INFORMATION DESIGN IS POWER.

by

Yathrib Elhillali Ragsdale
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of
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Art and Visual Technology

Committee:

_____ Director

_____

_____

_____ Director of the School of Art

_____ Dean, College of Visual and Performing Arts

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Fairfax, VA

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A Thesis submitted in partial fulfillment of the requirements for the degree of Master of Fine Arts at George Mason University

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Yathrib Elhillali Ragsdale
Bachelor of Arts
George Mason University, 2005

Director: Don Starr, Professor
Department of Art and Visual Technology

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Fairfax, VA

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DEDICATION

This is dedicated to my parents, Dr. Ahmed Elhillali and Mrs. Rabab Elhillali-Abuharaz. Without their sacrifice and strength, I would not be the person I am today. They inspired me to have a thirst for knowledge, and with this drive, I will educate the world.

ACKNOWLEDGEMENTS

I would like to thank my family, friends, and supporters who have made this happen. My loving husband, Joseph Ragsdale II, who never gave up on me. My fellow design educators and committee members—Don Starr, Reece Quinones, and Shanshan Cui—were an invaluable help. Finally, thanks to my students, who taught me how to become a better educator and creative thought-leader.

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ABSTRACT

INFORMATION DESIGN IS POWER.

Yathrib Elhillali Ragsdale, M.F.A

George Mason University, 2017

Thesis Director: Don Starr

This thesis describes the state of design and its future capabilities. This document focuses on the history of information design, design principles, human decision-making, psychology and perception, as well as data relations, wayfinding, and map-making. This thesis also showcases the teaching experience and artifacts from the Information Design course offered at George Mason University.

CHAPTER 1: INTRODUCTION

Due to the "fear of missing out", or FOMO, today's consumer seeks both information and entertainment. Information design is the visual representation of data, and can fulfill both needs simultaneously. Data represents the decision-making thought process, and how individuals perceive the world. Infographics and information design are often used as interchangeable terms for visual images, such as a chart or diagram, to represent information or data. Infographics are one of the possible outputs within the large information design principle. Data visualization and information visualization are terms often found within the scientific community to refer to the use of computer-supported, interactive, visual representations of abstract data to amplify cognition (Meirelles 13). Above all, information design is meant to record information, convey meaning, increase working memory, facilitate research, encourage discovery, support perceptual inference, enhance detection and recognition, provide models of actual and theoretical worlds, and to provide manipulation of data (Meirelles 13).

A successful infographic should be engaging, aid comprehension, and retention. The designer's mission is to create a piece that helps visually manage information in the mind of the viewer, so that they can easily put things in perspective, engage the data, make a decision, or share with others. Information design has the potential to offer context, explain and instruct, drive awareness, inspire change, build brand loyalty, and give clarity to complex decision-making. Environmental signage, recipes, agendas, timelines, statistics, scores, instructional diagrams, system architectures, and responsive dashboards are just a few examples of information design.

Other possible outputs involve the design of systems such as information systems, wayfinding systems, and visualization of large amounts of statistical data.

Additionally, information design can be used to visualize other concepts such as organizational hierarchy, financial anatomy, and chronology of events. Information design has the power to display simple daily activities or an entire life's work. To give life to data, interactive information design allows the viewer to engage the data on a granular or high-level view; essentially filtering possible solutions. Humans are curious and can be meticulously mindful of the information presented to them; therefore, information design must present complex information efficiently and succinctly. Examples of succinct design are present in environmental signage, maps, editorial and technical writing, and education or instructional graphics. There is a strong human desire for order, balance, hierarchy, structure, and unity (Lima 42). In order to fulfill this desire, a successful information design solution must break down content into digestible bits of knowledge, both clearly and concisely. Furthermore, visualizations can become an immensely powerful tool and an enduring, contagious meme. When creating a mental map, the power of visual aids is paramount in facilitating understanding at every level (Lima 43). We are now in a golden age of graphical innovation, powered by an abundance of digital data and the need to visually analyze them. Information is power, and we must not fall into a state of ignorance.

CHAPTER 2: A BRIEF HISTORY

Humans have mapped information since the dawn of time. Infographics range from early scientific diagrams of the human body to modern representations of how the brain functions, and from early trade routes to train schedules (Meirelles 11). Even during ancient civilizations our first engineers, scientists, and mathematicians developed visuals to communicate complex information. Consider notable information designer, Joseph Priestley's first biographical timeline chart: an innovation created in 1765. **(FIGURE 1)** Priestley cleverly displayed individual bars used to communicate the life span of a person and, at the same time, allowed for the comparison of the lifespans of many people.

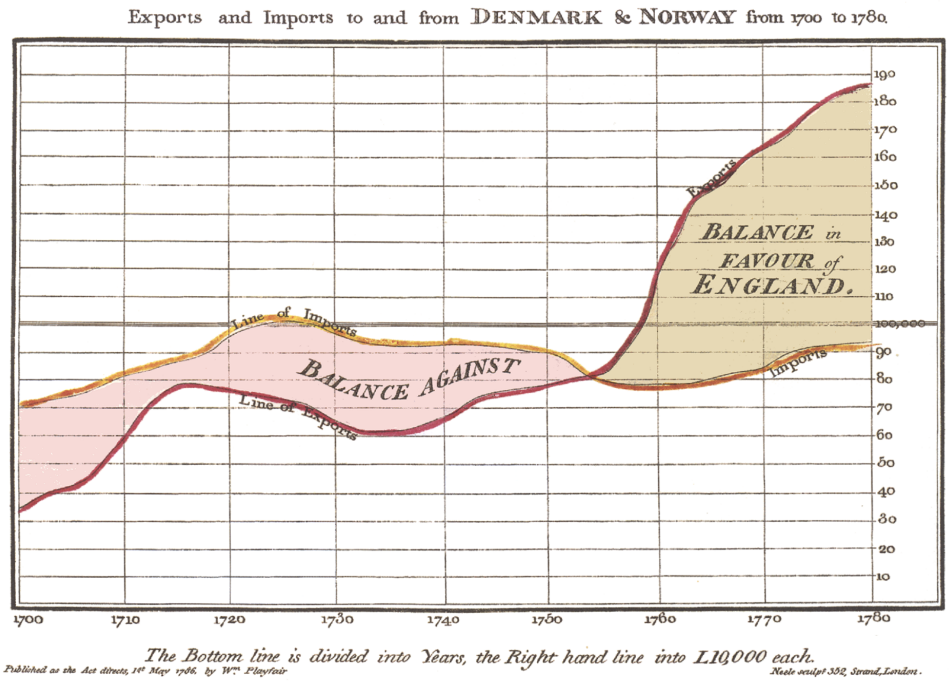


Figure 1: "Time series of exports and imports of Denmark and Norway"

Another historical example of information design is William Playfair's 1786 "Time Series of Exports and Imports of Denmark and Norway", which displayed the complex data charted in an organized fashion **(FIGURE 2)**. Additionally, Playfair is credited for inventing four types of diagrams, all of which are still in use today. He is credited for creating the line graph and bar chart for financial and economic data, and the pie chart and circle graph, used to show part to whole relations.

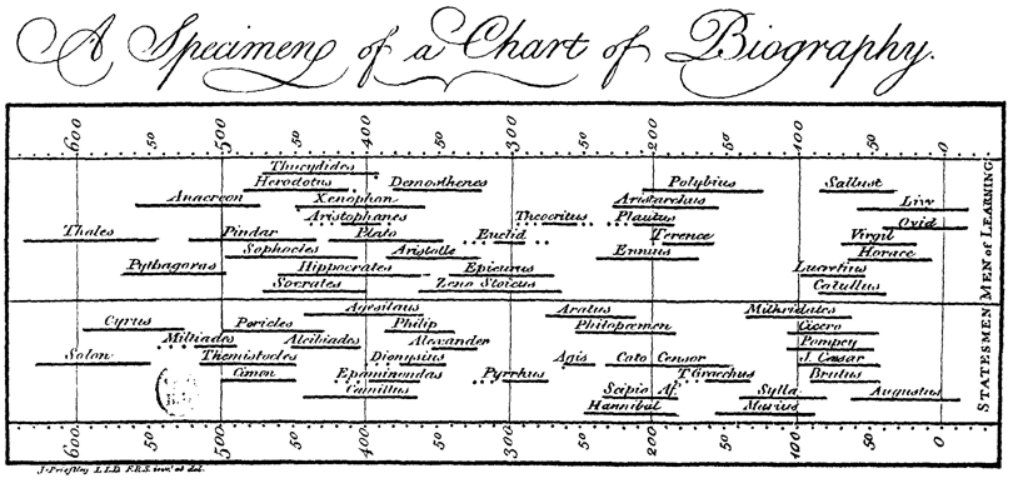


Figure 2: "A specimen of a chart of biography"

Moreover, information design is heavily involved in cartography, map-making, and the exploration of the space we inhabit. Harry Beck's famously color-coded and innovative full system map of the London Underground is a brilliant example. Beck believed that passengers riding the Underground were not concerned with the geographical accuracy, but were more interested in how to get from point "A" to point "B", and where to connect or change train lines. A radical concept at the time, but the commuters quickly took to this wayfinding approach; a concept that's still employed in our modern-day transit system.

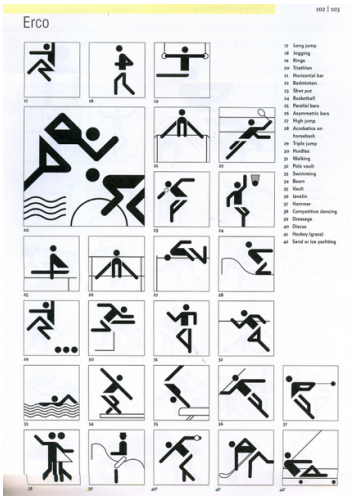


Figure 3: 1972 Munich Olympics iconography

Another innovative designer is Otl Aicher, who created a set of pictograms for the 1972 Munich Olympics that featured stylized human figures. Today, icons and symbols saturate information design; pictograms are incredibly popular and influence the design of many public spaces. And finally, the iconic information designer, Megan Jaegerman, who from 1990 to 1998 produced a series of news graphics at *The New York Times*. Her work is notoriously clever, finely detailed, elegant, witty, inventive, and informative. Jaegerman had the unique ability to explain the news visually through tables and illustrations. Today, information design is vital to facilitating the way users find, experience, and augment editorial content online.

CHAPTER 3: INFORMATION DESIGN PRINCIPLES

Nathan Yau, statistician and author of *Data Points: Visualization That Means Something* states, “The goal of any designer is to establish clarity from complexity.” Successful design solutions rely on clarity of information, by sectioning data into nuggets of knowledge. These digestible units must rely on a key message or call to action. When developing a design system, it is essential to categorically associate and group similar visual elements into a perceptual unit. For example, the use of a color-coding for categories can enhance the search and comparison between them (Meirelles 51). Information designers, like all creatives, must rely on nine visual properties: shape, size, color value, color saturation, orientation, texture arrangement, texture density, and texture size (Meirelles 128).

In addition to these elements, visual hierarchy aids in digestion, and the retention of information. Information designers are also able to reach their audience through the use of contrast, typographical hierarchy, imagery, and metaphor. Visual metaphor is a clever way to mimic the subject matter or key message, and will yield a memorable design solution. Moreover, Donis Dondis’s in her seminal book, “*A Primer of Visual Literacy”,* considers contrast as the prime visual technique: “In the process of visual articulation, contrast is a vital force in creating a coherent whole. In all of art, contrast is a powerful tool of expression, the means for intensification of meaning, and therefore, of simplification of communication.” (Meirelles 19)

Today's designer must weave a compelling visual narrative to guide the viewer through their journey of understanding. Information designers must hold steadfast to core design principles, as well as consider the target audience and content appropriateness. Additionally, it's essential that when working with large amounts of data, precision is key: size, shape, shade, hue—the tiniest details of visualization can radically alter how information is received and understood (Miller, 2016).

To create an effective solution, the designer must first submerse themselves fully in the data to be able to visually convey the information succinctly. To aid in comprehension, the designer must establish a hierarchy of importance, and allow the most space to highly significant information in the design. Conversely, the least important information should take the least amount of space. Information can be received in several formats, including static—as in editorial content, or a visual press release—in motion with audio for a narrative quality, or presented in a way for the audience to interact and engage with the information, which gives them the ability to explore and choose which information is accessed and visualized (Lankow 59). It's the designer's task to curate and present the data.

Yet what makes for a successful design solution? Information designers must ask what the end goal is: should the viewer find humor? Or feel enlightened? An effective designer must make certain their solution is relevant to their target audience, and that it achieves the communication goal. A successful design will be meaningful and interesting to others, and the level of uniqueness in the design solution will peak the viewer's curiosity. An experienced creative must make clear the objective of the design, and specify whether there is a need to create an explorative or narrative approach.

Explorative infographics provide information in an unbiased fashion, enabling viewers to analyze it and arrive at their own conclusion. This method is best used for scientific and academic application, in which comprehension of collected research or insights is a priority. While narrative infographics guide the viewer through a specific set of content that tells a predetermined story. This approach is best used when there is a need to leave readers with a specific message to take away, and should focus on audience appeal and information retention (Lankow 199).

Designers should communicate a message worth telling and provide readers with something of value. There are endless possibilities for how aesthetics can be manifested, or the aesthetic of the design. Yet most importantly, style must be appropriate to both the message and its objective. Author and information designer Robin Richards states, "Illustration can help showcase and bring things to life, but there's a fine line between this and it becoming distracting. It should be more of a supporting than a leading role. If the designer isn't careful, what he/she's designing can become purely an illustration, rather than an infographic. You want the illustration to support the story that the data is telling, rather than detract from it." (Lankow 205). It's imperative that the designed content relate to its intended audience with significance and honesty. And finally, one must consider format and design quality.

Above all the information designer's task is to select the appropriate format, and display the appropriate content without distorting the information. Experienced designers never start by trying to solve the problem given to them: they start by trying to understand what the real issues are, and selecting the appropriate format of communication (Norman 218). When designing to inform, first define the key message, and then address format and function—as they say, "form

follows function". To further aid retention, the designer should tell a story so the viewer may derive meaning from the visualization, yet allow them to find meaningful information on their own, not requiring narrative content (Lankow 134).

CHAPTER 4: PSYCOLOGY & PERCEPTION

Humans make sense of the world through the stories and depictions we share. Therefore, creatives cannot ignore psychology, since the principles of human cognition explain how individuals react and interact with a design. Information designers are uniquely able to take our knowledge of the human condition as a strategic design tool, to guide the viewer comprehend the information and visual narrative. Enticing visuals serve to burn a beautiful analogy into the viewers' brain, to help them retain the information, and act accordingly (Lankow 223). Imagery enables people to encode information more deeply, as there are more visual items to recall and use memory to draw upon (Lankow 51).

The mind can instantly detect and recognize a visual image with which it is familiar, and bring with it a host of associated experiences. Common imagery in a user interface also allows viewers to navigate through programs quickly, by prompting them to recall what the imagery represents and where it will take them (Lankow 185). Seasoned designers can harness our understanding of design principles and human cognition to aid retention and understanding. If the designer wishes to draw attention to one item, they must isolate it through color, size, space, etc. However, because people focus more attention on the isolated item, they remember less about the entire group. Keep the inverse in mind when consideration whether to highlight an item. "When everything is highlighted, nothing is highlighted." (Lankow 177). Moreover, our perception of color is also not absolute; such that surrounding colors often influence our impression.

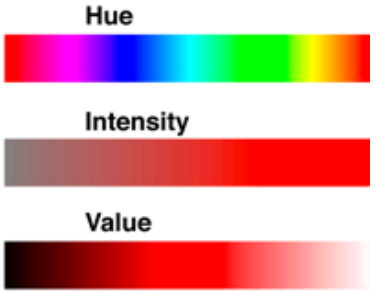


Figure 4: Color hue, intensity, and value

In addition to influencing our emotional response, colors affect how we perceive area size. Visual perception studies indicate that we tend to perceive lighter areas as larger than dark ones. Josef Albers in *Interaction of Color* states, "In order to use color effectively it is necessary to recognize that color deceives continually" (Gibson 86). Colors are also distinguished by three properties: hue, intensity, and value. Hue refers to color variation, such as pure redness or greenness. Intensity is the saturation or density of a color. Value refers to its relative lightness or darkness. Understanding these properties enables the designer to control a palette for legibility and to project the desired visceral response and connotation. For instance, when assembling an appropriate set of colors for coding purposes, it is helpful to pick colors of similar value so they fit together as a set and project meaning.

It's important to note, color intensity affects legibility. For example, on a sign, contrasting intensities differentiate between the type and panel colors, as in any figure and field relationship (Gibson 88). Jacques Bertin—a vital figure in the history of visualizing data—used size, color, and shape to signify different relationships. He saw that, "position, form, color, texture, value, and size, create a visual language that links data features to visual elements." Most importantly, Bertin states, one should use no more than six to seven shades so as not to confuse the user.

Furthermore, colors should be categorized by function, content, and hierarchy; and should not be too closely related, as it becomes difficult for the viewer to discern the differences. Bertin also states, color can only be interpreted correctly if the colors being used are strongly distinguishable. Color may also be used as a major indicator, key differentiator, and as a way to illustrate critically important proof points and statistics. It's important to note, to avoid confusion, a color key or legend must be used, and colors must be ordered accordingly to the strength of their values. Additionally, one must be careful using multiple color themes—such as cool, neutral, or warm—together in one diagram (Opara 116).

It is also essential that the designer charts color in a way that is consistent with the data, so as to emphasize the message being conveyed. Color distinctiveness and semantic correlation are imperative and will help people absorb and understand data more easily. It is also well documented that colors seen at small sizes are perceived as less colorful or vibrant. Additionally, it is believed that people feel an inherent sense of power when a color is darkened, making the color appear assertive and more credible. The viewer may perceive navy blue differently from black, and although the colors seem very close, they still regard black as the most powerful color of all.

The human mind can deduce when there is a correlation between concept and color, as we tend to associate color with underlying meaning. Therefore, designers must be wise with their color selection. Color is all about context, and information designers must consider where a color will be used and its appropriateness to the overall palette and subject matter. "If you truly believe in your color choice for a design, then explaining it becomes one of the most important challenges" states, Leatrice Eisman, executive director of the Pantone Color Institute (Gibson 95).

Edward Tufte, a leading thought-leader in data visualization, states that the use of color instead of letters or numbers can achieve a quick understanding of a problem—such as red for danger and green for go. In essence, we perceive color on a subconscious level, we then mentally process large shapes, and finally we recognize smaller forms such as symbols or signs.

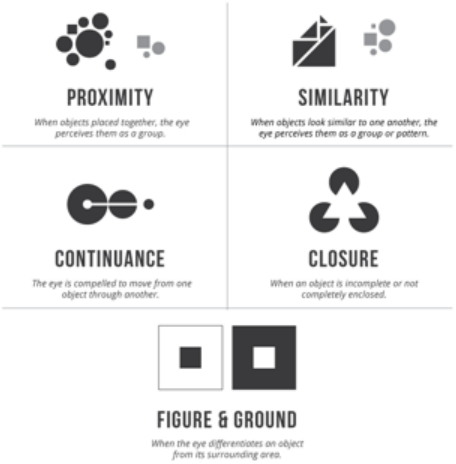


Figure 5: Gestalt principles

In addition to color, signs and symbols help quickly inform the viewer. Semiotics—the study of signs and symbols and their interpretation—is a tool designer's instinctively leverage, but by becoming aware of their power and use, designers can create more meaningful experiences. By exploring the semiotic connections between signifiers and the signified—a symbol and its perceived meaning—information designers can better recognize and predict the emotional responses or interpretations a user may have, and thus the designer can create more effective solutions that begin on a subliminal level. The Gestalt Principles of Proximity, Similarity,

Common Fate, Good Continuation, Closure, Simplicity, Familiarity, and Segregation between Figure and Ground explain the way in which we detect patterns and how individual units are integrated into a coherent perception. Patterns are central to how visual information is structured and organized. The Common Fate principle is the tendency to group elements that are moving in the same direction. Parallel lines are easier to perceive and will be grouped into a unit, whereas nonparallel lines are perceived individually (Meirelles 73). It is easier to perceive smooth continuous lines than lines with abrupt changes in direction/angles (Meirelles 58). In visual displays, it is crucial that we locate information that is conceptually related spatially close together. Spatial proximity will facilitate the detection and search for associated data (Meirelles 19). It's essential that The Gestalt theories are used alongside the basic design principles for effective subliminal detention and perceptual inferences.

Yet, no matter how organized the information is or how in sync the design is with human perception, more information does not equal better understanding. One must ask if large amounts of information assists logical decision-making, perhaps as design fundamentals state, "less is more". To avoid the dreaded "information overload" it is the designer's responsibility to curate, create hierarchy, and decide what data is most important to communicate. Therefore, the designer's goal is to alleviate cognitive pressure, and avoid visual clutter. The human span of attention encompasses only six objects at a glance, as our working memory is no more than seven items in length (Meirelles 36). When more than seven levels are needed, we should strive to group information into familiar units to expand our limited working memory capacity (Meirelles 97).

It's important to note, analytics—the systematic computational analysis of data or statistics—complements the human decision-making process, it does not replace it. Analytics provides data that informs, provides insights that might not be obvious, and guide the actions the viewer takes. Analytics can also help the user act more efficiently by surfacing information that might otherwise take time to extract. Analytics simply offers information that can be used to make better decisions. Data and data analysis, no matter how powerful, can only help take a problem apart and understanding its individual pieces, it's not suited to put those pieces back together again and then to come to a rational conclusion.

In addition to the Gestalt Principles, there are several psychological theories and effects on human perception that address human decision-making. Information designers must leverage these theories to power their design solution. Hick's Law explains how long it takes to make a decision, and the likelihood that the viewer may become overburdened. It's common knowledge that if the burden of deciding becomes too large, the viewer will opt to make no decision at all. While the Von Restorff Effect rationalizes that the more absurd an element is, the more it will stand out and be remembered. Although, if attention is drawn to everything, then the hierarchy of information is potentially lost. And yet another psychological theory is Occam's Razor, which states that the simplest solutions are almost always the best. If the information designer has overcrowded the design, instead of opting for the simplest approach, the viewer will become overwhelmed and quickly abandon the message. A successful solution will not overburden the viewer, but instead enlighten them with knowledge and in turn aid retention and understanding.

CHAPTER 5: FORMAT & DATA RELATIONS

Information graphics are meant to serve as functional visuals that will queue the viewer, instruct, aid in decision-making, increase retention, and offer an action plan. It's important to note that organizations are leveraging information design to share important information, tell the company story, explain how products work, or simply make a report or press release more visually appealing. Format is key when visually presenting data; therefore, the designer must decide the best medium and platform to display the information. Whether for mobile-viewing, interactive media, television, print or in motion, format is fundamental when creating a functional graphic. It's crucial that the designer grasps the content they wish to visualize completely. By understanding the data and its relation as a whole, the designer can decide the best method to display the content. Once a platform is selected, the designer must focus on the data relationships; which are perceived in the following formats: nominal comparison, time series, ranking, or part-to-whole.

Nominal comparisons are most often displayed using a vertical or horizontal bar graph. It's crucial that bar graphs have a zero baseline, as the length of the bars are used to compare against each other; if the scale is truncated, then the data and underlying message becomes distorted. Typically, each bar within a graph should be the same color, devoid of any visually distracting patterns. Best practice dictates the perfect distance between two bars in a graph is half the width of one of the bars. Moreover, vertical bar graphs are excellent at showing time series relationships, since the viewer is accustomed to reading time from left to right. When establishing

a visual hierarchy, it's imperative that the bars are organized with either the lowest or highest subcategories first.

Stacked bar graphs are most often used when there is a need to display multiple part-to-whole relationships, and can be oriented vertically or horizontally **(Figure 6)**. This graph type is used when the composition of each bar tells an interesting story that provides the viewer with greater insight. One hundred percent stacked bars are typically used when there is a need to show a time series relationship as well. This type of visualization is easier to understand than multiple pie charts, as it enables the viewer to directly compare segments on the same axis with relative ease. From a design perspective, they are much easier to label, as their orientation is linear, not circular.

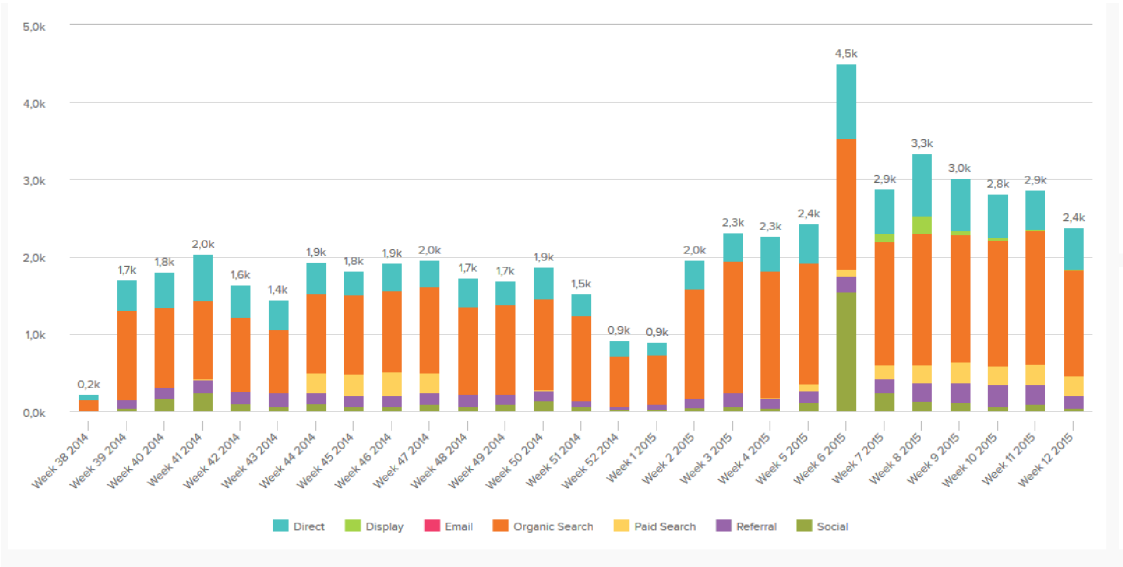


Figure 6: Google Analytics stacked bar chart

If the objective is to highlight accomplishments and milestones, the designer may opt to display the data as a timeline. Although time has no direction, we typically represent a time series as something that moves from left to right, rather than top-down. Historically, time is represented with the graphical form of timelines, which are chronological and sequential narratives of relevant historical events. In timelines, space communicates temporal distances, and negative space becomes a relevant graphical element pregnant with meaning (Meirelles 87). Although most of our systems for measuring time are cyclical, such as clocks or calendars, when representing spatio-temporal phenomena, the designer must make a series of decisions concerning the visual method. The designer must decide whether the most effective composition would represent linear time or cyclical time, time points or time intervals, ordered time or branching time, or time with multiple perspectives (Meirelles 163).

Circular or spiral structures are often used when the goal is to show a continuous timescale, as well as to reveal periodic data **(Figure 7)**. Spirals are best at depicting continuous data over many cycles, similar to several concentric circles. Different from linear time series, which depict data by aggregating values; in spirals, we can represent individual amounts per temporal unit (Meirelles 113). Likewise, dot plots are most commonly used to show time series relationships, with the various points along the x-axis representing sequential points in time (Lankow 211). While line charts are used to show time series relationships with continuous data, it is best to keep the chart to four or fewer clearly labeled lines. If there are more than four categories presented, then a "paneling" approach is recommended **(Figure 8)**.

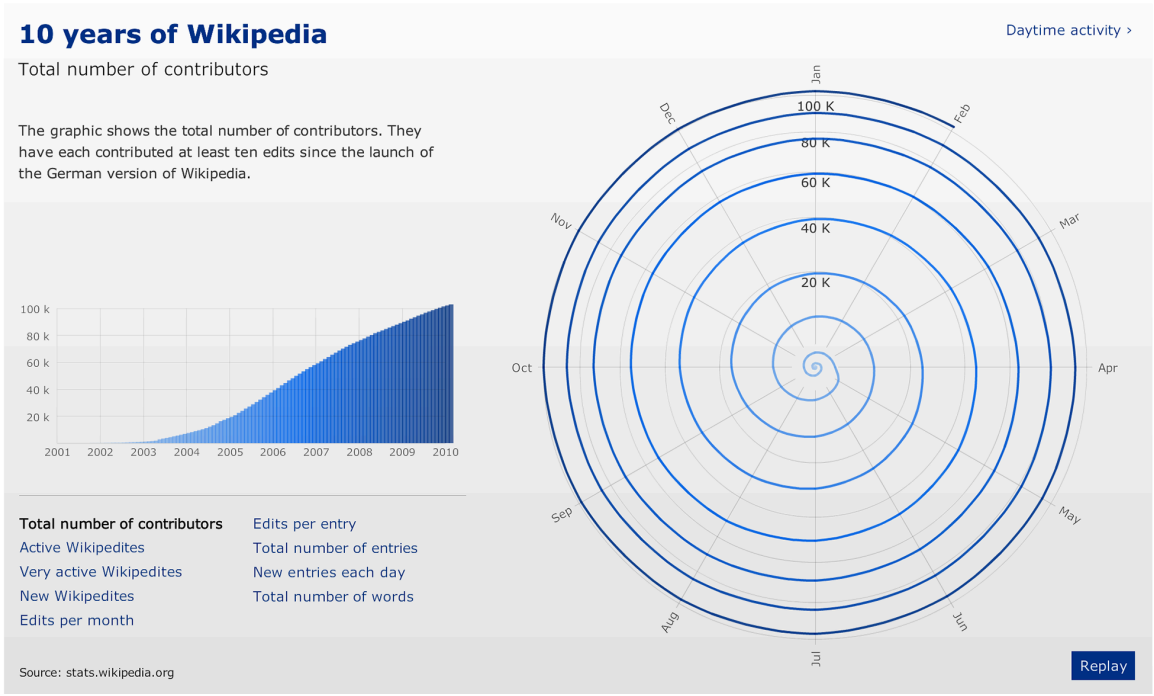


Figure 7: 10 years of Wikipedia

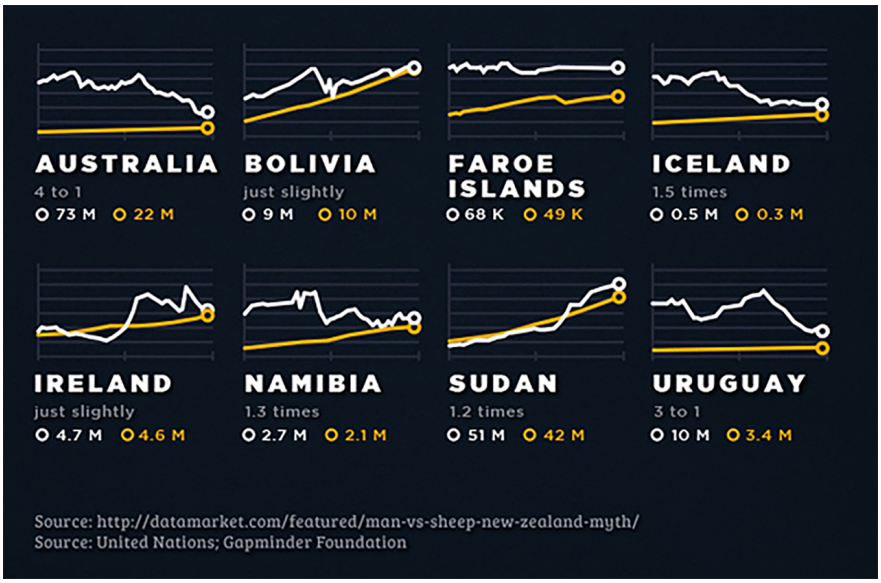


Figure 8: Line graph panel example

Another form of data relationship building is to create a formal ranking system. Ranking is meant to communicate order of numerical values; when displaying a ratio, a part-to-whole graph uses percentages as the unit of measurement. Pie charts are used to make part-to-whole comparisons with discrete or continuous data. Yet, any more than five slices can make it troublesome for readers to fully grasp the data and the overall message. It is often recommended that pie charts have no more than five or six wedges to avoid confusion. Also, the viewer will likely read the diagram from the top down, therefore the designer must arrange the parts of the pie chart accordingly; the largest sections should always start at the top, and go clockwise from 12 o'clock. An alternate ranking method is the bubble chart. Bubble charts are most valuable when the range of data set is large with a substantial variance between the smallest and the largest subcategories. To avoid data distortion, use the area rather than the radius of the bubbles to represent the values, otherwise the message and data will appear skewed.

CHAPTER 6: CORPORATE INFORMATION DESIGN

Information design is an excellent format for showing relationships in numbers, but can also deliver a message, and support a visual story. To reach as many viewers as possible, many brands produce marketing campaigns across multiple platforms. Organizations leverage thought leadership content on social media, encouraging sharing, and building impressions to engage their readers. Brands build confidence and brand loyalty, if the customer is provided with something of value, then they will look favorably upon the brand. Well-designed editorial infographics can communicate quickly and entice readers to engage with the content. But perhaps their greatest attribute is the ease with which people can share visual content via various social channels. Additionally, infographics are extremely easy to reuse, recycle, repost, or republish (Lankow 126).

Moreover, brands have gravitated to information because it's a highly effective way to display content for an annual report, dashboards, data hubs, product designs, user-experience opportunities, and even packaging design. Although it's important to note, the use of information design in annual reports is meant to supplement the body text of the report, not replace it completely. Rather, designers can bring the most important information to the forefront and provide key stakeholders with visuals that immediately highlight the essential message. Through information design, creatives can show rather than tell corporate progress displayed in the report.

Dashboards are also another creative and innovative format of information design, and make it possible to display more data in less space, thus offering the viewer greater insight in the same amount of time. When designing for dashboards one must consider the sequence of information. It's imperative that the designer clearly and logically provides a visual narrative to increase understanding and speed of comprehension. As always, informational hierarchy is paramount; it's essential to draw attention to important areas, by allocating more space and utilize color and type to distinguish their content. Furthermore, the content should guide viewers thorough the experience and ensure a full grasp of the information.

Today the average person is more data literate than ever before, and will understand information if it's displayed clearly. Google Analytics is an excellent example of information design leveraged in a visual data hub **(Figure 9)**. The hubs are designed to be inherently explorative; and encourage users to draw their own insights and conclusions. Visually displayed data can provide a resource for users, and will allow them to pull content from the hubs to inform their decision-making. A successfully designed interface must be inviting, entertaining, and ultimately useful for the audience. Hubs can also enable users to track and create infographics from the data recorded throughout their daily tasks and encounters. For example, the Fitbit wearable products and corresponding mobile app, gives the user the power to harness and take control of their health and wellness **(Figure 10)**. Information hubs can also provide underlying data for the viewer to explore, while also calling out areas of interest. It allows the viewer to drill deeper to find specific and potentially newsworthy figures (Lankow 195).

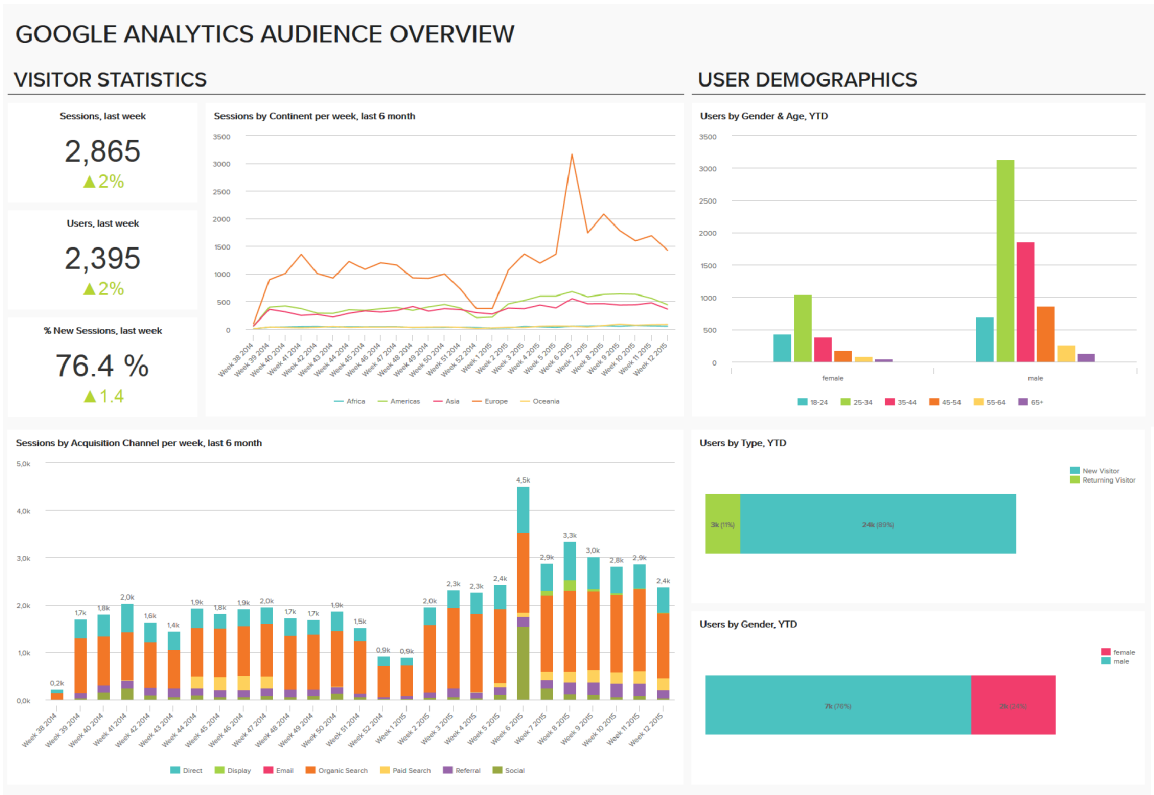


Figure 9: Google Analytics dashboard

Figure 10: Fitbit app, dashboard, and wearable technology

In addition to data reports, hubs, and dashboards, information design is an asset to packaging and instructional design as well as general user-experience. It's incredibly valuable to have the initial package instruction experience be not only simple, but also as inviting as the product itself. One must consider the customer's interaction at this stage as thoughtfully as their experience of actually using the product. It is logical and intuitive to visually represent a product's anatomy in its instructions, and provide a supporting diagram to serve to familiarize the user with the product more quickly. Motion graphics are an excellent way to explain and show how to use or even build out a product. The main features can be distilled into a short video clip, which offers necessary instruction and will help the user become familiar with the product.

CHAPTER 7: WAYFINDING & MAP-MAKING

Another facet of information design is found in the field of wayfinding. Wayfinding systems include environmental design, signage, directives, user experience, and the mapping of space. At its core, information design is meant to inform educate and direct the viewer. As such, wayfinding is a subject of information and environmental graphic design intertwined, it is a larger disciple that embraces many specializations including architecture and the design of graphic communications, maps, exhibitions, products, and interior spaces. Wayfinding systems also have the power to brand entire environments and spaces such as hospitals, stores, zoos, airports, malls, amusement parks, libraries, and public spaces. An effective wayfinding system incorporates branding, signs, maps and directional devices that tell us where we are, where we want to go, and how to get there (Wyman).

A highly successful wayfinding system will offer information and direction to people in a clear, appropriate, user-friendly way—to assist them in finding their way into, through, and out of an environment. It is symbols, however, that can communicate across the language barriers created by words (Wyman). The use of iconography links people together, even if they do not share a common language or destination, by guiding all who visit with a single system of communication. The unifying language of a wayfinding system creates a public narrative of how people witness, read, and experience a space. Each sign in a system, each separate voice, serves a particular function and displays a specific kind of content called a *message*, which might include nonverbal graphic symbols, images, and words (Gibson 46). Countless wayfinding systems utilize

obvious signifiers and information as well as implied symbols and landmarks that together communicate with accuracy and efficiency. The designer's task is to create a family of sign types that not only addresses primary information and wayfinding needs, but also establishes an appropriate information hierarchy and sign-messaging system. To make a complicated space less baffling, orientation signs and symbols offer visitors an overview of their surroundings in the form of comprehensive site maps and directories. Orientation signs are usually large freestanding units readily visible to many people simultaneously, or wall-mounted if space does not allow (Gibson 52).

We use wayfinding to establish landmarks and to orient ourselves physically in a space; enabling visitors to decipher and differentiate zones. Color is often used as a powerful mnemonic device within wayfinding systems; but as in all cases of design ideation, color is reliant upon the context of its situation (Opara 122). Since we deeply associate with color on a subconscious level, wayfinding is no different; designers exploit color as a tool and often select color as the central organizing element of a wayfinding design program. Colors can help people recognize, circumnavigate, and even bond emotionally to a place. Color-coding is a foundation for information hierarchy, an excellent method to inform the visitor, and distinguish between areas and districts clearly.

Moreover, indoor wayfinding can be applied not only to hanging and standing signage, but also to interior and exterior wall space and zones. Color applied to entryways and exits inform and indicate a change from one color-coded zone to another. Floors are also a method of conveying information, define the space, and offer directives. Today, most color-coding strategies either define distinct areas within a space or provide a basis for understanding the organization of

a complex facility. Colors within a wayfinding system can be used at least three ways: differentiate locations and features, such as roads, pathways, buildings, parks, and waterways; to code functional elements of the site, including zones, entryways, and floors; and to add style, personality, or character (Gibson 100).

The simplest wayfinding systems distinguish zones, such as the levels of a multilevel parking deck, by using numbers, colors, and icons. More technical applications of color, especially ones that code categories of information, are fundamental to effective wayfinding. For instance, without color coding it would be nearly impossible to differentiate transit lines, pedestrian pathways, or urban districts graphically on maps and signage. Color-coding not only informs the viewer, but also designates the function of a space. Color is not only a means to inform, simplify users' perception of a place, and provide prompts to guide them where they are going, but it can also breathe life into an otherwise purely utilitarian design (Gibson 93).

In addition to the experience of color, when given the opportunity to go to and through a space for the first time, the visitor encounters a series of decision points as they navigate. There is a sequential pattern to this wayfinding process—in effect, a series of questions that people ask themselves along the way. Wayfinding is the process and profession dedicated to helping people navigate. Wayfinding relates to the process of forming a mental picture of one's surroundings based on sensation and memory. But let the mishap of disorientation occur once, and the sense of anxiety and even terror that accompanies it reveals how closely it is linked to our sense of balance and well-being (Gibson 14).

Before starting the design process, the designer must anticipate human nature and habits, understand their logic, and apply their insights during the planning and design phase. In the process of tracing the visitor's path, the designer attempts to uncover the hidden logic of the place. The job of an effective designer is to present information in public spaces that helps facilitate a seamless visitor experience. The essential sequence of movement should feel as effortless and simplified as possible—so that ten steps, feels more like two or three. A contemporary example of a highly successful wayfinding system is that of the 2012 Olympics *Legible London*, which seamlessly integrated a powerful information strategy. This system designed a map that illustrated iconic structures, which aids wayfinding and amplifies the viewer's mental map of a space.

While wayfinding symbols deliver information at a glance, maps offer more complex visual cues. Maps provide specific orientation diagrams to explain public places to visitors, inform them of the arrangement of spaces, show where things are located, and aid proper physical orientation in a space. Maps depict the layout and organization of a complex, a building, or a space and show the relationships between the elements of a location and the pathways in between. Legends or keys are paramount to the success of any visualization, and should be placed in close proximity to the marks for which they stand for, to avoid a loss of meaning and to create a user-friendly experience. There are varying types of marks that can be used in maps as well as other visualizations: pictorial, associative, and geometric (Meirelles 132). By creating a standard "You Are Here" marker and a map key, the viewer will feel situated in a space, and will discover where they are and where things are located. To aid legibility, maps must be simple and clear and present the appropriate information in the correct hierarchy. The designer must first decide what

to focus on, as well as what to omit from the map. The zone of interest should be the focus of the map, with enough context to be useful but not distracting (Gibson 100).

Visualizing data with maps involves making decisions in three basic areas: projection, scale, and symbolization (Meirelles 118). Symbols add additional context, and provide a shorthand graphical representation of a place, a service, or an action. Symbols can also establish a sense of place while operating as a wayfinding device. It's important to note, our lives are immersed in time and space, and we constantly reason about both, making decisions about where and when we are, were, or will be. From sketches, we draw on napkins to give directions to our friends, to more complex cartographic representations of the real world, we have traditionally used maps as models for spatial reasoning and decision-making. Maps reduce dimensions in order to bring spatial reality, inform, and aid human cognition.

Initially, two issues must be considered when selecting the map scale: the objective of the map and the intended output. Deciding on which features to include will depend on the purpose of the map, with the stipulation that the map scale determines the level of details depicted in it. The amount of information to include in a map should match the mental model we've created in our minds. The smaller the scale, the less feature detail there should be. Yet, there is a limit on how many layers of visual information can be represented in a map without loss of legibility (Meirelles 125).

Jack and Gay Reineck, principals of Reineck & Reineck Design, state "As map designers for wayfinding systems, we have developed rigorous standards for informational hierarchy, typography, and colors, organizing complex information to make it accessible and comprehensive

to the user" (Gibson 101). An example of such rigorous standards can be found in Harry Beck's precedent-setting map design for the London Underground, issued in 1933, which changed transit maps forever. This brilliant map codified and abstracted spatial information, foreshadowing contemporary wayfinding systems (Gibson 40). The London Underground controls the coloration of each line thoughtfully and consistently by using the exact colors on site and throughout the transit system, through signage and information points, to enable passengers to reach their desired destinations with ease.

In addition to onsite wayfinding systems and indicators, it is important to connect mobile and virtual information graphics and wayfinding terminology to the actual signage on site. This way, visitors will have a consistent experience of a place from the planning state to arrival at the destination (Gibson 119). It is imperative that the brand style and directives of the physical environment mimic mirror and enhance the mobile or wearable user-experience while in the space.

CHAPTER 8: KNOWLEDGE IS POWER

In addition to map development, wayfinding systems, packaging instruction, data visualization, and user experience, information design can motivate change. Design is an influential tool to inform, invoke trust, build experience, inspire empathy and spark a movement. Additionally, designers as authors of their own content have the power to drive a personally meaningful agenda, for a cause they wish to raise awareness in—such as global, environmental, and societal issues, as well as political activism. Their work can raise a mirror to society's flaws and inspire change. The leveraging of striking data can spread a message, drive viewers to act, start a dialogue, and even ignite change. Bill Gates once attributed the initial spark to his charitable organization, *the Bill and Melinda Gates Foundation*, to an infographic that he had seen in an article in the *New York Times* **(Figure 11)**. No single graphic in human history has saved so many lives in Africa and Asia (Lankow 247).

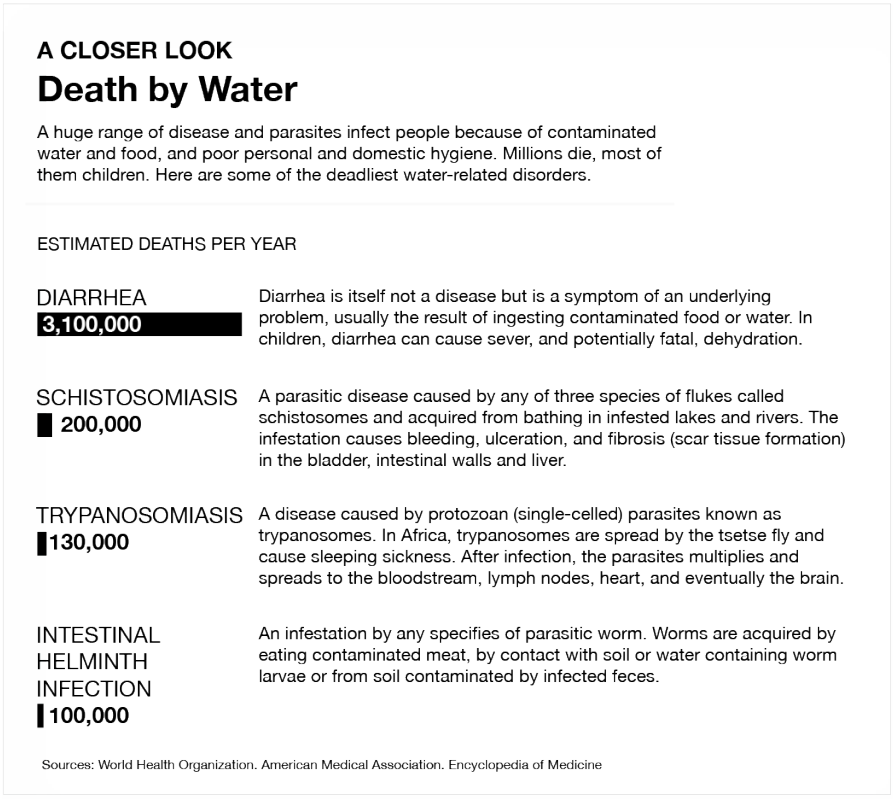


Figure 11: "Death by water" from The New York Times

Designers should strive to appeal on both an aesthetic and emotional level to awaken a deeper connection to the information; in this way, the viewer is more likely to retain the message and act. Designers must leverage data visualization to make a lasting, meaningful impact on society by providing valuable real-time insights. The design community must uphold the value of human creativity in shaping the world, and continue to empower people to craft visual stories that will inform, educate, and inspire (Lankow 248). Furthermore, the need to belong to a community is strong, and consumers expect businesses to play a role in that community and give back. In fact, 88% of women and 83% of men are more likely to support companies that prioritize purpose

over profit. The days of corporate social responsibility being an ancillary effort as opposed to a core component in the operation of any business are long over (Champagne).

Information and data saturates every aspect of our lives. How we plan our day, navigate our way through space, and make major life decisions. Designers have a responsibility to create solutions that will inform, educate, and delight our audience. There is a need for information design in the user interface and the visual experience of "the internet of things"; everyday objects such as refrigerators and temperature gauges, with network connectivity that can send and receive data. There is great potential for the designed user experience, wearable technology, and the "internet of things". In the future, we will experience the effect of information design on several disciplines; from physics to biology, from political sciences to literature, all permeated by the growing field of data visualization (Meirelles 118). Yet it's essential that designers maintain clarity and legibility in their design solution within these fields.

Information and data pervade our lives and all forms of design. Humans have a thirst for knowledge, and today's consumer has an innate fear of missing out on life's opportunities. There is a demand for designers who can display data with accuracy and ingenuity. The viewer can make life changing decisions based solely upon design alone. But, what does the future hold for information design when designers have the power to become the authors of their own work? One may envision information design as an integral piece in the development and user experience of virtual reality platforms, self-driving vehicles, robotic and drone interfaces, as well as the user interface and experience in the future of our wearable technologies.

Designers have the power to aid in the production and ideation of innovative products. Soon design applied to data and information will no longer be an afterthought, but will take a leading role. Designers understand that the users' needs are paramount, and can empathize with them on a deeper level. Designers, as agents of change, must be prepared to adapt as our world and technology expands.

APPENDIX

The following section is direct documentation and instructional graphics from the Information Design course (AVT 419-003). For more information, visit www.professorbebe.com

George Mason University
Department of Art and Visual Technology
AVT 419-003: Special Topics (Infographic Design) | Spring 2017

Syllabus and Policies

Infographic Design & Data Visualization

Instructor: Yathrib "BeBe" Ragsdale
Office Hours: By Appointment
Email: yelhilla@masonlive.gmu.edu
Class meeting days and time: M/W 4:30–7:10 p.m.
Location: School of Art Building 1020

Prerequisite
AVT 215, AVT 311, and AVT 411 (Motion Graphics), —or permission of instructor

Course Description
This course will focus on research, discovery, and execution. Learn how to gather, dissect, and execute a design solution based upon research, and cultivate it into an appropriate and digestible format. This course will offer students a diverse opportunity to become familiar with a means to envision and then build and test a design solution through to execution. The student will use the principles and methods of design to graphically represent very complicated data into a well-organized solution. Students are open to explore multiple subject matters and focus their content with visual hierarchy. Each project will begin with a sketch/storyboard, with a focus on the demographic/end-user. The final creative brief will aid the student as they execute a compelling product. Each design solution should offer a call to action, visual content that's easily digestible, and worth sharing.

Objectives
- Develop visual sensitivity and competency in graphic communications by following a disciplined design methodology
- Define problems, research, conceptualize, establish priorities, and develop graphic alternatives
- Introduce students to design history, perceptual psychology, and information design
- Further develop computer design skills in page layout and image creation programs
- Develop the ability to effectively communicate design concepts visually as well as verbally

Content

Through lecture, studio, and critique, students will design a series of projects developed from rough schematic level to final mounted presentation. The learning objectives are achieved through a series of sequential projects. We will build on concepts learned in the initial content areas and apply them in subsequent projects. Students will provide a solution to the visual communication problem, and keep record of the process, conceptual development, and exploration of ideas that lead to the solution.

Course Expectations

In professional practice, graphic designers solve client problems that often have tight time requirements. Our projects will also have deadlines to hit so you can get a feel for the pace set in professional practice. You will be given as much time as possible to work during the studio, but discussion and critiques will consume a significant amount of the time. The time spent in the studio may only be a fraction of the time that is necessary to complete the projects successfully so be prepared to make headway outside of the classroom. The primary objective of the course is to provide creative solutions to design problems, not to learn design software from the beginning. You should have basic skills in design software and use it as a design tool with certain proficiency.

Design Process

You will be following the recommended design process as outlined in the Project Statement. In many cases, you will follow specific methodologies, as they are known to increase ideas and enhance production efficiency. Evaluation of your design process will always factor heavily in the final project grade. This evaluation includes your ability to meet interim deadlines, to present the required quantity of sketches and to participate in critiques. The process of design is critical. The best final solutions come from practicing a methodology that can be repeated for a variety of design problems. You will be examining and cataloging your process for all the projects during the semester. The process includes thorough data research, word lists, sketches, storyboards, collected imagery, and design ideation. You are required to present many ideas for the critique and develop a final solution based on these ideas and their revision and refinement.

Process Documentation and Notebook

Students are required to keep well-organized, well-presented documentations of your design/learning experience (research, idea generation, and refinement) in this class. These documentations should be arranged in chronological order. You must submit your process with the final design of each project on your designated Dropbox.com folder. You should choose your best-documented process to put into a process book for final review. You will also be required to keep a sketchbook, which will also be used to document your process.

- Your Dropbox folders should contain project spec sheets, notes, research, design exploration (including sketches) and final solutions of all class projects.
- Your Dropbox folders must be well documented, structure, organized, and appropriately labeled.
- Your organized Dropbox folders will count toward a significant part of your final grade.

Take your design process seriously. Use your process documentation to help you advance from one idea to another. Use your notebooks to not only record what you are doing, but to maintain a dialogue with yourself, identify why you are making the design decisions you are making. Keep your notebooks current as you progress through each project. Students have often mistakenly believed that they could finish their project first, and organize and assemble their process books later. This is a daunting task to do shortly before a deadline. Your work will suffer if you do not follow the design process.

Performance Requirements, Critiques, and Class Participation

Due to the dynamics of the course your attendance, participation and punctuality are critical to your successful completion of the class. You must be on time—and prepared—with no exceptions. Not being properly prepared with required assignments is considered an absence from the class. Final projects are due at the beginning of class. Projects turned after the start of class are automatically reduced 1/2 letter grade. Late projects will be docked **1 LETTER GRADE PER DAY**. If compelled to miss a class, you must email/ask me with an acceptable explanation within 12 hours to be excused. If absent, you are responsible for materials covered in class. Please "buddy-up" with a classmate for this information. Two un-excused absences will gravely effect successful completion of the course. Excessive tardiness will also affect your final grade (3 unexcused late arrivals equals an unexcused absence). Personal communication devices must be turned to "silent mode" and put away.

Final critiques may last one or two class periods. Be prepared to participate in the entire final critique. Individual and group critiques will be held at each stage of a project. Students who fail to have adequate work to present will lose a valuable opportunity to learn, which will also directly affect their grades. Students must be prepared for class to be counted as present, i.e. having all necessary supplies and computer files, and process notebook with you. Critiques are an important opportunity to shape verbal skills. Designers in professional practice need to be able to convey ideas to clients, ask relevant questions, and understand client concerns.

Textbook

Infographics: The Power of Visual Storytelling
by Jason Lankow

Evaluation

All final projects will be graded by the following criteria: concept/development/process, execution, and presentation (project and personal).

- **Concept/Development/Process (1/3 of project grade)**—is defined as research, schematic thumbnail sketches, and computer roughs.
- **Execution (1/3 of project grade)**—is defined as the implementation of the design (visual organization, typography, communication). Basically, how successful is your design solution? How well did you incorporate your research and class/instructor feedback?
- **Presentation (1/3 of project grade)**—is defined as the final production quality of your project, as well as, your professional presentation (attendance, deadlines, verbal/written articulation, and participation).

The final semester grade is determined by final project grades (40%); assignments/exercises (10%); process documentation (10%); and class participation (10%). In lieu of a final exam, there will be final semester project (20%) and a mid-term exam (10%). A non-returnable digital portfolio on thumb/flash drive of all final projects must be turned in at the end of the semester. You may resubmit projects one time for a higher grade within two weeks (unless they are late), except for the final semester project. Student work may be on display at the Spring 2017 College of Visual and Performing Arts Master of Fine Arts Thesis Defense. If displayed, your work and intellectual property will be credited. Examples of course work may also be presented online for educational purposes and as a form of documentation.

Appendix and Additional Requirements

In-class Peer Critiques: Will be held in small groups of 4-8 participants on rotations, so that students are offered a different perspective. These facilitated critiques are meant to offer constructive feedback, which will yield portfolio worthy work(s).

Share & Inspire: Each student will have an opportunity to spend 10 to 15 minutes to present a work of information design that they find creative unique and/or exemplary. We will then open for comments/discussion, where participants can gain additional participation points. (Be sure your proposed presentation is approved in advance)

Participation points: A portion of your grade is based on class attendance, critique contributions, Share & Inspire presentation, and active discussion in response to the presentation. Be an active and engaged designer!

Comps & Sketches: Students are expected to produce 10 to 20 concepts/sketches and solutions per project. These iterations and sketches must be posted to Dropbox. It's imperative that all work be properly documented.

Creative Brief & Mood Board: Students will submit a brief and mood board for each project (uploaded to Dropbox). The brief will outline the intended solution, mood, demographic, key message, and over all tone. This document will answer how the design will engage the target audience, and achieve the intended communication goal. The mood board will visually display the proposed style and aesthetic.

Motion Demos: Students will view a series of Lynda.com tutorials outside of class time. In addition, there will be a series of in class demo sessions. Students will work towards a goal to create something new, and eventually apply these lessons to Project 4.

Open work hour: If time allows, students may spend a moderate amount of the class period working on their projects, and making the necessary post-critique adjustments. Students are not dismissed until a substantial amount of progress is provided as proof of effort.

Grading Scale (Overview of grading standards)

A. Superior execution; maximum originality; excellent concentration and initiative; cooperative with peers; excellent judgment; superior attitude and dedication; highly imaginative, original, and experimental; very consistent in work ethic; significant improvement
B. Strong execution and originality; adequate concentration and initiative; cooperative with peers; good attitude, dedication, and judgment; imaginative and experimental; consistent in work ethic; noticeable improvement.
C. Average execution, concentration, organization, and attitude; some imagination and originality; lacks some consistency in work ethic; some improvement.
D. Poor execution and improvement; limited originality; little concentration and organization; poor judgment; evades responsibility and cooperation; lacks work ethic, concentration, organization
F. Fails to execute to minimum standards, insignificant improvement; no originality; minimum concentration and organization; evades responsibility and cooperation; no work ethic.

\+ above average
✓ average
– below average

Course Outline

1. Pitch potential subject of analysis
2. Fully research potential subject
3. Submit creative brief, mood board, and competitive examples
4. Submit (at least 10-20) sketch/storyboard for critique
5. Submit final copy/text for approval
6. In class critiques of several iterations/solutions
7. Final Submission

Project 1: Aid Comprehension — The Examination and Organization of Information // Weeks 1–4

The design solution is meant to show a complicated method and give the viewer step by step directions. Find or collect content that teaches, guides, or informs the viewer visually. **Deliverables:** Design brief, Data/Research, Process documentation uploaded on Dropbox, and the final graphic.

Project 2: Call to Action — Social Change // Weeks 3 – 6

Select a social or personal issue of which you are passionate about. Find or collect data that informs, and/or shocks and portray that information in a compelling format. This infographic is meant to show a complicated or sensitive issue and convince the viewer to act. **Deliverables:** Research on your chosen topic, Design brief, Image collection, Process documentation via Dropbox, final graphic.

Project 3: Retention & Appeal — Visual Storytelling // Weeks 6–9

Students will create a visual narrative on a subject of their choosing. The infographic should tell a compelling story and will involve thorough research. Focus on visual metaphor, and feel free to be clever or witty to help convey the message. **Deliverables:** Audience assessment, Design brief, Process documentation (Dropbox), final solution, and other materials as assigned.

Final Semester Project: In-Motion // Weeks 7 – 14

Students will research and create a dynamic infographic on a topic of their choosing. Once the design and concept is approved the student will develop a storyboard, and generate an animated motion graphic to engage the audience. **Deliverables:** Process documentation (Dropbox), Design brief, final animated piece posted to vimeo or youtube.

Mid-term Exam

Students will be evaluated on their Information Design knowledge through an (open-note) mid-semester examination.

Materials

- Dropbox.com account/subscription
- USB flash memory, cloud subscription (It is important to backup your work on box/dropbox/googledrive/etc)
- Project-dependent materials that will vary per concept
- Super-Black mounting boards, thin super-black boards, acetate, spray mount, black or white mounting tape, large black portfolio for housing final projects for review, cutting pad, Xacto™ knives & blades, self-healing cutting mat (all for home use) for final project submission
- Sketchbook

University and AVT Department Policies

University and School of Art Policies

In accordance with George Mason University policy, turn off all beepers, cellular telephones and other wireless communication devices at the start of class. The instructor of the class will keep his/her cell phone active to assure receipt of any Mason Alerts in a timely fashion; or in the event that the instructor does not have a cell phone, he/she will designate one student to keep a cell phone active to receive such alerts.

Commitment to Diversity

This class will be conducted as an intentionally inclusive community that celebrates diversity and welcomes the participation in the life of the university of faculty, staff and students who reflect the diversity of our plural society. All may feel free to speak and to be heard without fear that the content of the opinions they express will bias the evaluation of their academic performance or hinder their opportunities for participation in class activities. In turn, all are expected to be respectful of each other without regard to race, class, linguistic background, religion, political beliefs, gender identity, sex, sexual orientation, ethnicity, age, veteran's status, or physical ability.

Statement on Ethics in Teaching and Practicing Art and Design

As professionals responsible for the education of undergraduate and graduate art and design students, the faculty of the School of Art adheres to the ethical standards and practices incorporated in the professional Code of Ethics of our national accreditation organization, The National Association of Schools of Art and Design (NASAD).

Open Studio Hours

SOA teaching studios are open to students for extended periods of time mornings, evenings and weekends whenever classes are not in progress. Policies, procedures and schedules for studio use are established by the SOA studio faculty and are posted in the studios.

ArtsBus

Dates for Spring 2017:
February 18
March 25
April 18

ArtsBus Credit:

* Each student must have up to 5 AVT 300/Artsbus credits before graduation. For credit to appear on your transcript you must enroll in AVT 300. This also applies to anyone who intends to travel to New York independently, or do the DC Alternate Assignment.
* If you plan/need to go on multiple ArtsBus trips during a semester and need them towards your total requirement, you must enroll in multiple sections of AVT 300. Please go to the ArtsBus website: http://artsbus.gmu.edu "Student Information" for additional, very important information regarding ArtsBus policy.
* Non-AVT majors taking art classes do not need Artsbus credit BUT may need to go on the Artsbus for a class assignment. You can either sign up for AVT 300 or buy a ticket for the bus trip at the Center of the Arts. Alternate trips must be approved by the instructor of the course that is requiring an ArtsBus trip.

Visual Voices Lecture Series

Dates for Spring 2017:

January 26

February 9

March 9

March 23

March 30

Visual Voices is a year-long series of lectures by artists, art historians and others about contemporary art and art practice. Visual Voices lectures are held on Thursday evenings from 7:20- 9:00 p.m. in Harris Theater: http://soa.gmu.edu/visualvoices/

Important Deadlines

January 1 Day of Week	*Sunday*
Martin Luther King Day (no classes)	Mon Jan 16
First day of classes; last day to submit Domicile Reclassification Application; Payment Due Date; full semester waitlists removed	Mon Jan 23
Last day to add classes—all individualized section forms due Last day to drop with no tuition penalty	Mon Jan 30
Last day to drop with a 33% tuition penalty	Mon Feb 13
Final Drop Deadline (67% tuition penalty)	Fri Feb 24
Immunization Record Deadline	Wed Mar 1
Midterm progress reporting period (100-200 level classes)—grades available via Patriot Web	Mon Feb 20 – Fri Mar 24
Selective Withdrawal Period (undergraduate students only)	Mon Feb 27 – Fri Mar 31
Spring Break	Mon Mar 13 – Sun Mar 19
Incomplete work from Fall 2016 due to Instructor	**Fri March 31**
Incomplete grade changes from Fall 2016 due to Registrar	**Fri April 7**

Dissertation/Thesis Deadline	Fri May 5
Last day of classes	Sat May 6
Reading Days Reading days provide students with additional study time for final examinations. Faculty may schedule optional study sessions, but regular classes or exams may not be held.	Mon May 8 – Tue May 9
Exam Period (beginning at 7:30 a.m.)	Wed May 10 – Wed May 17
Commencement and Degree Conferral Date	May 20

Once the add and drop deadlines have passed, instructors do not have the authority to approve requests from students to add or drop/withdraw late. Requests for late adds (up until the last day of classes) must be made by the student in the SOA office (or the office of the department offering the course), and generally are only approved in the case of a documented university error (such as a problem with financial aid being processed) , LATE ADD fee will apply. Requests for non-selective withdrawals and retroactive adds (adds after the last day of classes) must be approved by the academic dean of the college in which the student's major is located. For AVT majors, that is the CVPA Office of Academic Affairs, Performing Arts Building A407.

Students with Disabilities and Learning Differences

If you have a diagnosed disability or learning difference and you need academic accommodations, please inform me at the beginning of the semester and contact the Disabilities Resource Center (SUB I room 234, 703-993-2474). You must provide me with a faculty contact sheet from that office outlining the accommodations needed for your disability or learning difference. All academic accommodations must be arranged in advance through the DRC.

Official Communications via GMU E-Mail

Mason uses electronic mail to provide official information to students. Examples include communications from course instructors, notices from the library, notices about academic standing, financial aid information, class materials, assignments, questions, and instructor feedback. Students are responsible for the content of university communication sent to their Mason e-mail account, and are required to activate that account and check it regularly.

Attendance Policies

Students are expected to attend the class periods of the courses for which they register. In-class participation is important not only to the individual student, but also to the class as a whole. Because class participation may be a factor in grading, instructors may use absence, tardiness, or early departure as de facto evidence of nonparticipation. Students who miss an exam with an acceptable excuse may be penalized according to the individual instructor's grading policy, as stated in the course syllabus.

Honor Code

Students in this class are bound by the Honor Code, as stated in the George Mason University Catalog. The honor code requires that the work you do as an individual be the product of your own individual synthesis or

integration of ideas. (This does not prohibit collaborative work when it is approved by your instructor.) As a faculty member, I have an obligation to refer the names of students who may have violated the Honor Code to the Student Honor Council, which treats such cases very seriously. No grade is important enough to justify cheating, for which there are serious consequences that will follow you for the rest of your life. If you feel unusual pressure about your grade in this or any other course, please talk to me or to a member of the GMU Counseling Center staff.

Using someone else's words or ideas without giving them credit is plagiarism, a very serious Honor Code offense. It is very important to understand how to prevent committing plagiarism when using material from a source. If you wish to quote verbatim, you must use the exact words and punctuation just as the passage appears in the original and must use quotation marks and page numbers in your citation. If you want to paraphrase or summarize ideas from a source, you must put the ideas into your own words, and you must cite the source, using the APA or MLA format. (For assistance with documentation, I recommend Diana Hacker, A Writer's Reference.) The exception to this rule is information termed general knowledge—information that is widely known and stated in a number of sources. Determining what is general knowledge can be complicated, so the wise course is, "When in doubt, cite."

Be especially careful when using the Internet for research. Not all Internet sources are equally reliable; some are just plain wrong. Also, since you can download text, it becomes very easy to inadvertently plagiarize. If you use an Internet source, you must cite the exact URL in your paper and include with it the last date that you successfully accessed the site.

Writing Center

Students who are in need of intensive help with grammar, structure or mechanics in their writing should make use of the services of Writing Center, located in Robinson A116 (703-993-1200). The services of the Writing Center are available by appointment, online and, occasionally, on a walk-in basis.
The Collaborative Learning Hub Located in Johnson Center 311 (703-993-3141), the lab offers in-person one-on-one support for the Adobe Creative Suite, Microsoft Office, Blackboard, and a variety of other software. Dual monitor PCs make the lab ideal for collaborating on group projects, Macs are also available; as well as a digital recording space, collaborative tables, and a SMART Board. Free workshops are also available (Adobe and Microsoft) through Training and Certification; visit ittraining.gmu.edu to see the schedule of workshops and to sign up.

AVT 419-003: Project 1

Instruct

Objectives

A process or activity of choice will be studied. From this study you will create a design showcasing the necessary actions, steps, and procedures. Copy will be developed based upon research and insight collecting. This infographic is meant to show a method or process and give the viewer step by step directions. This could involve phases, directions, wayfinding, etc. This task will require you to collect information and organize it in a way that is visually powerful and appealing.

You will be required to show your process through:

- Research and ideation
- Collection of imagery and data
- Photography/Illustration/Collection of imagery
- Typography
- Typographic studies will be part of your research and design process. Document your studies.
- Color studies

Design Process

1. Problem identification and definition (design brief)
2. Research and discovery
3. Competitive analysis
4. Visualize, explore, and ideate
5. Compose, evaluate, refine
6. Execute or implement

Problem statement

You must inform or educate your audience. (Pick who your audience is based on the topic.) Find or collect data that teaches or guides the viewer visually. Data visualization is only as good as its data. Don't recreate a chart that could be made with Microsoft Excel, nor should you rely TOO much on typography to convey your message. Show, don't tell.

Goals

Your design solution will be graded based on the appropriateness of the content, how your concept is portrayed, and how easily it can be understood. People who want above average grades should include more than one layer of meaning as well as avoid unnecessary imagery and details. I will also be looking at your use of grids, good color combination, hierarchy, and good typography. Your visual solution should need very little to no explanation. Your information should be clearly laid out and easily found, labels need to be meaningful, information should not be slanted or skewed by bias or misleading imagery, and your method or idea for portraying the content should add to the ease of understanding.

Deliverables

1. Process documentation (creative brief, data/research, 10 to 20 sketches, iterations, etc.) uploaded to Dropbox
2. Final mounted onto a 15x20" blackboard
3. A PDF of your final project

Constraints/requirements

- 11 x 17 or 12 x 18 inches, 4/0 CMYK inks, Bleeds okay
- Your infographic must have a title. You should have an intro paragraph unless you can prove that people will understand your design without it.
- All imagery must be appropriate and true to form
- You are not allowed to use imagery that you don't legally have the right to use.

Due Dates

Week 1: Research; develop data, copy and content
Week 2: Design Brief + Competitive Audit
Concepts + Data + Sketches
Week 3: Initial iterations and revised comps
Week4: FINAL DUE + Process documented on Dropbox

AVT 419-003: Project 2

Social Change

Objectives

The student will create a piece meant to shed light on a social issue of their choosing. This infographic must include a call to action and convince the viewer to take necessary action. You are required to collect information and organize it in a way that is visually powerful and appealing. All imagery used must be illustrated or manipulated in some way.

You will be required to show your process through:

- Research and ideation
- Collection of imagery and data
- Photography/Illustration/Collection of imagery
- Typography
- Typographic studies will be part of your research and design process. Document your studies.
- Color studies

Design Process

1. Problem identification and definition (design brief)
2. Research and discovery
3. Competitive analysis
4. Visualize, explore, and ideate
5. Compose, evaluate, refine
6. Execute or implement

Problem statement

You must inform or educate your audience. (Pick who your audience is based on the topic.) Find or collect data that teaches or guides the viewer visually. Data visualization is only as good as its data. Don't recreate a chart that could be made with Microsoft Excel, nor should you rely TOO much on typography to convey your message. Show, don't tell.

Goals

Your design will be graded based on the appropriateness of the data, how the content is portrayed, and how easily it can be understood. People who want above average grades should include more than one layer of meaning as well as avoid unnecessary imagery and details. I will also be looking at your use of grids, good color combination, hierarchy, and good typography. Your poster should need very little to no need for explanation. Your information should be clearly laid out and easily found, labels need to be meaningful, data should not be slanted or skewed by bias or misleading imagery, and your method or idea for portraying data set should add to the ease of understanding.

Deliverables

1. Process documentation (creative brief, data/research, 10 to 20 sketches, iterations, etc.) uploaded to Dropbox
2. Final mounted onto a 15x20" blackboard
3. A PDF of your final project

Constraints/requirements

- Poster: 11 x 17 or 12 x 18 inches, 4/0 CMYK inks, Bleeds okay
- Your infographic must have a title. You should have an intro paragraph unless you can prove that people will understand your poster without it.
- All sources must be cited on the poster.
- All imagery must be appropriate and true to the data
- You are not allowed to use imagery that you don't legally have the right to use.

Due Dates

Week 5: Research; develop data, copy and content
Week 6: Design Brief + Competitive Audit
Concepts + Data + Sketches
Initial Comps and Revised Comps on
Week 7: FINAL DUE + Process Board
Week 8: (SPRING BREAK)

AVT 419-003: Project 3

Visual Narrative

Objectives

This infographic will require you to collect information and organize it in a way that is visually powerful and appealing. All imagery used must be illustrated or manipulated in some way. Students will create a visual story on a subject of their choosing. The infographic should tell a compelling story and will involve thorough research. Information should be organized in a way that's visually powerful and appealing. All imagery used must be illustrated or adapted. Consider creatively designing a timeline, series, phases, and/or stages.

You will be required to show your process through:

- Research and ideation
- Collection of imagery and data
- Photography/Illustration/Collection of imagery
- Typography
- Typographic studies will be part of your research and design process. Document your studies.
- Color studies

Design Process

1. Problem identification and definition (design brief)
2. Research and discovery
3. Competitive analysis
4. Visualize, explore, and ideate
5. Compose, evaluate, refine
6. Execute or implement

Problem statement

Students will create a visual story on a subject of their choosing. The infographic should tell a compelling story and will involve thorough research. Focus on visual metaphor, and feel free to be as clever or witty to help convey the message. All imagery used must be illustrated or adapted. Consider creatively showcasing a timeline, series, phase, and/or stages to show the narrative.

Goals

Your poster will be graded based on the appropriateness of the data, how that data is portrayed, and how easily it can be understood. People who want above average grades should include more than one layer of meaning as well as avoid unnecessary imagery and details. I will also be looking at your use of grids, good color combination, and good typography. Your poster should need very little to no need for explanation. Your information should be clearly laid out and easily found, labels need to be meaningful, data should not be slanted or skewed by bias or misleading imagery, and your method or idea for portraying data set should add to the ease of understanding.

Deliverables

1. Process documentation (creative brief, data/research, 10 to 20 sketches, iterations, etc.) uploaded to Dropbox
2. Final mounted onto a 15x20" blackboard
3. A PDF of your final project

Constraints/requirements

- 11 x 17 or 12 x 18 inches, 4/0 CMYK inks, Bleeds okay
- Your infographic must have a title. You should have an intro paragraph unless you can prove that people will understand your poster without it.
- All sources must be cited on the poster.
- All imagery must be appropriate and true to the data
- You are not allowed to use imagery that you don't legally have the right to use.

Due Dates

Week 9: Research your topic completely; develop data, copy and content
Week 10: Design Brief + Competitive Audit
Concepts + Data + Sketches
Week 11: Initial Comps and Revised Comps
Week 12: FINAL DUE + Process documented on Dropbox

AVT 419-003: Project 4

In-motion

Objectives

Students will create a time-based motion project of :10-:20 seconds in length (must include audio/sound effects). You may use a static infographic you've already created and translate it into kinetic information, or create a piece from scratch. Keep in mind the visual arrangement, style, purpose, and target audience. Once the design concept is approved the student will develop a storyboard, and create an animated motion graphic with a focus on its interactive qualities and engaging viewer experience.

You will be required to show your process through:

- Research and ideation
- Collection of imagery and data
- Photography/Illustration/Collection of imagery
- Typography
- Typographic studies will be part of your research and design process. Document your studies.
- Color studies

Design Process

1. Problem identification and definition (design brief)
2. Research and discovery
3. Competitive analysis
4. Visualize, explore, and ideate
6. Create a rough storyboard sketch that demonstrates how the piece could be animated accordingly
7. Develop a revised edition that clarifies the sequence of events and the types of movements and transitions that will occur
8, Import the components into AfterEffects and animate.

Problem statement

Students will design an infographic that must be set in motion. This project will require you to collect information and organize it in a way that is visually powerful and appealing. All imagery used must be illustrated or manipulated in some way.

Goals

This narrative in motion will be graded based on the appropriateness of the data, how that data is portrayed, and how easily it can be understood. People who want above average grades should include more than one layer of meaning as well as avoid unnecessary imagery and details. I will also be looking at your use of grids, good color combination, hierarchy, and good typography. Your final solution should need very little to no explanation. Your information should be clearly communicated and easily understood, labels need to be meaningful, data should not be slanted or skewed by bias or misleading imagery, and your method or idea for portraying data set should add to the ease of understanding. (*Open to discussing an alternate project including wearable tech, mobile/UX, or some other form of kinetic design)*

Deliverables

1. Process documentation (creative brief, data/research, 10 to 20 sketches/storyboards, iterations, etc.) uploaded to Dropbox
2. Vimeo or Youtube of the final piece

Constraints/requirements

- Students are open to use AfterEffects, Premiere, or any industry-standard software to develop their final piece
- Your infographic must have a title. You should have an intro paragraph unless you can prove that people will understand your final piece without it.
- All sources must be cited
- All imagery must be appropriate and true to the data
- You are not allowed to use imagery that you don't legally have the right to use.

Due Dates

Week 13: Research; develop data, copy and content
Design Brief + Competitive Analysis
Week 14: Storyboard + Sketches
Initial Rough-cuts and Revised rough-cuts
Week 15: FINAL MOTION GRAPHIC DUE + Process Documentation
Week 16: May 8-9: reading days | May 10-17: exam period

10 Tips for a successful information design solution

1. **Gather Data**
   The full picture of a story is usually found scattered through multiple materials, not isolated in charts alone. Limit your sources for consistency and be sure the data is of the utmost quality. Make sure the source(s) tell a story, are reliable, and relevant.

2. **Read everything**
   Make sure the facts support the story being told. Submerse yourself into the data completely. Weave a compelling story. How do you exaggerate the data without misrepresenting the content? Then narrow down the content to what's worth keeping. What should be omitted? What should the viewer care about? The student's main focus is to bridge the gap of understanding by telling a visual story

3. **Create a unique/original narrative**
   Clarify a complete set of data, explain a process, highlight a trend, or support some kind of argument. Do you want to make them laugh? Or do you want to educate them? Is this format relevant to your target audience? How does your approach help achieve your communication objective? Is the narrative meaningful? Will other people find this interesting?

4. **Consider real-world problems**
   Identify problems (ask the difficult questions and get to the root of the data). Be sure to build a complete design brief and competitive analysis. What is the business situation, and how will your design add value to the campaign or company. What is the industry standard in reference to your topic of analysis?

5. **Create a hierarchy**
   A "hero" that leads the story, a bit of data that causes your jaw to drop. Once you find it, it becomes a way to organize the project and solidifies the hierarchical structure of the design. Typographic hierarchy is key! Slice content into visual nuggets to make the design easy to read and digestible.

6. **Wireframe and sketch**
   Ideate and visually conceptualize as many solutions as possible. Mock up as many iterations and concept drawings as possible.

7. **Choose a format**
   What's the best way to visually represent the content? It might require a diagram timeline or flowchart to explain a process, or perhaps a map might be the best way to tell the story. Be thoughtful to your user when considering the format.

8. **Determine a visual approach**
   Now exaggerate that format through clever imagery and wit. There are those who prefer to make the raw data beautiful, while others prefer to use illustration or clever metaphors. What sets your design solution apart and makes this shareable on social media, blogs, etc? How is your design engaging? What it is the call to action?

9. **Refine and test**
   The testing phase ensures that the piece is readable and easy to understand, especially to those who have not see the data before. Evaluate the design and iterate until the piece is as clear and simple as possible. Engage in experimentation. Construct and test prototypes that can affect the real-world problems they set out to address. Utilize this data to guide the generation of new ideas.

10. **Release it to the world**
    An intensely scrutinized design is one that has stirred the minds of its audience.

Imagine

In-class Exercise 1 | Monday January 30

Think of a piece of information design that frustrates you or where you believe there's room for improvement. Is it illegible? Is the information difficult to read or digest? Perhaps it's a complicated recipe, an instruction sheet, a building diagram, scientific data, complex invoice or bill, wayfinding signage, maps/directions, a flowchart, or maybe even a nutrition label. Consider the user-experience. What about this example seems unsuccessful? Reimagine the possibilities and create a fresh new solution to the problem.

YOUR MISSION

Execute a concept design and pitch it to the class in 60 minutes or less

10 minutes to immerse yourself in the content, research as much as you can about the subject

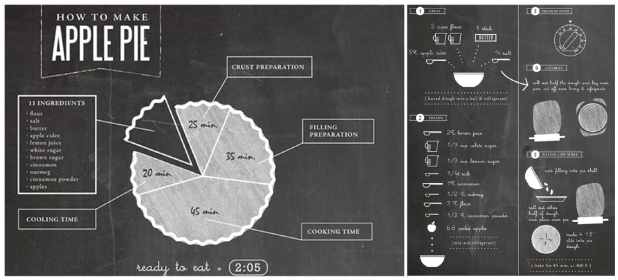
10 minutes to develop a call to action or key message for the intended target audience

10 minutes take a competitive audit and document other successful solutions

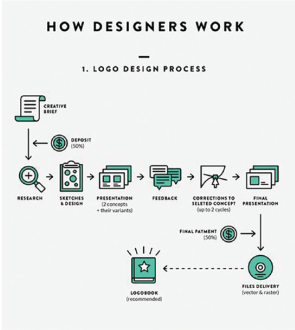
10 minutes to sketch conceptualize and ideate (consider the hierarchy of information, and the overall tone)

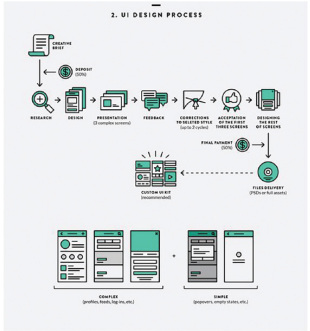
20 minutes to develop a final design on screen to pitch to the class

EXAMPLE 1



EXAMPLE 2





Survey

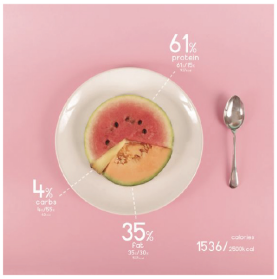
In-class Exercise 2 | Wednesday February 8

Take the survey responses from the class and visually represent the findings. Select two or more bits of information and visually show the correlations or data relationships. Create a hypothesis or insight about your findings. Create a clever and unique visual metaphor based upon the data findings.

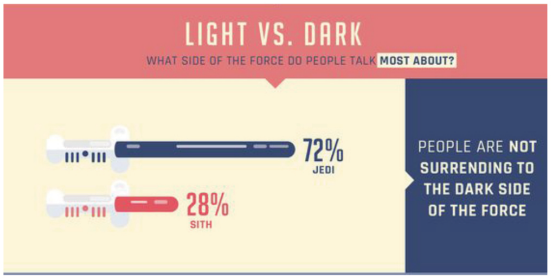
YOUR MISSION
Execute a concept design and pitch it to the class in 60 minutes or less

- 10 minutes to immerse yourself in the content, research as much as you can about the subject
- 10 minutes to develop a call to action or key message
- 10 minutes take a competitive audit and check out other solutions
- 10 minutes to sketch conceptualize and ideate (think of the mood, and tone)
- 20 minutes to develop a final design to pitch to the class

EXAMPLE 1



EXAMPLE 2



Who are you?

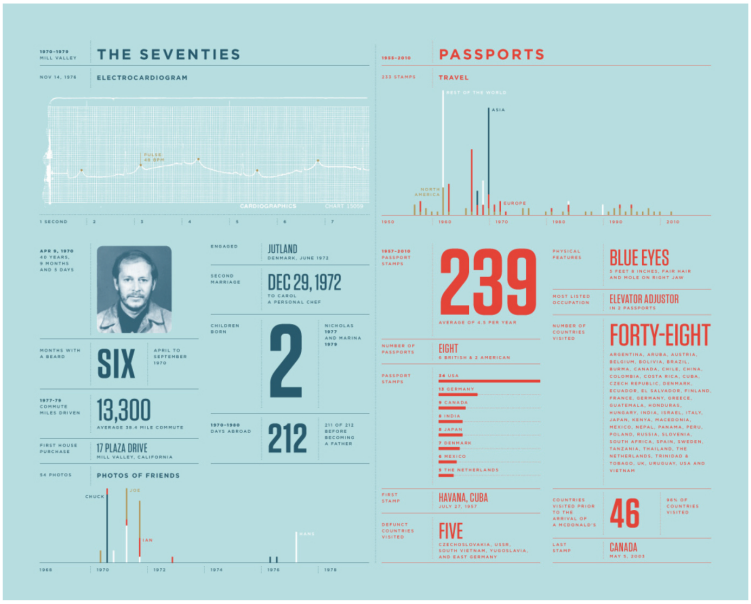
In-class Exercise 3 | Wednesday February 15

Create an intimate portrait of who you are as an individual. Consider your life story up to this day. What were your major accomplishments? When was the best day of your life? Think of this as a visual representation of your life story, or a map or resume of your skills now and into the future. This could potentially become an example of a large amount of data and/or tiny measurements displayed in a stunning fashion.

YOUR MISSION

Execute a concept design and pitch it to the class in 60 minutes or less

- 10 minutes to immerse yourself in the content, research as much as you can about the subject
- 10 minutes to develop a call to action or key message
- 10 minutes take a competitive audit and check out other solutions
- 10 minutes to sketch conceptualize and ideate (think of the mood, and tone)
- 20 minutes to develop a final design to pitch to the class



EXAMPLE 1: A page from the 2010 Feltron Annual Report — The Paternal Report, by Nicholas Felton

What do you do?

In-class Exercise 4 | Wednesday March 1

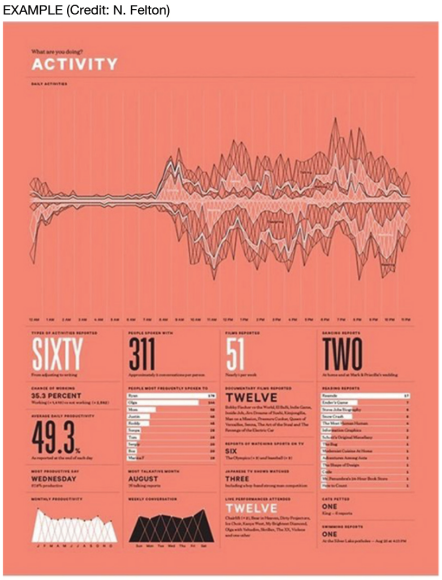
Visually display how you spend your time. How much time do you spend in your commute? Consider the amount of time you spend in class, at work, or during extracurricular activities. Create a visual narrative of your day, week, month, and/or year, and how each moment of time is spent. Consider how time is organized: minutes, hours, days, weeks, months, etc.

YOUR MISSION

Execute a concept design and pitch it to the class in 60 minutes or less

- 10 minutes to immerse yourself in the content, research as much as you can about the subject
- 10 minutes to develop a call to action or key message
- 10 minutes take a competitive audit and check out other solutions
- 10 minutes to sketch conceptualize and ideate (think of the mood, and tone)
- 20 minutes to develop a final design to pitch to the class

EXAMPLE (Credit: N. Felton)



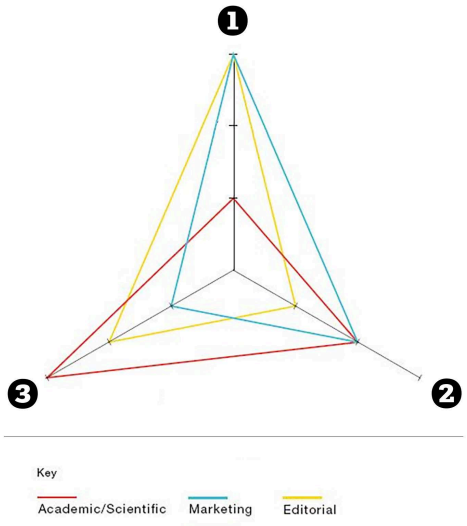
Information Design Exam

FIRST LAST NAME: _____ DATE: _____

1.) Wayfinding is a subject of information and environmental graphic design intertwined, it is a larger disciple that embraces many specializations including architecture and the design of graphic communications, maps, exhibitions, and interior spaces. **TRUE** or **FALSE**

2.) This individual invented four types of diagrams: the line graph and bar chart for financial and economic data, and the pie chart and circle graph, used to show part to whole relations. These forms of organizing data are still in use today.

a) Harry Beck
b) William Playfair
c) Megan Jaegerman



3.) By definition, all information graphics are aimed at communicating information. What varies is the purpose for doing so—and understanding this purpose is what determines the graphic's priorities. List the three priorities:

1. _____
2. _____
3. _____

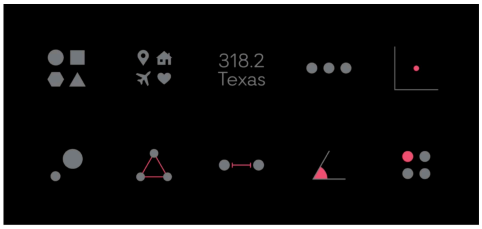
4.) Name the four formats in which data relationships are perceived.

5.) Name and define at least one of the psychological theories and effects on human perception that address human decision-making. When leveraged these laws help power your design solutions.

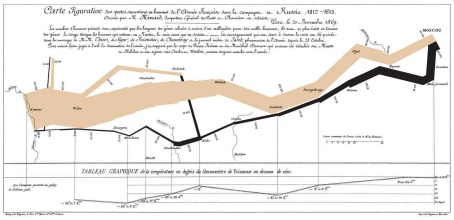
6.) What is Harry Beck most known for and why is his work so ground-breaking?

7.) The human span of attention encompasses only _____ objects at a glance, as our working memory is no more than _____ items in length.

8.) Nicholas Felton states, that when organizing data, we must create Visualization Elements as a way of codifying our content. Name at least 7 of the 10 elements.



9.) In 1869 "Napoleon March to and from Russia, 1812-1813" display combines statistical data with a timeline, and spatio-temporal information about the French army.



a) Otl Aicher

b) Charles Joseph Minard

c) Joseph Priestley

10.) On a separate sheet of paper, take a moment and share your thoughts about one of a fellow classmate's "Share & Inspire" presentation. What did you learn? How do you intend to apply it to your own work?

RECIPE

INGREDIENTS

Fulfill your upper-level credit requirements & learn a new skill set

Register for AVT 419-003

Information Design (3 credits)
Spring 2017 | Mon&Wed 4:30-7:10pm

2 cups design

1/2 cup critical-thinking

2 tbs story-telling

1 teaspoon empathy

pinch of fun

Function is fine, but designers as the artists of our system must provide the spice as well as the nutrition.

1. Learn how to visualize complex information
2. Combat the dreaded "information overload"
3. Information can inspire and motivate change!
4. Design has power! Invoke trust, build an experience, drive awareness, inspire empathy and spark a movement.
5. Give clarity to complex decision-making
6. Bridge the gap of understanding by telling a visual story
7. How to best craft the message for the medium
8. Pairing of wearable devices to simplify the process of completing activities or absorbing information even faster
9. Present our work in an efficient and effective manner.
10. How to gather, dissect and execute research or data into a digestible form.

Upper-Level Credits: All undergraduate students are required to complete a minimum of 45 credits of upper-division courses at the 300–499 level. Breadth and Experience (9-12 credits): Choose three of the following classes; at least one course must be a 200-level studio course (see each concentration for individual requirements)

Research & Discovery - 40%

RESEARCH - 20%

The student exhibits a deep and logical connection between the research and their final concept. The designer has a defined objective and is able to identify relevant need the intended viewer may have. He/she has collected a substantial amount of reputable data and can validate their sources. The information is accurate; sources are legitimate, with an appropriate understanding of the situations observed or information collected.

DISCOVERY - 20%

The student has provided a series of sketches, storyboards, mood boards, or prototypes with a rigorous design exploration. The have explored several solutions and maintained a record of their aesthetic explorations. Alternative design solutions may explore varying conceptual meanings and potential viewer scenarios. **Note: all iterations and variations of the design process must be housed on Dropbox**

Final Product - 60%

CLARITY - 20%

The final solution is legible and easy to follow. There is clarity of type and a high attention to detail. A definitive solution is met. The design communicates the designer's understanding of the relationship between the data and the key message clearly and creatively. The design exhibits a clear message and the visual queues aid in retention of information. The design is easy comprehended and successfully, offers a call to action, and educates or informs the viewer of the intended message. There is a clear attention to the overall hierarchy, and focus on the key message The final design solution exhibits a visual narrative that guides the viewer through the design.

AESTHETICS - 20%

The style visual theme and aesthetic is appropriate to the design concept. The final solution is visually reminiscent of the topic, yet exhibits a clever creative and original design piece. The designer has exhibited a keen understanding of the fundamental design principles and has executed them effectively. The designer has elected an appropriate format to the design solution.

QUALITY - 20%

The final piece is trimmed cropped to an appropriate size (no larger than 15x20"). If it is a motion graphic, the final video is uploaded to youtube or vimeo. Care has been taken to the quality of the final presentation.

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BIOGRAPHY

Yathrib Elhillali Ragsdale graduated from Gar-Field Senior High School, Woodbridge, Virginia in 2001. She received her Bachelor of Arts from George Mason University in 2005 in Graphic Design. She is the 2014 AIGA Design Continuum Fund Scholarship Recipient, and the 2016 Victoria Salmon Scholarship Recipient. Mrs. Ragsdale has over ten years of design experience, and is an adjunct professor at George Mason University in the Art and Visual Technology department.