the rate of information acquisition and the need for designers to understand its formatting. The technology to create photographs and video on smartphones and to publish to the Internet has made us more visually literate. Vision is arguably the most important of the sense. Half of the human brain is involved in visual processing; 70% of our sensory receptors are in our visual cortex, and a full 90% of human sensory input is visual.¹⁸

Today, we can process pictures and attach them to meaning in fewer than 100 milliseconds.¹⁹ Retaining information from words is around 20%, while retaining information from an image is in the 70% range.²⁰ However, the ambiguity of image interpretation means words are still vital for focused communication. The information graphic—or infographic—is defined as any visual presentation that combines images, symbols, icons, sound and video with words. Words are necessary for a focused communication to convey meaning to the user.

¹⁷ McCandless, David, Miriam Quick, and Kesta Desmond. "Interactive: Snake Oil Supplements? The Scientific Evidence for Health Supplements - Information Is Beautiful." Information Is Beautiful Interactive Snake Oil Supplements The Scientific Evidence for Health Supplements Comments. David McCandless, 1 Jan. 2013. Web. 12 Aug. 2014. <<http://www.informationisbeautiful.net/play/snake-oil-supplements/>>.

¹⁸ Merieb, E. N. & Hoehn, K. (2007). Human Anatomy & Physiology 7th Edition, Pearson International Edition.

¹⁹ Thorpe, S., Fize, D. & Marlot, C. (1996). Speed of processing in the human visual system, Nature, Vol 381.

²⁰ Merieb, E. N. & Hoehn, K. (2007). Human Anatomy & Physiology 7th Edition, Pearson International Edition.

The information graphic has been useful for centuries as a means of concisely communicating key ideas. Today information graphics are even more useful. Most users have grown up with the Internet, and have a shorter and more easily distracted attention span. According to the National Center for Biotechnology Information at the U.S. National Library of Medicine, the average attention span of a human being has dropped from 12 seconds in 2000 to 8.25 seconds in 2015.²¹ The information graphic, which efficiently combines the visuals with text to carry complex messages, context, and specificity of meaning, is the perfect match for the Internet generation's short attention span. The success of information graphics is the result of the clear use of a technology that capitalizes on the human biology of vision and brain function.

²¹ National Center for Biotechnology Information, U.S. National Library of Medicine. "Attention Span Statistics." *Statistic Brain RSS*. The Associated Press, 02 Apr. 2015. Web. 02 July 2015. <<http://www.statisticbrain.com/attention-span-statistics/>>.

THE PLACE FOR EMPATHY

In a previous project, *China Water*TM, I built six information graphic posters about the diversion of water in China from farmlands to fuel the industrialization of the country. My design process was based on news reports and statistics about the problem, but did not include any conversations with the people affected or any attempt to empathize with them. For the American audience, it was a beautiful look at another people's problems, a kind of colonialist's view from far away. With an empathetic approach I could have become a conduit for a people-to-people communication.

The Right Kind of Empathy

As Chen points out in his article "*The Value of Empathy*,"²² designing for social causes has become a trendy movement that imagines empathetic design as making us all feel bad about the plight of Africans ("I Am African"), obese people (New York City's "Don't Drink Yourself Fat"), or global warming ("Global Warming Ready"), by attaching these causes to celebrities, shock ads, or marketing consumer goods. This brand of design imagines that consumers will only help if it means they get to imagine themselves as the celebrity, can feel superior to fat people, or buy a pair of jeans in the process to helping others with their problems. Designing for the ego of self-obsessed consumers comes from the playbook of the Mad Men era of advertising design. Playing to the baser instincts of the ego, like selling with sex, may work for selling products but for a more sustainable

²² Chen, Andy. "The Value of Empathy." *Design Observer*. The Design Observer Group, 13 Oct. 2009. Web. 02 July 2015. <<http://designobserver.com/feature/the-value-of-empathy/11347/>>.

and truly empowering user experience, designing with empathy, starts with understanding the problem from the unique eyes of the people you are serving.

IDEO and Redesigning Death

In its precedent setting work on human-centered design, the innovation firm IDEO speaks of empathy: “Immersing yourself in another world not only opens you up to new creative possibilities, but it allows you to leave behind preconceived ideas and outmoded ways of thinking. Empathizing with the people you’re designing for is the best route to truly grasping the context and complexities of their lives. But most importantly, it keeps the people you are designing for squarely grounded in the center of your work.”²³

Chief executive officer at IDEO recounts in an article “*Death, Redesigned*,”²⁴ his attempt to use these principals of empathetic design following the death of his father and the realization that 76 million baby boomers were approaching the same horrible experience of end-of-life he had. IDEO’s approach started by attempting to imagine their own perfect deaths: on an Icelandic ice flow under northern lights; they even built a death yurt and held meetings in it. Their design centered on what the clients asked for, an app called *After I Go*, “...[a] straightforward app that would allow people to write wills or advance directives and, in general, preemptively smooth out the many ancillary miseries that can ripple through a family when someone dies.”

Ultimately the app proved a non-starter for business reasons, but led to conversations and an eventual deal with the hospice organization Zen Hospice. With Zen Hospice the empathetic design process included studying the lives of the dying and those

²³ The Field Guide to Human-Centered Design By IDEO.org, 1st Edition © 2015, ISBN: 978-0-9914063-1-9

²⁴ Mooallem, Jon. "Death, Redesigned." *The California Sunday Magazine*. California Sunday, Inc., 05 Apr. 2015. Web. 02 July 2015. <<https://stories.californiasunday.com/2015-04-05/death-redesigned>>.

left behind to articulate and design a palliative care solution that was more compassionate. Designing an app to address the mechanics and practical process of dealing with death while comforting, failed to address the real complexities and anxieties of death for the dying and the loved ones left behind. Designers in this way are evolving from solely designing forms to design experiences even dealing with the questions of our own demise.

Empathetic Design Hypothesis

Understanding how technology has enhanced design communication addresses the questions of how we communicate, it doesn't address for whom or to whom we are communicating. To apply the empathetic design hypothesis I will address the many Americans like myself who have a problematic relationship with sugar and obesity, the audience is everyone who needs to understand that the problem includes them.

Like most Americans, I have had difficulty controlling my weight, first in my early teens and later in my thirties. As with most young adults, the combination of a sedentary lifestyle, a desk job behind a computer, and a dependence on fast food and eating out led to ever-increasing weight gain and yo-yo dieting. By age 50, I was diagnosed as morbidly obese and a Type 2 Diabetic. Multiple doctors and a dozen medications later, I was set on the same prescribed path every diabetic follows, and like many other diabetics, received very few answers about how I got here and what I really needed to do to get better; rather, every healthcare provider espoused the mantra to eat less and exercise more.

Like other Americans dealing with obesity, I found the volume of conflicting information so problematic that the result was more often worse rather than better health.

Yo-yo diets, nutritional labels designed by lobbyists, and food industries seem to conspire against the average person. As a result, people feel powerless and unable to take appropriate action. With 24 million Americans diagnosed with Type 2 Diabetes²⁵, and the 33% of Americans battling obesity, I was not alone. Like them, I noted the mounting evidence that suggested a conspiracy of outside factors were, in part, to blame. Information about nutrition and sugar, in particular, were privileging political interests rather than health of the public. The numbers and the facts about the health dangers of excessive sugar were being twisted by the sugar industry for profit.

²⁵ Neal, Meghan. "USDA Food Pyramid Out: Is The New Food Plate Better?" The Huffington Post. TheHuffingtonPost.com, 2 June 2011. Web. 7 Aug. 2014. <http://www.huffingtonpost.com/2011/06/02/food-pyramid-usda_n_870375.html>.

BIG SUGAR PROPAGANDA

An article by Taubes, and Couzens, for *Mother Jones* magazine, entitled “Big Sugar’s Sweet Little Lies,” chronicled thousands of Sugar Industries’ internal memos. The authors “... show how Big Sugar used Big Tobacco-style tactics to ensure that government agencies would dismiss troubling health claims against their products.”²⁶ The Sugar Industries, the public relations arm of Sugar Research, was so successful in funding their own pseudo-scientific studies since the 1940s that they created doubt about contrary studies suggesting that sugar makes people sick.

Linked to the *Mother Jones* story was a graphic timeline, “A Timeline of Sugar Spin,” that made the extended case that the political advertising perpetrated since the 1940s on the American public had covertly added to both the problem of obesity and diabetes. Unlike cigarettes, sugar, until recently, was not revealed as a public health risk, so any attempt to address the issues with information graphics must first arm the user with the power of this knowledge. If knowledge of the cigarette industry’s lies could result in labels on cigarettes and reduced U.S. consumption of cigarettes, perhaps an information campaign about sugar could produce the same effect.

In addition to these revelations about the Sugar Industries, I found a minefield of misinformation in food labels. For example, labels like *no sugar added*, *all natural*, *fat*

²⁶ Taubes, Gary, and Cristin Kerns Couzens. "Big Sugar's Sweet Little Lies." *Mother Jones*. Mother Jones and the Foundation for National Progress, Dec. 2012. Web. 02 July 2015.
<<http://www.motherjones.com/environment/2012/10/sugar-industry-lies-campaign>>.

free, sugar free, light, multigrain, and made with real fruit, are often misnomers for hidden unhealthy foods.

I was beginning to understand that the food industry's propaganda tactics, which have been vilified in documentaries like *Super Size Me*²⁷, *Fed Up*²⁸, and *Food Inc.*²⁹, had a very real effect on the epidemic rise in Type 2 Diabetes and obesity.³⁰ From the subject's view, the sheer anxiety producing complexity of this information was making me mad; as the designer, I realized if I expressed all this angst in the design, the viewer would disengage from the exhibit out of pure self-preservation. My goal for empathic design is not for the audience to feel the pain, but to feel compassion for those who are in pain.

²⁷ *Super Size Me*. Dir. Morgan Spurlock. Perf. Morgan Spurlock. Cameo, 2005. Film.

²⁸ *Fed Up*. Dir. Stephanie Soechtig. Perf. Michele Simon, Oprah Winfrey, Bill Clinton, 2014. Film.

²⁹ *Food, Inc.* Dir. Robert Kenner. Perf. Michael Pollan, Eric Schlosser, Richard Lobb. Movie One, 2008. Netflix.

³⁰ Laino, Charlene. "Type 1 Diabetes, Type 2 Diabetes Rising Among U.S. Kids and Teens." *WebMD*. WebMD, 14 June 2012. Web. 02 July 2015. <<http://www.webmd.com/diabetes/news/20120614/diabetes-trends-kids-teens>>.

I JUST WANT TO BE UNDERSTOOD

Being fat is part of my identity; when others look at me they can't ignore my size any more than they can the color of my skin. The stereotypes follow: you're lazy, have no willpower, are unattractive, and disgusting. Obese people know these stereotypes all too well. I had faced the most severe bullying in my teen years; public shaming and beatings were the reasons I stopped using the bathroom at school.

As an adult, the derision I experience is perhaps more veiled, but still present. I cannot deny my own culpability, but by learning new facts, I was becoming aware that I have to question the conclusion that my obesity was entirely my fault. My research taught me that diet plans or better nutritional label were not the right goals.

Americans like myself, struggling with obesity and diabetes, want to be understood and accepted for who we are. To reach this level of understanding from the public, I must bring compassion into the conversation. These revelations were to form the backbone of my thesis exhibition, "Sugar Coated" and my goal to use empathetic design principles to help others understand the tangible and intangible information that has led to my and our problematic relationship with sugar.

THE EXHIBITION

The goal of the exhibition is to raise awareness and understanding about our problematic relationship with sugar in all its complexity, including the advertising, propaganda, and even personal responsibility. The title *Sugar Coated* intentionally refers to the practice of sweetening bitter content. The exhibit reveals how this practice results in misinformation and covering up of the truth. The design must convey how we are all part of the problem, and potentially the solution, for our friends and loved ones who struggle with the effects of excessive sugar in our diets. Every medium and technique of traditional design will be used, but empathetic storytelling, user-centered involvement, and emotional engagements are the essential means of creating an environment of compassionate understanding.

Gallery Tour

As visitors enter the gallery space, they see a video of my face being covered with falling powdered sugar, as shown in Figure 1. The video is projected on the right wall and is 8 feet tall. As visitors walk deeper into the exhibit, they pass through the light of the projector. Through the slow reveal and dreamlike quality of the falling sugar on the 8 foot tall super-scaled face, black and white grainy film-like appearance, many viewers became mesmerized and watched the video for the full 9 minutes. The figure, at first euphoric, eventually expresses discomfort over the smothering substance. Positioning the projection so viewers must walk through it caused them to be “sugar coated” and immersed them into the exhibition space.



Figure 1. “Sugar Coated” text introduction and video projection

Next, the visitors saw the title “Sugar Coated,” and introductory text set in loose poetic format with white text on a black field back-printed on Plexiglas suspended with corner mounted silver discs. As a design object, the introduction text looked expensive and important. The introduction statement framed the complex relationship Americans have with sugar and the many actors who play a visible and invisible part in creating the current health-care problems of diabetes and obesity. Corporations, culture, heredity, advertising, propaganda, and self-control, all play a part of these problems framed as “Sugar Coated.”

Setting up the thesis of the exhibition in lines of a poem clarified the actors and their roles in the problem. The poem also drew in the viewers. The body copy can be read both as separate columns or straight across.

It’s a sin this condition we are in...40% of kids are obese; they don’t exercise.
A smoker, a drinker, and an addict... We still blame the victim: self-control!

Subsidized by the government...Corporations want to super-size
2nd leading cause of preventable death...Sugar in excess is out of control

The second reading of the text was purposefully designed to add extra meaning to the statement. As a poem, the aesthetic form follows the function of allowing beauty to engage the readers' attention.



Figure 2. Tablecloth on dining table with black “Eat Your Heart Out” logo, centered

In the center of the room, but slightly off-center to the left, is a dining table with a decorative black tablecloth. On the tablecloth are printed the words “Eat Your Heart Out,” the lyrics to “A Spoon Full of Sugar...” and decorative sugar skulls. The skulls and central text remind the viewer of the deadly effects of sugar while the lyrics evoke fond childhood memories reminding us of the conflated emotions brought on by our relationship to sugar. The table with four chairs invited the viewer to sit and consider

their formative relationships with both food and the culture of eating. Whether reflecting on the family table as an emotional center or general social gatherings to celebrate special occasions, the table image is a powerful empathetic tool.

This table also primes the viewer to experience how early conditioning related to food is a guide to our current relations with food. On the table, four plates are printed with the words, “Home Sweet Home” embroidered around the edges, and silverware and napkins set alongside. Stacks of plates were available for viewers to record memories of Food and Family. The collected memories and reflections were then pinned to the nearby wall demonstrating how we all share similarities, creating greater empathy with the designer as well as with other viewers.

As an empathetic design, the table invited the viewer to sit and recall the memories of their own family and food. Reaching for the plates as they would for food, many visitors drew pictures of those memories on nearby blank “plates,” while others recounted detailed memories of mothers and grandmothers preparing food, or lunchboxes filled with peanut & jelly sandwiches, or lasagna prepared layer by layer. The design method was powerful in that it invited the viewer to insert themselves and their memories into the conversation of the exhibit.



Figure 3. Names for sugar, plates about food and family, and dining table

The adjacent wall contains the plates on which viewers wrote about memories of “Food and Family.” Participants’ plate responses ranged from intricate drawings of the Kool Aid Kid breaking through a wall or a cup of coffee with the words “When my father let me pour sugar in the coffee to see the clouds,” to the narratives of making lasagna with their mother, or a friend who stuck her fist into a girl’s Barbie birthday cake. Over 25 plates were pinned to the walls over the course of the exhibit.



Figure 4. Names for sugar poster and 150lbs of sugar and sugar trashcan

The next item in the exhibition was a trashcan disguised to look like a soda, complete with straw, placed next to three 50lbs bags of sugar. Printed on the side of the soda/trashcan were the words, “150 lb. consumed per person per year.” The form of a large trashcan with red striped straw further connects the massive consumption with both trash and soda drinks, as sodas are a major source of empty calories and sugar.

The massiveness of the 150 lb. of sugar was a visual intended to shock the average visitor. Real bags of sugar used for comparison emphasized the scale of the U.S. obesity and diabetes problem. Most viewers are aware of the “Super-Sized” McDonalds’ cups and “Super Big Gulps” of 7-11, and some might even be aware of Mayor Michael Bloomberg’s controversial attempt to limit soda sizes in New York City. Regardless of previous knowledge of a sugar problem, the viewer is now aware that this problem is about them, and bigger than they had previously thought.

Next to the soda/trash can was a 120-inch wall diagram illustrating the 60-plus names for sugar that have been purposeful hidden from the public. These pseudonyms are used to obscure the fact that 80% of products in the grocery store have large amounts of sugar added.³¹ Written large, the names are no longer obscured; the names are decoratively on display, calling out for the attention they deserve in this conversation about sugar.

Decorated in the style of late 1800s apothecary-style typography common in hipster coffee houses today, these aesthetic objects are decorative, finely crafted, and beautiful whether at 50 feet, 50 inches, or a foot. One of the ultimate goals of infographics is to reveal what was previously hidden information; the stylized words are an elegant solution to increase awareness.

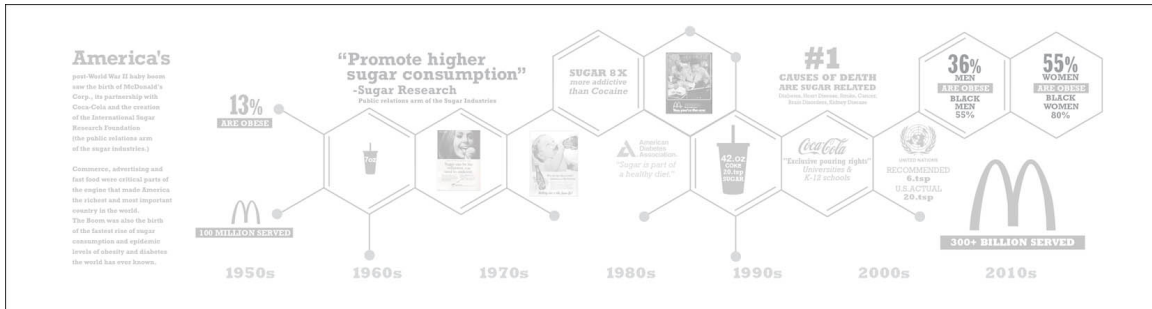


Figure 5. Timeline of sugar industry propaganda and advertising, and its effects on Americans

Posted on the next wall was a timeline that illustrated the connections between the sugar industry’s propaganda, McDonalds’ growth, and advertising to the rise in obesity and diabetes following WWII. To simplify the core message, I chose to focus on the 50s to present. Using data from these decades, I attempted to establish a clear correlative

³¹ *Medical Daily*. IBT Media Inc., 02 Nov. 2014. Web. 02 July 2015. <<http://www.medicaldaily.com/opinion-nutrition-facts-labels-may-soon-include-added-sugar-info-food-companies-308834>>.

relationship in the viewer's mind between industry propaganda, advertising, and the rise of obesity and diabetes.

During my research, I found information on the history of sugar. Over 300 reference stories, 300 images, and 50 hours of searching uncovered information dating to 8000 BCE. The most shocking information for me was the story in *Mother Jones* magazine that revealed the deliberate propaganda effort by the sugar industry to hide sugar's dangerous health risks from the public. My reaction was anger, even rage, similar to what must have been felt by cigarette smokers of the early 20th century upon hearing about the hidden dangers of cigarettes that were causing millions of deaths. I designed the timeline to reveal, in connect-the-dots fashion, the facts. As viewers scanned the timeline, they also learn the truth.

Creating the design required some creativity and adaptation. After a dozen unsuccessful attempts to use the color palette of McDonalds and failing to create the form of a drive-through window, I switched to a white on black motif. For the final displays, I used a high key white-toned typography and images, which simplified the amount of information and homogenized the elements with monotone uniformity. The use of the Rockwell typeface family for all fact-based information here and elsewhere in the exhibit is meant to contrast with the "Sugar Coated" Coca-Cola looking typeface (Loki-Cola), and the contemporary display fonts popular in younger urban demographics, (Bronxshoes) used in the sugar name wall.



Figure 6. Backlit signs of advertising slogans

Around the corner from the dining table were three black backlit boxes mounted on the wall illuminating the text of three advertising slogans, “i’m lovin’ it,” “EAT LIKE YOU MEAN IT,” and “OBEY your thirst.” These advertising words are calls to action that are usually paired with photos of sensuous food or people; when used alone against negative space, the slogans’ impact as stand-alone words is revealed. As aware as we think we are about the power of advertisements, this deconstruction of the text and image reminds us of the many layers that exist below our conscious perception of advertising. Berger, in *“Ways of Seeing,”* says of advertising: “The buyers imagine themselves transformed by buying the product and envy this transformed self. In effect, the publicity

image has lowered the spectators' self-esteem and offers it back if they buy the product."³²

To complete the environment, I employed auditory and well as visual elements. All of the ambient music in the exhibition space included the word sugar. But, more importantly, each song spoke of sugar from the complex perspectives of (1) nostalgia: "A Spoon Full of Sugar Helps the Medicine Go Down" from Mary Poppins, (2) endearment: "Sugar, Sugar," by The Archies, (3) love: "Sugar" by Maroon 5, and (4) seduction: "I Want A Little Sugar in My Bowl" by Nina Simone. The songs were the only sound in the space and were set to an ambient volume, like music at a department store. The viewers became slowly aware of the unobtrusive influence of sound.

Sound design is an often-overlooked element for graphic designers, but sounds, especially songs that have such a rich and complex relationship to emotion, memory, and context, are vital. Sound surrounds the visitors and enters their consciousness as they moved through the space. Without ear "lids," we cannot help but listen.³³

³² Berger, John. *Ways of Seeing*. London: British Broadcasting, 1973. Print.

³³ Wesson, Kenneth. "LEARNING & MEMORY: How Do We Remember and Why Do We Often Forget? *Brainworld*. International Brain Education Association (IBREA), 01 Mar. 2012. Web. <http://academicearth.org/electives/internet-changing-your-brain/>



Figure 7. Before and after photo and video confessional on iPads

The final piece starts with photos in the typical before–and–after style of diet ads, but the “after” version is fatter to show the visible affects sugar has had on my body. I became the case study, demonstrating 55 years of sugar abundance and abuse.

The next part of the final piece is a short video on an iPad. The video is part confessional about my personal responsibility in my struggle with sugar. The other part is reflections on the connection between sugar and the deaths of my parents. Hearts, minds, compassion, and empathy are powerful tools for persuasion, which this piece tried to accomplish. Offering my very real stories as an example of the effects of sugar brings the exhibition to an emotional end. Until this point in the exhibition, with the possible

exception of the dining table and plates, the information graphics primarily used facts to build the complex case of our problematic relationship with sugar.

This confessional is meant to be an intimate emotional recanting of the personal impact of all these facts to provide a context in which the facts are real and alive. The confessional asks of the viewer to empathize with my story in a very intimate and emotional way. Emotions and empathy become powerful catalysts to change when mixed with facts. In the words of brand designer Turkel, “Hearts then minds. People make decisions based on emotions and justify their decisions with facts. To get someone to pay attention, you must get him or her emotionally involved.”³⁴

Unlike the New York City’s campaign, “Don’t Drink Yourself Fat,”³⁵ the confessional positions me as the one suffering instead of reinforcing existing stigmas and stereotypes about the blame for obesity.

The emotion of compassion is closely related to concerns about caring for and reducing harm to others, particularly those in need. Compassion has historically been hailed as the ‘Foundation of the social instinct’ originally evolved from caregiver-child attachments and now extending to non-kin (e.g., Darwin 1871/1952; Goetz, Simon-Thomas, & Keltner, 2010). Compassion is aroused by perceptions of need, suffering, or weakness, and induces individuals to overcome selfish cost-benefit barriers to helping others (Batson & Shaw, 1991; Eisenberg & Miller, 1987; Eisenberg et al., 1989). This emotion prominently shapes moral judgments of harm and care; for instance, people report greater willingness to help those for whom they feel sympathy (Schmidt & Weiner, 1988).³⁶

³⁴ Turkel, Bruce. "The 7 Points of Brain Darts (Part 1 of 3)." Web log post. *The 7 Points of Brain Darts (Part 1 of 3)*. Bruce Turkel, 08 Feb. 2007. Web. 02 July 2015. <<http://bruceturkel.com/the-7-points-of-brain-darts-part-1-of-3>>.

³⁵ Bloomberg, Mayor Michael R., and Commissioner Thomas Farley M.d. M.p.h. *DON'T DRINK YOURSELF FAT*. (n.d.): n. pag. Web. <<http://www.nyc.gov/html/doh/downloads/pdf/pan/PouringOnPounds.pdf>>

³⁶ Keltner, Dacher. "The Neurobiology of Emotion-cognition Interactions." *Frontiers Research Topics* (2015): 51-52. *Socrates.berkeley.edu*. Ist-socrates.berkeley.edu, 2013. Web. 02 Jan. 2015. <<http://ist-socrates.berkeley.edu/~keltner/publications/Handbook%20chapter%202013.pdf>>.

REACTION TO THE EXHIBITION

In this exhibit I was a member of this very group so empathizing was innate, translating this emotion into design that was actionable on the part of the viewer was the goal. While empathy requires attempts to experience the problems and emotions of the other, as designers our end goal should not be to elicit this same empathy but its counterpart, compassion. For the end user recreating the experience of empathy might result in empathetic distress or despair, which could negate any action on their part. Compassion on the part of the end user is more likely to evolve into concern, activate a caregiving instinct, and result in an altruistic action.

I sat in the exhibition for over 40 hours and watched and talked to many of the over 250 visitors. One visitor, a Broward Security Guard working on campus returned many times and brought back his co-workers and half his family to visit the exhibition; he remarked that he had been struggling with the same issues all his life and brought others back to share. Many visitors commented on finding a connection to the exhibit because of their own issues or those of a loved one. One woman, after watching the confessional video, left in tears only later to come back to explain she had just lost her brother, a diabetic, to the disease and while watching the video she saw her brother in me, and was overcome.

The exhibit was entirely based on my own struggle to understand my problematic relationship with sugar, and to share my struggles with others. Being empathetic was easy since I was intimately involved in the issues; the difficulty was to design an experience

that engaged the viewer to be the compassionate party. Empathy is the attempt to imagine and feel like the other, it is a core value that graphic designers must embrace to create designs to engage the user. I designed for the tangible data of the timeline and for the intangible data like the emotions connected to the dinner table. As designers we are privileged to involve ourselves in many new avenues of information design; as technological barriers to expression become translucent, we can feel free to address the higher levels of design thinking.

CONCLUSION

The 20th and 21st Century evolution of information graphic design has seen borne of technologies' chicken and egg relationship with information growth and the expansion of human knowledge on an exponential scale. On the human side of design a parallel movement increasingly looks at the end users' needs. Like *Maslow's Hierarchy of Needs* Pyramid, designers need to satisfy the basic needs of the users' experience and then sequentially their higher needs in designing information graphics.³⁷ Maslow postulated that psychological, safety, love, self-esteem and self-actualization are progressive human needs. I would create the following requirement list for information graphic designers' use in creating a powerful user experience:

1. Raw Information: statistics, facts, figures, and research.
2. Visualization: text to pictures, statistics to graphs, words to pictography.
3. Simplicity: editing information to its most meaningful components and organizing it spatially to be easily understood.
4. Compassion: make the user care about the information.
5. Sensory: the power of sound motion and space on our emotional engagement.
6. Empathy: Insert the user into the information with universal themes they can subscribe to.

³⁷ Lidwell, William, Kritina Holden, and Jill Butler. "Pages 106-107." *Universal Principles of Design*. Gloucester, MA: Rockport, 2003. 106-07. Print.

Historically, we can see this evolutionary thought process develop in the raw information gathering of “*Mapping Cholera*” graphic by John Snow, the visualizations of the Neuraths’ Isotype system and its attempt to cross over language barriers, the visual simplicity of the Space Shuttle Challenger explosion graphics by the illustration staff of Knight-Ridder newspapers, or the compassionate rendering of *The Girl Effect* video developed by the Nike Foundation, meant to illicit support for teen girls of developing countries. While all of these wonderful information graphics have an everlasting value as classics, they are still only stories told about “the other” asking for your attention. By asking questions of design like “redesign death” or helping Americans understand our problematic relationship with sugar, we stretch the definition of what we have traditionally done as designers.

Our role can be one that is holistic and humanistic in nature; one that through empathetic design locates the user in the information and results as a true interior experience. The final self-actualization stage Maslow described as morality, creativity, spontaneity, problem solving, lack of prejudice, and acceptance of facts, is the stage of the enlightened and empathetic designer.

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