
User Considerations in Graphic Design

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May 2005

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A thesis submitted to the faculty
of the College of Imaging Arts and Sciences
in candidacy for the degree of Master of Fine Arts

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Acknowledgements

I would like to extend my utmost gratitude to Bruce Meader for his invaluable guidance and to Roger Remington and Paul Grebinger for their constant support and input.

Special thanks to Kate Kritkauskay, Marcia Lausen, Erin Malone, Alan Reddig, Stan Rickel, Tim Scanlon, Vincent Serravallo, and Jim Yarrington for their valuable insights and time.

Thank you to Betsy Murkett and her staff for their help with my Bevier Gallery exhibition.

Thank you to Deborah Beardslee for her guidance throughout my graduate studies and to my fellow students for their advice and support.

And thanks to Mom, Dad, Jean, and Thad for their lifelong support, confidence, and love.

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Finding the appropriate balance between form and function is a main component of effective design; however, aesthetic and stylistic concerns sometimes dominate over usability and understanding. This project examines the role of the final user within the graphic design process and investigates strategies graphic designers can use to learn more about users of a graphic design solution. From these findings, designers will be better equipped with tools to gather and analyze user wants and needs, facilitating the development of solutions that satisfy the needs of the intended users and are also aesthetically sound.

Situation and Audience

In graphic design, the user frequently relies on a design to communicate important information; by considering user experience and understanding user behavior, a graphic designer can develop solutions that are appropriate for the intended audience and are therefore usable. This thesis project is directed primarily toward the graphic design community to help bring awareness to the importance of considering and understanding the user. Subsequently, it also reaches out to the general public to explain the role of usability within design.

The application of this project is a *User Guide* for graphic designers that explains the process of user-centered design and provides strategies for carrying out effective user research.

Graphic Design Content

This project focuses on defining methods and strategies that can be used by graphic designers to understand their target user during the design process. These methodologies can then be incorporated into the preliminary stages of the design process as a foundation upon which usable graphic design solutions can be developed.

Outside Content

From this study, a set of guidelines was developed that can be used by graphic designers to better understand user needs and concerns.

Contribution

This designer is personally interested in the importance of function and user understanding within graphic design and believes in creating usable design solutions. Many graphic design professionals could benefit from an organized body of information on usability, and methods for better understanding the user to develop solutions that are aesthetically and functionally sound. Additionally, design that focuses on individual users benefits society by providing focused, practical solutions to many everyday problems, eliminating unnecessary frustration and making life easier.

Inspiration

This project was born out of the writings of a variety of design practitioners and critics who discussed the impact of usability on user experience within design. Selected quotations that sparked interest in this subject are presented below:

“If everyday design were ruled by aesthetics, life might be more pleasing to the eye but less comfortable; if ruled by usability, it might be more comfortable but uglier. If cost or ease of manufacture dominated, products might not be attractive, functional, or durable. Clearly, each consideration has its place. Trouble occurs when one dominates all the others.”
Donald Norman, The Design of Everyday Things

“Despite the critical role that graphic designers play in the delivery of information, most of the curriculum in design schools is concerned with teaching students how to make things look good. This is later reinforced by the profession, which bestows awards primarily for appearance rather than for understandability or accuracy.”
Richard Saul Wurman, Information Anxiety 2

Inspiration continued

“Misleading graphics are a direct result of “the skills, attitudes, and organizational structure prevailing among those who design and edit statistical graphics. . . Many graphic artists believe that statistics are boring and tedious [and] believe graphic displays should divert and entertain those in the audience who find the words in the text too difficult.”

Edward Tufte, *The Visual Display of Quantitative Information*

“Visual communications of any kind... should be seen as the embodiment of form and function: the integration of the beautiful and the useful.”

Paul Rand, *A Designer's Art*

“Cool is not a good design reason.”

Alan Cooper, interview with David Anderson

From these and other related comments, an interest was cultivated to better understand user-centered design. Preliminary research indicated that usability was often considered within industrial design, website design, and digital media, however attention to the user within graphic design was not as prevalent. These initial findings prompted this designer to delve further into this subject area.

Goals

The overarching mission of this project is to increase awareness of user-centered design within graphic design, with the ultimate goal of improving user experiences. Through this study, benefits of user-centered graphic design will be explained and graphic designers and a set of guidelines will provide graphic designers with strategies for developing design solutions that consider user experience.

The planning document developed at the onset of this study can be found in its entirety in Appendix A. This document, prepared on November 10, 2004, outlines in detail the goals, objectives, strategies, and the preliminary stages of the thesis project.

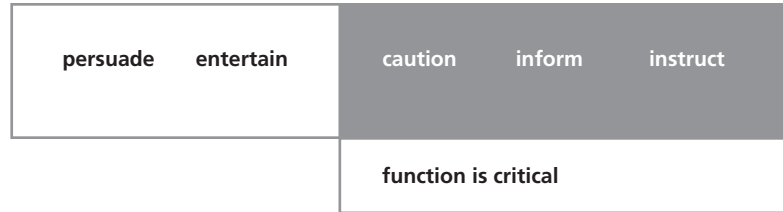
Personal Impact

The ability for graphic design to help others is extremely important to this designer. Also, it is of great personal interest to make connections between disciplines, inside and outside of design. Last, and possibly most important, this topic and study is intellectually stimulating, and was approached with great interest and pleasure.

Explanatory Diagram

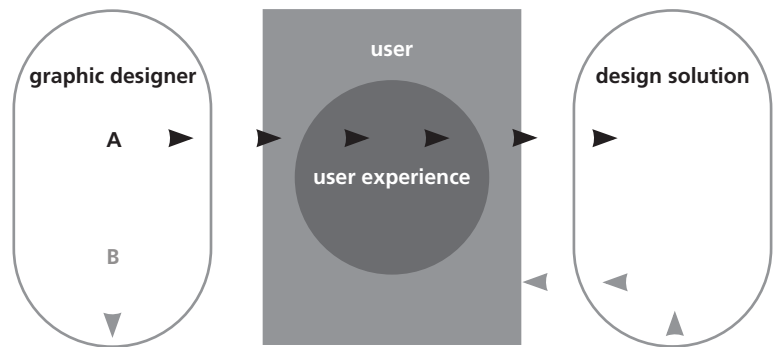
As a component of planning, this diagram was developed to explain two design processes: one in which the user and the user's experience is considered before a design solution is developed, and the other in which a design solution is developed with more focus on the physical artifact than on the user and the user's experience.

Major Pursuits of Graphic Design



A User Experience-Driven Design Process

B Artifact-Driven Design Process

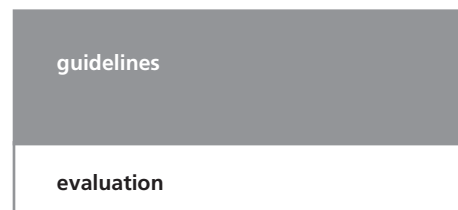


research user considerations
(cognitive ability, behavior,
understanding, language
physical capabilities, etc.)
from case studies
across multiple disciplines

understand drawbacks of B
(success of solution, usability,
emotional response of user,
longevity of solution, etc.)

Final Application

design considerations
for developing
user-centered solutions



Substantiating

These precedents substantiate the basic premise of this thesis—that more attention to function and user experience is needed within the field of graphic design.

Donald Norman

Donald Norman, a social scientist and self-proclaimed “user advocate,” is a design advisor and consultant emphasizing a human-centered approach to design. His book *The Design of Everyday Things* (originally titled *The Psychology of Everyday Things*) focuses on the impact of usability on everyday life. Norman comments, “If everyday design were ruled by aesthetics, life might be more pleasing to the eye but less comfortable; if ruled by usability, it might be more comfortable but uglier. If cost or ease of manufacture dominated, products might not be attractive, functional, or durable. Clearly, each consideration has its place. Trouble occurs when one dominates all the others” (151).

Impact

Norman’s observations were influential to this project and spurred consideration of the impact design can have on our daily lives, for better or for worse.

Paul Rand

In his work *A Designer’s Art*, Paul Rand, one of the preeminent American graphic designers, comments, “visual communications of any kind... should be seen as the embodiment of form and function: the integration of the beautiful and the useful” (3).

Impact

Rand believed that design solutions should be relevant, communicate, and function—a concept that is a cornerstone of the thinking behind this thesis.

Edward Tufte

In his book *The Visual Display of Quantitative Information*, Edward Tufte, a statistician and professor devoted to visually presenting complex, quantitative information, comments on the impact aesthetics can have on developing accurate graphical representations of statistical information. He asserts that misleading graphics are a direct result of “the skills, attitudes, and organizational structure prevailing among those who design and edit statistical graphics” (79). He elaborates upon this, stating there is a “lack of quantitative skills of professional artists,” that “many graphic artists believe that statistics are boring and tedious,” and “many believe graphical displays should divert and entertain those in the audience who find the words in the text too difficult” (79–80).

Impact

Tufte’s comments sparked interest in this thesis topic, bringing this designer to wonder if his assertions are in fact true and, if so, what can be done to remedy the problem. Within this thesis project, Tufte’s work can be used to reinforce where in some instances emphasis on function should dominate over aesthetics.

Richard Saul Wurman

Richard Saul Wurman, an architect by trade, is concerned with making information understandable. He coined the term “information architect” in his book *Information Anxiety* to describe someone who builds structures to organize and present information. His *ACCESS* guides took a new approach to explaining complex and detailed information by organizing material in a non-traditional format based on the user. The series “is fired by a curiosity about what people do, where they like to go, and how they see” (*ACCESS* 73). For instance, the *Boston ACCESS* guides the reader throughout the city, not only by category of business, but also based on neighborhoods; therefore, users can easily find a place for lunch near their location, not based on cuisine.

Impact

This approach of focusing first on users and then shaping the information around their needs was a great influence on the development of this thesis topic.

Contextual

This precedent helps to provide a better understanding of the current state of user-centered design and the context in which this study exists.

AIGA Experience Design
Community of Practice

In 1998, the American Institute of Graphic Arts (AIGA) established a community of practice devoted to experience design, which focuses on developing user experiences instead of taking an object-oriented approach. As a leading organization for graphic designers, AIGA's standards of practice and information serve as a means for reaching the design community and their offerings can be used to better understand and judge what is currently taking place in the field with respect to user-centered design.

Impact

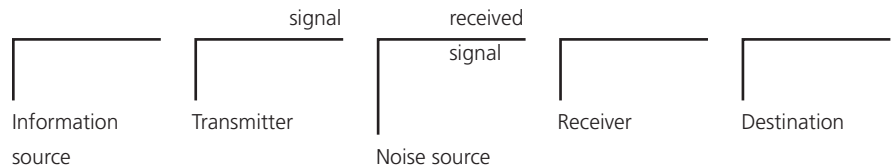
This group provides timely information about current efforts within the design community to focus on the user first, and subsequently build the design solution from there.

Informative

These precedents offer evaluative tools to help define user-experience.

Shannon-Weaver
Model of Communication

The Shannon-Weaver model of communication demonstrates the cyclical sequence of events that a message undergoes between sender and receiver. Originally developed to explain the structure of switches within electrical engineering, this model can be used in design to show that a solution may be interpreted differently than intended by the designer. Similarly, it can be used as a method to determine where communication discrepancies occur, and to show the influence of outside forces upon function and user understanding.

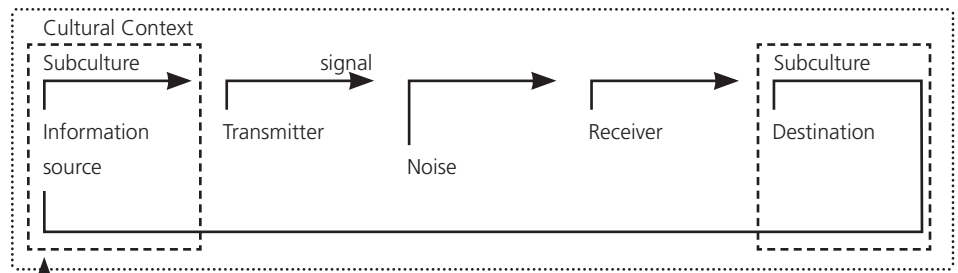


Impact

This model informs this thesis by providing guidelines for better understanding how a graphic design solution is perceived by the audience and by demonstrating the need for feedback to ensure that messages are being received as intended.

Type & Typography
Phil Baines & Andrew Haslam
p. 34

This work provides a revised model of the Shannon-Weaver communication theory that was adapted specifically for graphic design.



Impact

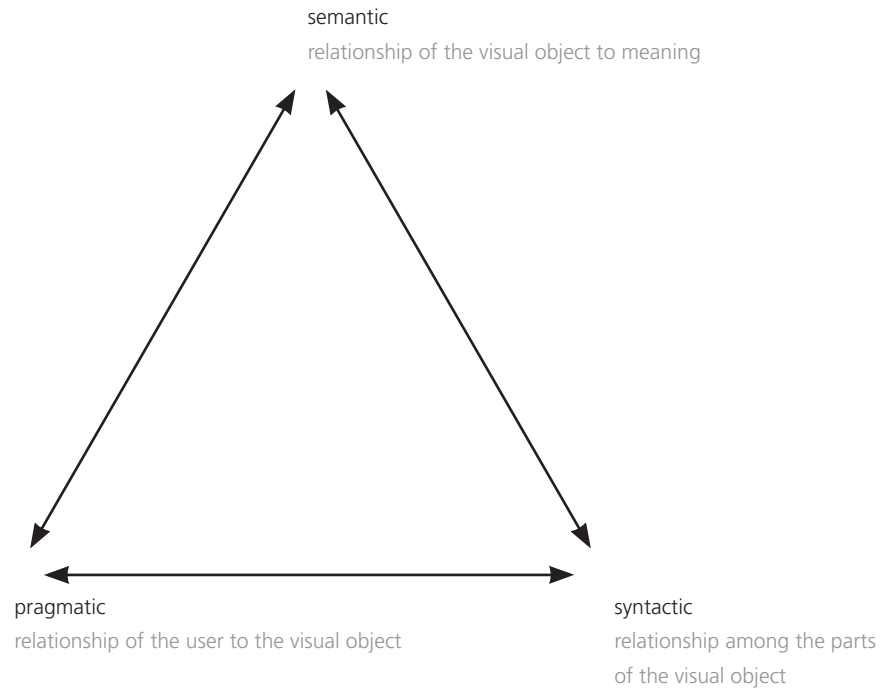
This revised model adds to the original Shannon-Weaver model by taking into account the environment in which communication takes place. The impact of external influences upon the sender and receiver of a message is closely connected to user-centered and user experience design. This model demonstrates the cultural forces acting upon the sender and user, and also shows the individual subcultures in which each party functions. The sender must recognize these differing external forces, understand his or her own personal influences, and see past them to better comprehend the receiver's perspective.

Informative continued

These precedents offer evaluative tools to help define user-experience.

Semiotic Model

The Semiotic model shown below is a method for evaluating the success of semantic, syntactic, and pragmatic components of a work. It can also be used to examine the ratio of emphasis given to specific attributes.



Impact

This model can be used within the framework of this thesis to help define and assess the weight given to function for specific design solutions.

Symbol Signs
AIGA

This book from the American Institute of Graphic Arts judges the strengths and weaknesses of a range of transportation symbol sets and evaluates each using the three Semiotic Model dimensions: semantic, syntactic, and pragmatic.

Impact

This work informs this study by demonstrating a method of applying the semiotic model as an evaluative tool to graphic design. *Symbol Signs* also offers a clear, concise definition of the three dimensions of the semiotic model as they relate to graphic design.

Research Overview

Research began with a survey of writings and other existing commentary on the user in relation to design by leading user advocates, including Donald Norman, Jakob Nielsen, Richard Saul Wurman, and Alan Cooper, a user advocate in digital media. Information was also gathered through AIGA, particularly from their Experience Design community. Case studies from a variety of design disciplines were gathered, many through AIGA and the *Information Design Journal*, to determine what processes and user considerations were being employed. From this and other miscellaneous resources, such as journal articles, a rough timeline chronicling important events that relate to user considerations from different design disciplines was generated.

Research was conducted through a wide variety of resources. Books and journal articles were a major source of information. Websites, particularly those of professional organizations, such as AIGA, and literary publications were valuable. Additionally, personal interviews were conducted with experts across disciplines, including graphic design, industrial design, architecture, and engineering. These interviews were of tremendous value to this study because the conversations allowed for focused questioning directly related to the thesis topic.

Much of the existing information on user-centered design lies within digital media and product design. Historically, these disciplines have been more focused on conducting user research than graphic design; however the methods and techniques used in these fields can be directly applied to graphic design and were, therefore, extremely valuable resources.

In gathering information from graphic design, a wealth of information relating to subway map design and election ballot design was uncovered. Of particular help was AIGA's Design for Democracy project; information on this project was accessed from Marcia Lausen through a lecture at RIT and an interview, and from the Design for Democracy website. Of key interest were the strategies used to better understand the voting population, particularly user observation and interviewing, building user personas (a profile of the user outlining characteristics, needs, goals, motivation, and behavioral patterns), first-hand participation in the voting experience, and analyzing the user's step-by-step experience.

Techniques and processes from specific design companies were examined to better understand current user-based strategies. Of particular interest was the international product design company IDEO, started in Palo Alto, which has a well founded, multidisciplinary methodology that includes user observation and prototyping. Also of interest was the Pittsburgh-based communication, design, and planning firm Agnew Moyer Smith, who place themselves in the shoes of their users in order to understand their needs first-hand.

Outside of design, information was sought from a variety of disciplines, including engineering, anthropology, sociology, and psychology. In engineering, a common strategy was identified that places the final user at the beginning of the design process. The social sciences provided insight into the human mind, culture, and behavior.

Information Design

Information design is an area of graphic design concerned with visually organizing information where function (usability) and the consequences of design failure are critical. Information design problems include documents, forms, diagrams, maps, charts, tables, instructional materials, wayfinding, and graphical user interfaces.

Impact

Information design practitioners strive to make complex information accessible, usually with the goal of informing, instructing, and/or cautioning, and their strategies and techniques provide valuable tools for this thesis.

Agnew Moyer Smith

Agnew Moyer Smith, a design firm based in Pittsburgh, “gets lost” in order to understand the needs of their user when developing wayfinding and other navigation designs. The designer needs to understand what it feels like to be lost in order to develop appropriate directional signage.

Impact

The techniques employed by Agnew Moyer Smith can be used within this thesis to learn about and analyze user needs. Additionally, Agnew Moyer Smith makes efforts to apply user research not only to product and digital design, but to all areas of graphic design.

Within this thesis, Agnew Moyer Smith staff members not only provided insight into their design process, but also contributed to the application of this research by acting as outside evaluators.

Henry Beck

Henry Beck designed the celebrated London Underground subway map in 1933. A guiding principle behind this design was the delivery of only the necessary information. Complicated, extraneous details, such as the subtle twists and turns of the subway lines, were excluded, reducing the map to a diagram of straight lines and 30-degree angles. Beck made use of meaningful and consistent color and marks to identify specific train lines and stations.



Impact

Beck’s design was revolutionary and was quickly adopted by commuters because it was useful and met the needs of the users (Garland 19). Simplifying the complexities of London’s transportation system into a clean, clear diagram that provided only information necessary for train users made it easy for train passengers to navigate the system.

Beck’s work helps to support the hypothesis of this thesis that consideration for and understanding of user needs will result in appropriate, useful graphic design solutions.

Design for Democracy	<p>The goal of Design for Democracy, an AIGA initiative, is to “promote and facilitate inclusive communication between government and the governed” (DfD: Enabling par 1). The Election Design initiative focused on creating clear, understandable materials for all aspects of the electoral process. This included materials for voters, information for polling place workers, ballot layouts, and all other items with which stakeholders in the election process come into contact. Design for Democracy worked closely with Sapient, an experience modeling group, to conduct user research and analyze the data collected.</p>
Impact	<p>The Design for Democracy team began the design process by gathering and analyzing information about users’ needs and implemented their findings as a framework to develop design solutions. The research began by collecting information through observing users as they participated in the electoral process, assessing their likes and dislikes through interviews, soliciting feedback about their experiences, and by participating first-hand in all aspects of the voting process. Information gathered was then analyzed to understand the users’ goals, needs, and to find ways that design could improve the voting experience. Design for Democracy provides a case study in which user needs were considered and applied to solving a graphic design problem, resulting in helpful and appropriate solutions.</p>
<i>Information Design Journal + Document Design</i>	<p><i>Information Design Journal + Document Design (IDJ+DD)</i> is dedicated to investigating and thinking about effective information design, in both print and digital formats. The journal, which resulted from the merger of two publications, addresses practitioners and researchers.</p>
Impact	<p><i>IDJ+DD</i> is a tremendous resource for case studies related to information design problems, which often provide insight into the designer’s process. Many articles provide a scientific foundation for design research, which helps to provide validity and support for specific design decisions. Many articles published within <i>IDJ+DD</i>, and in the individual journals before their merger, relate to user needs and understanding within the practice of information design, and their findings support many of the methods and strategies gathered in this thesis project.</p>
Edward Tufte	<p>A statistician, Tufte is interested in clearly and accurately communicating complex data through visual media. He is a strong proponent of first defining functional needs and using them as a framework upon which a visual design solution can be developed.</p>
Impact	<p>In his books and on his website, Tufte outlines many strategies designers can incorporate into their process when developing visual representations of complex information. Additionally, Tufte’s work identifies instances where emphasis on function should precede visual appearance.</p>

 Richard Saul Wurman

Architect turned information architect, Wurman is committed to making information understandable and accessible to its audience. In his book *Information Anxiety*, Wurman outlines a variety of methods for arranging information, including his hatracks method, which provide five ways to organize information: by location, alphabet, time, category, and hierarchy (40). The hatracks method provides a framework upon which any mass of complex information can be systematically organized.

Wurman also published a series of *ACCESS* guides, which provide complex information in a format that is organized around user needs. For instance, in contrast to typical guidebooks, which provide dedicated chapters for accommodations, restaurants, sites, and other places of interest, the *ACCESS* guides are arranged so that readers are guided through the city and can easily find sites or restaurants within close proximity to their location.

 Impact

Wurman's organizational methods can be used within graphic design to develop a hierarchical structure that makes it easy and logical for users to access complex information. Additionally, the approach taken with the *ACCESS* guides provides an example of an existing graphic design solution that considered user needs as a part of the design process.

Experience Design

Experience Design approaches the design process by focusing on developing user experiences as opposed to objects. This interdisciplinary community includes professionals from digital technology, the software industry, printing, publishing, broadcast media, marketing, public relations, advertising, and all design disciplines. This collaborative community focuses on issues related to user experience across disciplines

 Impact

The emphasis on developing user experiences, rather than taking an object-oriented approach to design, is valuable to user-centered design. Focusing on the end user and considering their goals and desired interactions as a framework for design is closely aligned with the process of user-centered design.

A main goal of this study was to draw upon other disciplines to develop a set of strategies graphic designers can employ to learn about and understand their target users. The multidisciplinary aspects of experience design are closely related to this goal and help provide applied methods as well as support the need for a cross-disciplinary approach within this study.

AIGA Experience Design Community of Practice	<p>AIGA's Community of Practice devoted to experience design includes materials on the evolution, participation, and general information about the practice of experience design. Because of its relationship with AIGA, this group is especially significant within the graphic design community. The organization, founded in 1998, is focused on digital experiences, however they "are mindful that human experience is not confined to the computer screen" (What is Experience Design? par 3).</p>
Impact	<p>This organization provides a number of links to resources on the role of user experience within digital design. The Community offers a wealth of information on the development and practice of experience design, including case studies, summaries of relevant lectures and conferences, and an email mailing list.</p> <p>It is also of interest that despite its connection to AIGA, an organization typically devoted to all aspects of graphic design, the Community of Practice is focused on digital environments. This helps to reinforce the historical importance of user-centered design within digital design and to reveal the scarcity of related information within other areas of graphic design.</p> <p>Additionally, as a component of research, members of this Community were solicited, through the community's email list, for resources and materials related to this thesis project, resulting in a few suggestions, which can be found in Appendix B.</p>
Lauralee Alben	<p>Although technology plays a role in interactive design, Alben, a graphic designer concerned with developing interactive experiences, asserts that the most important component of interactive design is human experience. She writes, "What is vital, I have discovered, is our humanness: who we are and the ways in which we express our fundamental human qualities in our work. When these qualities are included as an integral and natural part of the design process, everyone benefits: those for whom we are designing, as well as ourselves" (DMJ 9).</p> <p>In her work with the ACM Interactions Design Awards, along with other colleagues, a set of criteria was developed that defines successful interaction design. The main criteria are understanding users, effective design process, need and contribution of the final product, appropriateness of the product, aesthetic experience, mutability (the ability for change, adaptation, or evolution), and manageability (Interactions 3). Within each category are more specific questions that can be used to gauge the effectiveness of a design solution.</p>
Impact	<p>Alben's efforts with interactive design and work with interaction design awards provides tools for evaluating the effectiveness of design with respect to user experience.</p>

**Digital Media
and Web Design**

Much of the focus on usability and user-centered design has come out of electronic media, software programming, and website design. Even though these areas are relatively young, they have given birth to a great deal of information on considering user needs as an important factor within the design process.

 Impact

The body of knowledge from these digital disciplines can be applied to graphic design to provide insight into methods for learning about user considerations and testing design solutions for usability.

 Alan Cooper

Cooper is one of the leading advocates of user-centered approach in digital media. One of Cooper's main contributions is distinguishing between "interaction design" and "interface design." The first takes the user into account throughout the design process; the user interacts with the entire program, not just a façade placed between the program and the user. Interface Design, in contrast, is developed after the computer programming in order to provide a way for a user to interact with the program. Interaction Design is concerned with the user's experience throughout the design process, while Interface Design considers the user at the end of the process.

Cooper advocates interaction design when developing software applications as a means to create usable products. Interaction design addresses fundamental issues, such as system goals and behavior. Good interaction design reduces what the user has to remember, is goal-directed, focuses on what the user is good at doing and what a computer is good at doing, and lets the computer manage the difficult procedures.

Cooper believes that programmers often develop systems that are easiest for them to use or follow their own wants and needs, rather than those of the user. He asserts that computer programmers often "create the behavior and information presentation that they like best, which is very different from the behavior and information presentation that is best for [the user]" (Inmates 11). Additionally, focusing on technology alone has caused problems with interface design. In order to develop designs that are appropriate for the final audience, designers need to get rid of "the cool stuff" and make decisions that are appropriate. It is important to think in terms of the goals people try to accomplish and design the system that addresses those goals. This goal-directed approach looks at the way people actually do things.

Another main component of Cooper's work is the use of "personas" within the design process. He defines a persona as a "precise description of our user and what he wishes to accomplish" (Inmates 123). By designing for a hypothetical persona, a solution will, in the end, effectively address the goals of real people.

 Impact

Although Cooper's work is related to computer programming, his theories can be directly applied to graphic design. Graphic designers can consider their users at various stages in the design process, as Cooper distinguishes in his comments on interaction and interface design. Additionally, the strategies and methods he advocates, especially the use of personas, can be used not only in programming, but also within graphic design.

 Jakob Nielsen

Nielsen is a leading proponent of usability within website design. Usability is a quality attribute that assesses how easy user interfaces are to use, and also refers to methods for improving ease-of-use during the design process (Alertbox 8/25/03). Usability has five quality components: learnability, efficiency, memorability, errors, and satisfaction (Alertbox 8/25/03). Another key attribute to a design's usability is utility, the design's functionality and ability to do what users need. For instance, Nielsen asserts that if a website is difficult to use, people leave; therefore it is of the utmost importance for designers to take into account function when designing a website.

Nielsen promotes user testing as a means to judge the functionality of a website design. He recommends finding representative users, asking them to perform representative tasks, and observing what they do, noting where they succeed and where they have difficulties. He recommends starting user testing early and testing continually to achieve a high-quality user experience (Alertbox 8/25/03). However, he cautions that "to design an easy-to-use interface, pay attention to what users do, not what they say," as their actions often do not match what they report (Alertbox 8/5/01).

Nielsen believes that web designers should make use of standards and conventions to avoid confusion for the user. Standards ensure that users:

- know what to expect, know how the features will look in the interface,
- know where to find these features on the website and on the page,
- know how to operate each feature to achieve their goal,
- don't have to ponder the meaning of unknown design elements,
- don't miss important features because they overlook a non-standard design element,
- and don't get frustrated when something doesn't work as expected (9/13/04 alertbox).

Users also benefit from standards by increasing their sense of mastery over the website, increasing their ability to get things done, and increasing their overall satisfaction with the experience (Alertbox 9/13/04). Conventions and standards are like a dictionary, in that they define and offer guidelines, but they don't define what you are writing (Alertbox 9/8/03).

 Impact

Nielsen's recommendations for web design are also appropriate for non-digital graphic design. He suggests many methods that can be adopted by designers to test a solution for its functionality.

Industrial Design

Human factors engineering is often considered the predecessor of user-centered design. Within industrial design, anthropomorphics – the physical measure of humankind – and ergonomics frequently guide a design. Since most solutions are physical objects with which people interact, ergonomic considerations are usually introduced early in the design process. Designers often look at the user environment and watch users to determine what is going on, and then develop products based on this information.

In an ideal world, the user is the primary target within industrial design. Oftentimes, designers will develop solutions that are appropriate for the extremes, which results in solutions that satisfy everyone's needs.

Industrial Design continued

A variety of techniques are used within industrial design to learn about users and to determine the appropriateness of design solutions for a target audience. Cultural anthropology, including ethnographic research, is commonly used as a means to gear a design toward a very specific group. Working prototypes and user testing are done to gauge responses to a design and to observe where users experience confusion and problems, or to determine the clarity of presented information. Focus groups, field trials, and usability studies are common methods and tools within industrial design.

Another important concept often used within the field of industrial design is designing an action or process, rather than a specific object. Users are asked what they are trying to do or what they would like a product to do, and designs are built to meet these goals. This allows the designer to redirect focus from the object to address the user's problem.

Impact The methods used by industrial designers to learn about users and their needs can be directly applied to the graphic design process.

Ralph Caplan

Caplan, an author and industrial design critic, is interested in how design impacts and influences daily life and places emphasis on the value of function in design. However, he does not believe that an object that functions well is automatically designed well. In fact, he lauds finding a balance between form and function, stating, "While regard for function does not guarantee good design, it is obviously true that to ignore function is to guarantee bad, although not necessarily ugly, design... What function dictates is not form, but a set of boundary conditions" (33).

Caplan also advocates understanding the individual needs of a user as a precursor to developing an appropriate design solution. In discussing a refrigerator design that was unnecessarily difficult to use, Caplan notes, "It isn't necessary to do research to find out that people want a clean refrigerator. But it is necessary to consider the characteristics of the user, and this does call for direct, nonscholarly research" (27).

Caplan exhibits concern that designers may be motivated to design for people, however they are actually designing for the marketplace (65), which may lead to poorly designed products that cater to the needs of businesses rather than the needs of the final users. Designers often must resign themselves to a menial role, responding to the desires of clients even if the choices are not the strongest design decisions (109).

Caplan also addresses the growth of "situation design," which focuses on designing circumstances rather than objects (135). Designing for specific situations or environments can be used to direct human behavior and focus people's actions on specific tasks.

Impact Caplan's focus on the role of design within everyday life is closely tied to this thesis. People may not realize or understand the impact of design on their own lives, and do not understand when design helps or hinders their behavior. Additionally, Caplan's view of the balance, order, and importance of form and function is integral to developing effective user-centered design. Caplan does not disregard the role of aesthetics; however, a designer must first address the functional needs of an application before considering aesthetic issues.

Caplan's assertions that situation design can be used to direct people's actions are valid; however, within the scope of this thesis, experience design should be based on innate human behavior rather than trying to elicit a specific action. Design can and should, however, attempt to focus the user's attention on the most important information or controls.

IDEO

IDEO is a product design company that specializes in designing products, services, environments, and digital experiences. IDEO takes a multidisciplinary approach to design that celebrates human behavior by attempting to use it in a productive manner rather than trying to harness and change it. The company “identifies opportunities for innovation by understanding latent user needs, technology factors, and business requirements for success” (IDEO Fact Sheet par 2).

IDEO has developed a set of design principles that guide their process:

- 1 observation
 - shadowing
 - behavioral mapping
 - consumer journey
 - camera journals
 - extreme user interviews
 - storytelling
 - unfocus groups
- 2 brainstorming
 - defer judgement
 - build on the ideas of others
 - encourage wild ideas
 - go for quantity
 - be visual
 - stay focused on the topic
 - one conversation at a time
- 3 rapid prototyping
 - mock up everything
 - use videography
 - go fast
 - no frills
 - create scenarios
 - bodystorm
- 4 refining
 - brainstorm
 - focus prototyping
 - engage the client
 - be disciplined
 - focus
 - get agreement
- 5 implementation
 - tap all resources
 - the workforce (Nussbaum)

Within each step, IDEO has defined strategies and techniques for learning about the user and uses this information as the foundation for developing the final design.

IDEO continued	<p>Observation is a key component of IDEO's design process, and is used to understand user behavior and determine a user's goals; design solutions are then developed to meet the user's needs and goals. When gathering information about user behavior, it is important to not just ask, but to watch what people do to determine what comes naturally to people. In addition to information gathering strategies, IDEO also has defined methods for analyzing information. Open questioning is encouraged to explain user actions and to develop possible solutions.</p>
Impact	<p>IDEO's innovative approach to design outlines many strategies that can be used to understand and analyze human behavior. These techniques can be incorporated into a variety of design problems, beyond product design, to explore and examine user needs.</p>
The Industrial Designers' Society of America	<p>The Industrial Designers' Society of America (IDSA) is the leading industrial design organization in the United States and is dedicated to "advancing the quality and impact of design" (About IDSA par 1). The organization is multifaceted and, within the scope of usability, offers a number of professional interest areas that focus on understanding user needs, including Communicative Environments, Human Factors, Interactive Design, and Universal Design.</p> <p>According to IDSA, there have been recent trends within industrial design regarding the role of aesthetics and functionality. Two noticeable trends growing considerably are "bringing functionality, usability, and aesthetics to the medical products field... [and] the upgrading of usability and aesthetics in kitchen gadgets" (IDSA Design Trends par 3).</p>
Impact	<p>The importance of the user in industrial design is clear within the scope of IDSA's offerings. The varying ways of approaching the role of the user within industrial design can be directly applied to graphic design. Additionally, of particular interest within this study is the industrial design trend focusing on products that must be functional, often as a matter of life or death. The increase in emphasis on these functional products relates directly to the concept of beginning the design process with functional considerations and using them as a guide to develop solutions that are both useful and visually attractive.</p>
Donald Norman	<p>Norman, a cognitive scientist, discusses the impact of design on product usability and user behavior, particularly with respect to everyday objects, and advocates a user-centered approach to design. He examines human perceptions, thoughts, and reactions to everyday objects and relates them to design. In doing so, he provides suggestions for user considerations from a social science perspective, outlining his major principles for designing for people. More recently, Norman has examined the role of emotion within design and user behavior.</p> <p>Norman proposes major criteria for good design:</p> <ul style="list-style-type: none"> • visibility • mapping • affordances • constraints • conceptual models • feedback • knowledge-in-the-world vs knowledge-in-the-head • forcing functions (DOET)

 Donald Norman continued

Norman outlines a seven step process that identifies how people take actions:

- forming the goal
what is to be achieved
- forming the intention
intended action in order to achieve goal
- specifying an action
determine sequence of actions (mental)
- executing the action
performing action upon the world
- perceiving the state of the world
our perception of the world
- interpreting the state of the world
our interpretation, based on our expectations
- evaluating the outcome
comparing our interpretation with respect to our intentions and goals (DOET)

These action steps can be examined to understand where errors or problems occur within a step-by-step process. By analyzing each step, a designer can better understand the user's experience and design products that enable the user to achieve their goals.

 Impact

Although Norman's work is predominantly related to product design, his philosophies are directly applicable to graphic design. His criteria for design can be used as a part of the design process or to evaluate existing solutions. Additionally, Norman's strategies can be applied to graphic design to determine ways that design can improve a user's experience and by providing specific techniques that can be considered in the design process.

Norman's work was also influential in providing additional sources of information for this thesis, particularly Ralph Caplan's *By Design*, which Norman recommends in his book *The Design of Everyday Things*.

 Red Dot Design Center

Red Dot is a German organization dedicated to recognizing and documenting high-quality design that offers annual awards celebrating innovative design. Awards are given based on function as well as visual appearance. Red Dot awards originally focused on product design, however, in 1993 they began offering visual communication awards, which encompass many aspects of graphic design.

Within the 2005 Red Dot Award: Product Design, a number of consumer trends were noted; in particular, the "death of the universal consumer" (Design News, prod awards, par 1). Winning designers incorporated user research into the design process, and designs clearly catered to specific, targeted groups. One particular area that interested jurors was life science design. "The jurors above all praised the sensitive design with its focus on emotional aspects, which is highly important for this product category, as well as the innovative solutions to difficult technical challenges" (par 3).

 Impact

Red Dot's awards for innovative designs that are both functional and aesthetic help to recognize the importance of the user within design and elevate the standard of design. Expanding their recognitions beyond product design helps to promote usability and shed light on the importance of the user across all design disciplines.

Architecture

Within architecture, the needs of the final user are considered throughout the design process. Some user needs, such as safety concerns, are legally built into the architectural process through regulatory codes and guidelines. Others are dictated by intended use and goals for the final building. Constraints, however, can be used creatively and constructively to develop spaces that are beautiful and meet functional design goals.

Learning about and understanding user needs is an inherent part of professional training. Architects often start with the basic needs and requirements for a space and expand from there, ensuring that a design will accommodate the intended goals.

Architectural awards are often given based on aesthetics rather than functionality. Honors are typically awarded based on graphic documents, such as plans and images that give an unrealistic vision of a space, rather than on the experience of being in the actual space. This process encourages tunnel vision and can lead to design that does not blend form and function into a usable and beautiful solution.

Impact

Architectural guidelines, legal or otherwise, help to demonstrate that constraints do not necessarily result in poor or restrictive design. In fact, constraints help guide the design process so resulting work is useful and beautiful.

The role of the final user in architecture also has direct implications within this thesis, as it helps to show the impact of design on everyday life. By incorporating user research into architectural schooling, the impact of the user becomes engrained within the process of developing spaces.

Additionally, the award system in architecture mimics that of graphic design, in which the functional aspects of a solution might not receive the same attention as aesthetic ones. The result of this within architecture, as in graphic design, leads to a discrepancy between the overarching design goal of balancing form and function and the system of accolades.

Engineering

Within engineering, design methods are employed for exploring design situations, searching for ideas, exploring problem structure, and for evaluating design (Cross 34-36). These methods can be used to formalize the process of design and externalize design thinking. One engineering approach of particular interest is Quality Function Deployment (QFD), which introduces customer requirements at the beginning of the design process.

Impact

Various methods employed within the realm of engineering can also be used in graphic design in order to develop and evaluate the functionality of a design. Additionally, the QFD approach of beginning the design process by evaluating and understanding the user is directly related to the premise of this thesis.

Marketing and Advertising

Typically, the development of an advertising campaign begins with a creative brief. This document outlines the communication message and goals of the campaign and is the foundation upon which the advertisements are built. The creative brief does not constrain creativity, but instead offers guidelines in which creativity can flourish. By clearly determining the message at the beginning of the process, the creative solutions can be tailored to the specific goals, resulting in appropriate, targeted communications.

Impact

The concept of providing guidelines around which creative solutions can be developed is extremely appropriate to this thesis. It could be argued that focusing on function will result in aesthetically poor designs; however, this is not necessarily the case. Functional considerations, such as a user’s behavioral tendencies or goals, should not entirely trump any aesthetic decisions; rather, they should be used to guide the design process to develop useful, usable designs that are also aesthetically pleasing.

Anthropology and Sociology

Closely related to one another, anthropology is the study of humankind, while sociology examines human society. “Anthropologists listen to, record, and represent voices from a multitude of nations and cultures. [They] strive to [demonstrate] the value of local knowledge, of diverse world views, and perspectives” (Kottak 9). “An anthropological perspective explains human nature, illuminates human similarities and differences, describes contemporary societies and cultures, and increases our empathy for human groups who struggle to achieve security and integrity” (Kottak 7).

Impact

Understanding human behavior and the impact of external forces upon an individual is of great interest within this study. Anthropological and sociological perspectives can be used to gain insight into a user and influences surrounding that individual.

Diagram of Multicultural Understanding

This diagram of multicultural understanding explains the external influences upon an individual that contribute to his/her personal experiences and beliefs (Locke 7):

Diagram One

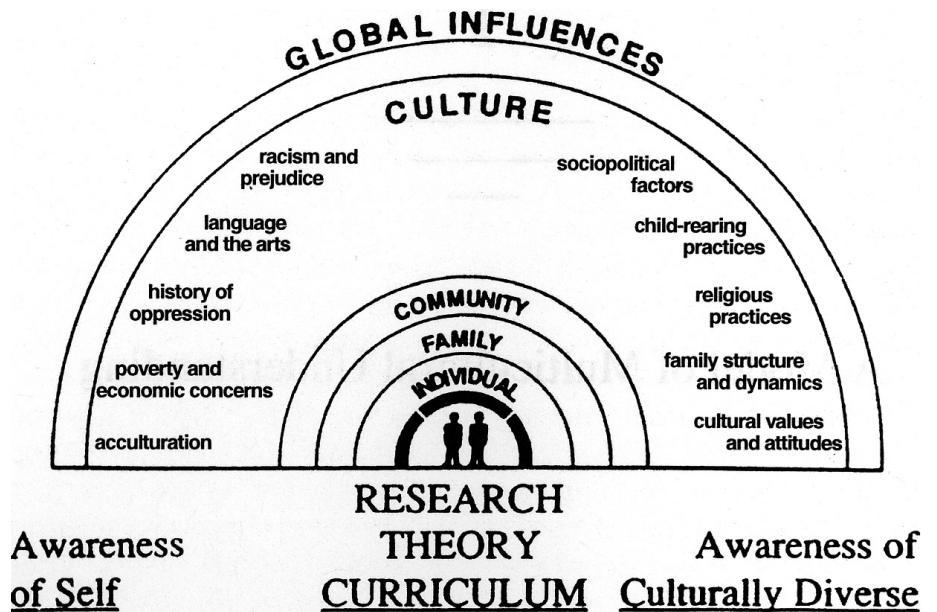
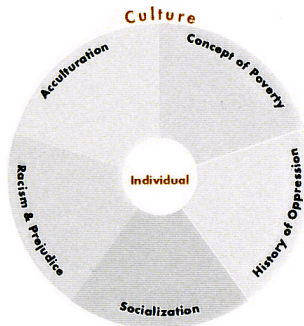


Diagram of Multicultural Understanding continued

This diagram was revised by Yih-Chi Wang, a graphic designer, to better relate the model to visual communications (10).

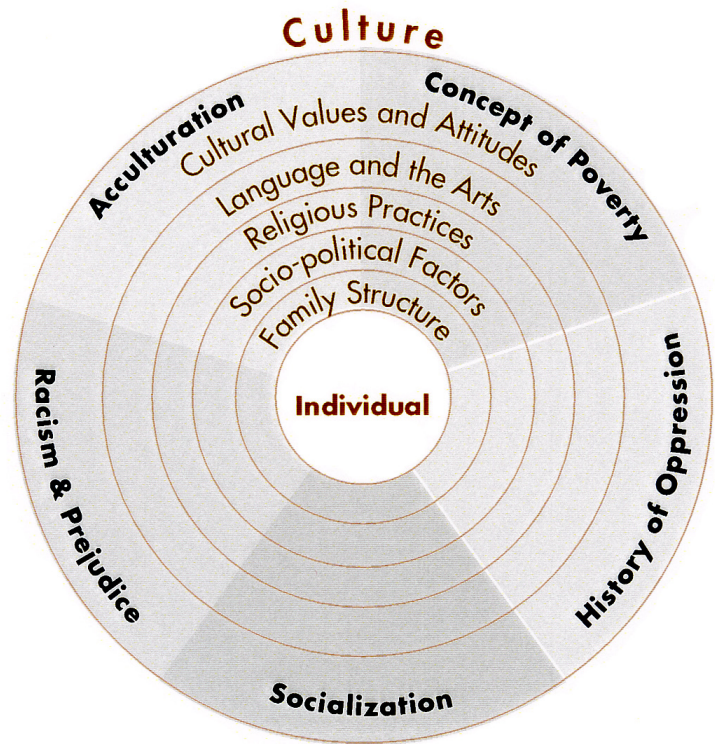
Diagram Two



Elements that construct a culture



Factors that shape the ethnic experience



Impact

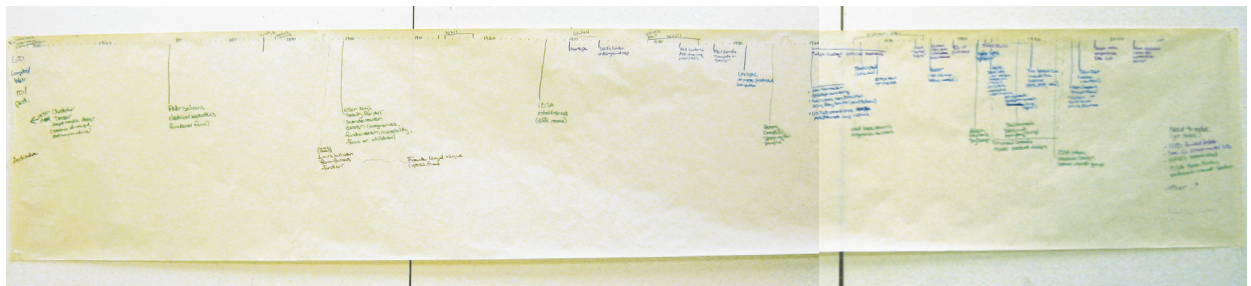
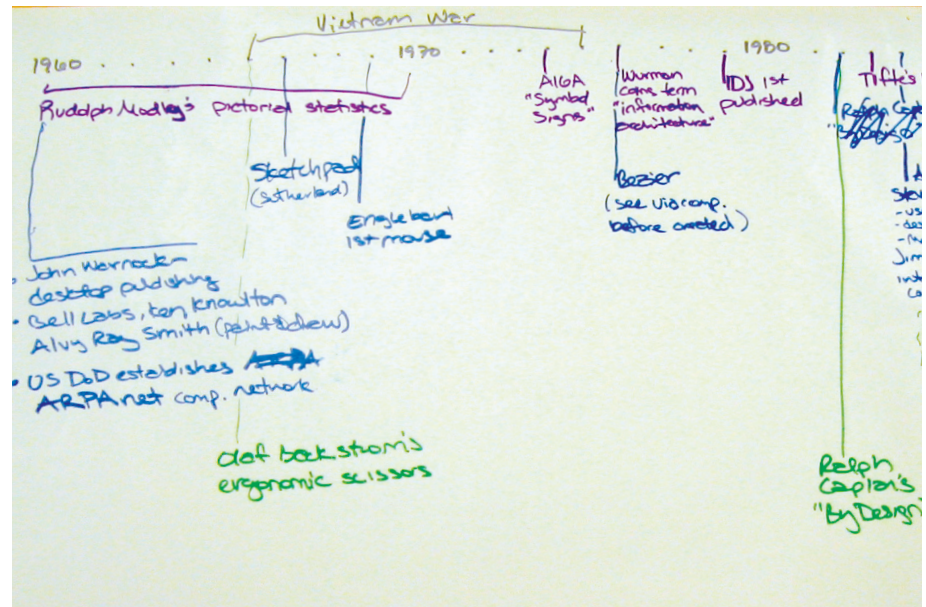
To understand an individual or group of individuals, a designer must also understand the larger context in which the individual is functioning. Additionally, the designer must be aware of one's own personal biases and influences to better understand and react to others with sensitivity.

This model can also be combined with the revised Shannon-Weaver model of communication, discussed in the precedents section, to demonstrate the role of external influences and culture on an individual and on communicating a message.

Ethnographic Research	<p>Within the field of anthropology, cultural anthropologists “attempt to interpret and explain similarities and differences among societies and cultures,” often through ethnographic research (Kottak 7). Sociologists use similar ethnographic methods to study human society. A major component that differentiates ethnographic research from other methods of scientific information gathering is the assumption that we must determine what people do and why they do it before we can interpret their actions (LeCompte, 1-2).</p> <p>Ethnographers typically gather data through observational research and interviewing, although they also use more indirect, “outside” methods, such as surveys, to gather data (LeCompte, 3).</p>
Impact	<p>Research methods for ethnographic fieldwork can be used within graphic design to gather and interpret information about target users. Within design, as well as anthropology, ethnography can be used to define a problem, explore related factors, document a process, and describe outcomes (anticipated and unexpected). Research is conducted in context, which allows the researcher to record the subject’s behavior in their natural setting. Ethnographic methods for interviewing, observational research, and data analysis can be adopted by graphic designers to learn about their users’ behavior.</p>
Cognitive Psychology	<p>Cognitive psychology is concerned with processes involved in making sense of the environment, studying of the way we cope with the world, and deciding which actions are appropriate in specific situations. The discipline examines capabilities and limitations of users performing cognitive tasks and makes predictions about task performance. Cognitive psychological processes, including perception, attention, memory, learning, and thinking, are directly related to understanding human behavior.</p>
Impact	<p>By understanding human cognitive processes, graphic designers can employ strategies within their design process that accommodate the behavioral needs of users. Related considerations include affordances, visibility, analogies and meaningful relationships, perceptual organization, cues, coding, focusing attention, chunking, feedback, mental models, and constraints (these terms are listed in the glossary on page 55.)</p>

Preliminary Synthesis

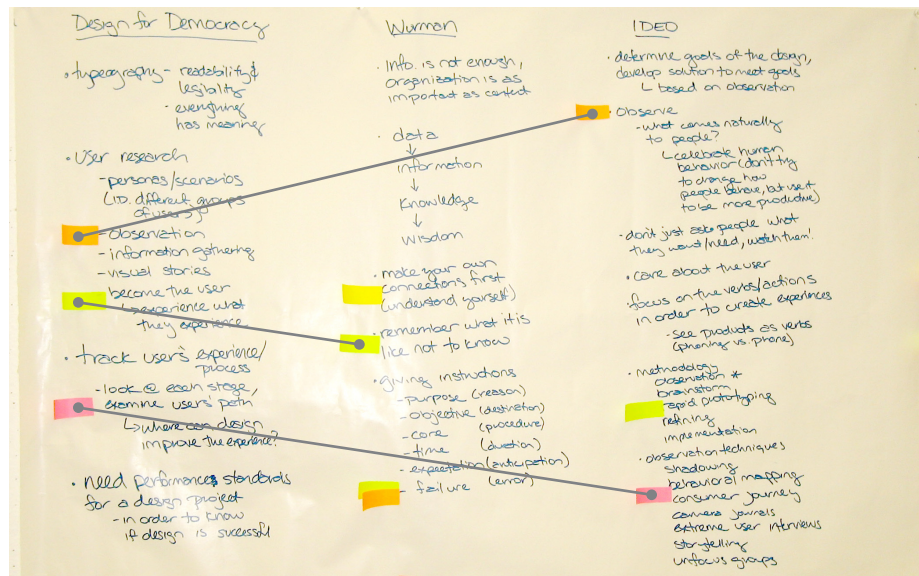
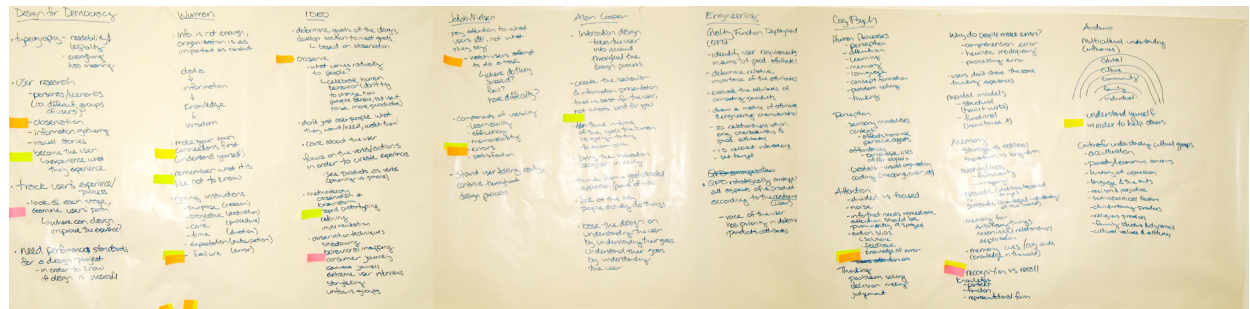
Early in the thesis process a multidisciplinary timeline examining milestones related to user considerations and needs was constructed. The goal of the timeline was to understand the historical context for this study and to examine the role of the user within a variety of fields. The timeline also helped support a main hypothesis of this thesis – that more attention is given to user considerations in industrial design and digital media than in graphic design.



Although the timeline was originally intended to be developed into a formal artifact, it was decided that the thesis would give a more valuable contribution to the field of graphic design if it focused on strategies for learning about users, rather than a historical overview of the role of the user within various design fields. The information gathered for the timeline, however, provided a solid historical context for the project and supported the importance of increasing consideration of user needs within graphic design.

Synthesizing Strategies for Understanding Users

The theories and practices of the contributing individuals and organizations found during the research phase of the study were cross-referenced for similarities and connections. From this multidisciplinary group, a chart that listed the main contributions from each source was developed. The sources were then examined and parallel theories were identified and color-coded to show common themes:



An enlarged version of this chart can be found in Appendix c.

These commonalities were further synthesized into a more defined set of strategies.

Within these combined methodologies, two main categories emerged:

- strategies related to understanding the user
- and strategies related to considerations that can be incorporated into the design process.

Three main techniques for understanding the user also became apparent:

- observing,
- interacting,
- and participating in the user’s experience.

The process of learning about a user could be broken into two steps: familiarization, which encompasses the three techniques above; and analysis and synthesis. The first stage consists of gathering user information while the second is concerned with using this information to better understand a user’s goals and needs.

continued

The various methods were then grouped accordingly into categories, resulting in a defined set of strategies for understanding a user, their experience, and process. In addition to these design strategies, a recurring theme emerged of the designer understanding him- or herself to see beyond personal biases to better understand others.

Understanding the User and the User's Experience/Process

<p>Familiarization: Initial Audit and Information Gathering Participation (I)</p> <ul style="list-style-type: none"> • put yourself in the user's shoes • look from the user's point of view • participate in the experience • understand the user's state of mind • see the world through the eyes of the user <p>methods</p> <ul style="list-style-type: none"> • get lost • visualize yourself as the user • role playing • participant observation • understand yourself – not everyone is like you 	<p>Interaction (you)</p> <ul style="list-style-type: none"> • interviewing current users • interviewing target users • interview colleagues, friends, and family <p>methods</p> <ul style="list-style-type: none"> • semantic differential • ask why? ask why not? • listen • storytelling • surveys/questionnaires • record the user speaking about his/her actions while doing a task 	<p>Observation (he/she)</p> <ul style="list-style-type: none"> • testing prototypes on real users • testing prototypes in context • notice the rule breakers <p>methods</p> <ul style="list-style-type: none"> • shadowing • known participant observation (context) • surveys/questionnaires • usage studies • usability testing • consumer journey (tracking interactions) • observer participation • storytelling: <ul style="list-style-type: none"> photographic journals (visual stories) log book/journal (written)
<p>Refinement: Analysis and Synthesis</p> <ul style="list-style-type: none"> • determine user's goals and performance standards and develop solutions to meet those goals <p>methods</p> <ul style="list-style-type: none"> • think in verbs, not nouns • understand the user by understanding their goal; understand the goal by understanding the user • organize information: <ul style="list-style-type: none"> hatracks patterns/logical groupings matrices semiotic model visual representation (iconic, indexic, symbolic) 	<ul style="list-style-type: none"> • understand influences on the user (cultural, societal, etc) <p>methods</p> <ul style="list-style-type: none"> • develop user personas (characteristics, needs, goals, motivation, and behavioral patterns) • modeling research: <ul style="list-style-type: none"> photographic collage 	<ul style="list-style-type: none"> • document the user's experience/process <p>methods</p> <ul style="list-style-type: none"> • storyboarding • map the system from the user's point of view • break the user's process into steps/stages, then analyze for opportunities

From the research, a list of criteria for good design was compiled. Most of these standards came from the work of Donald Norman and Jakob Nielsen, although other sources also contributed:

- visibility
- mapping
- affordances
- constraints
- conceptual models
- feedback
- knowledge-in-the-world vs knowledge-in-the-head
- forcing functions
- learnability
- efficiency
- memorability
- errors
- satisfaction
- aesthetics

This criteria can be used as a guide for developing design as well as a tool to evaluate existing design solutions.

continued

Another major component of the synthesis stage was developing a list of graphic design goals that fall under the main pursuits of informing, instructing, and cautioning. Under each pursuit, a list of communication goals and corresponding design applications was generated:

Graphic Design Functions

Inform

- spatial understanding
maps (weather, geographic)
- communicate complex information clearly and accurately
*diagrams
graphs
matrices
charts
typography*

Instruct

- gather information from the user
forms
- demonstrate an object's functions and controls
- direct the user and help the user navigate through a space
*wayfinding
graphical user interfaces*
- guide the user through a series of steps
sequential directions

Caution

- warn users of danger
warning labels
- provide users with directions in case of danger
*emergency exit maps
emergency signage*

This chart helped explain in which realms of design user considerations should be given importance over formal, visual appearance.

Another chart was developed examining the relationship between five key cognitive processes (perception, attention, memory, thinking, and knowledge) and design.

Key Cognitive Processes

Perception

the interpretation of sensory information, the interpretation of information gathered and processed by the senses

Attention

selecting certain information for further analysis, concentration
focused attention requires responding to one stimulus, divided attention requires responding to more than one stimulus.

Memory

the cognitive ability to recall information
short-term or working memory vs. long-term memory
memory for arbitrary things, for meaningful relationships, and through explanation
encoding, storage, and retrieval

Thinking

upper level cognitive processes, components of thinking are problem solving, decision making, reasoning, and judgement

Knowledge

information stored in memory
declarative vs. procedural

	Perception	Attention	Memory	Thinking	Knowledge
design solution goals	<ul style="list-style-type: none"> · functionality · satisfaction · visibility 	<ul style="list-style-type: none"> · readability · legibility · divided/focused 	<ul style="list-style-type: none"> · retrieval vs. recall · efficiency 	<ul style="list-style-type: none"> · cognitive mapping · errors · slips · mistakes 	<ul style="list-style-type: none"> · learnability · performance · aesthetics · ease of use
applied strategies	<ul style="list-style-type: none"> · affordances · cues · coding · conceptual model · Gestalt principles · proximity · similarity · closure · continuity · symmetry 	<ul style="list-style-type: none"> · cognitive aids · hierarchy/organization · feedback, alerts · focus attention · most important information prominent · increase motivation · increase activity · consistency 	<ul style="list-style-type: none"> · affordances · meaningful relationships · cognitive aids for recall · chunking · natural constraints · limit choices · limit options 	<ul style="list-style-type: none"> · logical mapping · functional fixedness · constraints · feedback for errors · natural thinking · scripts · cultural constraints · standardization 	<ul style="list-style-type: none"> · representational form · context · knowing how vs knowing that

continued

This chart was originally developed to show applied strategies for design as they relate to aspects of human behavior. However, upon examination by the committee, there was concern that the examination and analysis of cognitive processes could be problematic within the scope of this project. Additionally, psychological processes were more applicable to graphic design applications rather than to the design process; therefore, this portion of the thesis was not pursued to the same extent as the methods and strategies for understanding the user.

Despite originally abandoning the exploration of the relationship among cognitive processes, design goals, and applied strategies, they were later resurrected as a component of the “troubleshooting” section of the final application. Originally, these strategies were applied to developing a design solution; however, it became clear that they could also be used as an evaluative tool. In this vein, the relationship between design goals and strategies for achieving these goals, in conjunction with criteria for good design, was used to determine factors of design that might lead to poor usability.

Results

Synthesis and interpretation of research reinforced the thesis hypothesis that there is a need for increased understanding of the role of the user within the graphic design process. Additionally, many of the methods gathered from the various disciplines could be directly applied to the graphic design process and used to understand a user’s needs and goals.

The original concept for this thesis project was a set of guidelines for graphic designers that could be used during the design process to better understand the final user; however, this concept was expanded to determine other possible applications and audiences.

The subject of this thesis was determined to be relevant to two main audiences: **users** and **graphic designers** (including professionals, educators, and students). Although purchasers and those who fund design are stakeholders in the design process, it did not seem appropriate to gear the thesis application toward these individuals; the two key parties within user-centered design are users and designers, thus the application should be aimed at one or both of these groups.

To determine the best possible application, communication goals were explored for each audience :

- users
demonstrate how a design can impact their experience, both positively and negatively, using familiar examples
- designers: professionals
provide a tool that designers can use to better understand their audience – methods, strategies, and techniques for carrying out user research
- designers: educators
develop a curriculum for teaching user-centered design, including suggested reading materials and projects for students
- designers: students
show how design can be used to help people – methods, strategies, and techniques for user research; develop applied projects for learning user-centered design techniques

A group ideation session was held to discuss a variety of brainstorming strategies to help determine the physical format of the application. The two methods covered in most detail were random juxtaposition and creative strategies from Roger von Oech's *Creative Whack Pack*. Both of these tools help to expand thinking by providing a new or unusual perspective.

For each audience determined at the beginning of the ideation process, there were many possible vehicles, including a poster series, book, booklet/pamphlet, website, or CD-ROM. A printed guidebook with suggested guidelines and/or curriculum seemed most appropriate for the three subgroups of designers. For users, however, the goal was different; the application should explain the role of design in daily life and show users when they are making mistakes due to poor design. A publicity campaign, possibly through posters, seemed a better method of providing information in a clear, understandable way to this audience.

The original goals were expanded to define key messages that the application would deliver: **for designers**

- designing with the user in mind is important
- user research doesn't need to take a lot of time or money
- if the goal of a design is to caution, inform, or instruct, then function should be emphasized
- methods for understanding a user

for users

- graphic design is all around you
- graphic design influences you every day
- you shouldn't have to put up with frustrations due to poor design
- sometimes design causes you to make mistakes, but other times it makes things clearer/easier

continued

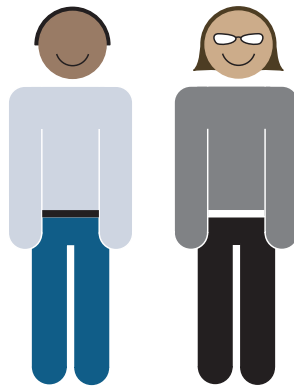
Out of these communication goals emerged the concept for the application: a guide for designers that demonstrates the impact of design on the user and provides tools that can be used to learn about and understand the user.

This guide would also address the other communication goals listed above, although their hierarchical importance would vary. Unlike the original application concept, these guidelines would not be a field journal, but a means of demonstrating the importance of the user in design and as a resource for methods of understanding the user. The application would tell the tale of Joe User, a fictitious persona representing the user or graphic design, and his experiences. The premise of the guidebook is to provide methods for better understanding Joe, his needs, and goals.

To better understand and clarify the goals of the application, a short summary defining the application, its scope, and objectives was developed:

Message	Graphic design intended to inform, instruct, or caution should take a user-centered approach, aiding the development of design solutions appropriate for the target audience. User research can be easy, inexpensive, quick, and will enable the designer to better understand a user's goals and needs. This information can then be used as a framework within which graphic design solutions can be developed.
Tone	The application will use a humorous, friendly tone to engage the audience. The information needs to be easily accessible and not overwhelming; however, at the same time, it must not appear childish.
Why	The vehicle for explaining the ease of conducting user research needs to be consistent with the message itself; since user research can be casual and approachable, the application should be the same. Additionally, the application should not be too lengthy or complex, in terms of language and imagery, so methods are easily understood and accessible.
Vehicle	This message will be sent through the development of a User Manual, directed at graphic designers, which explains how to learn about and understand a target user.

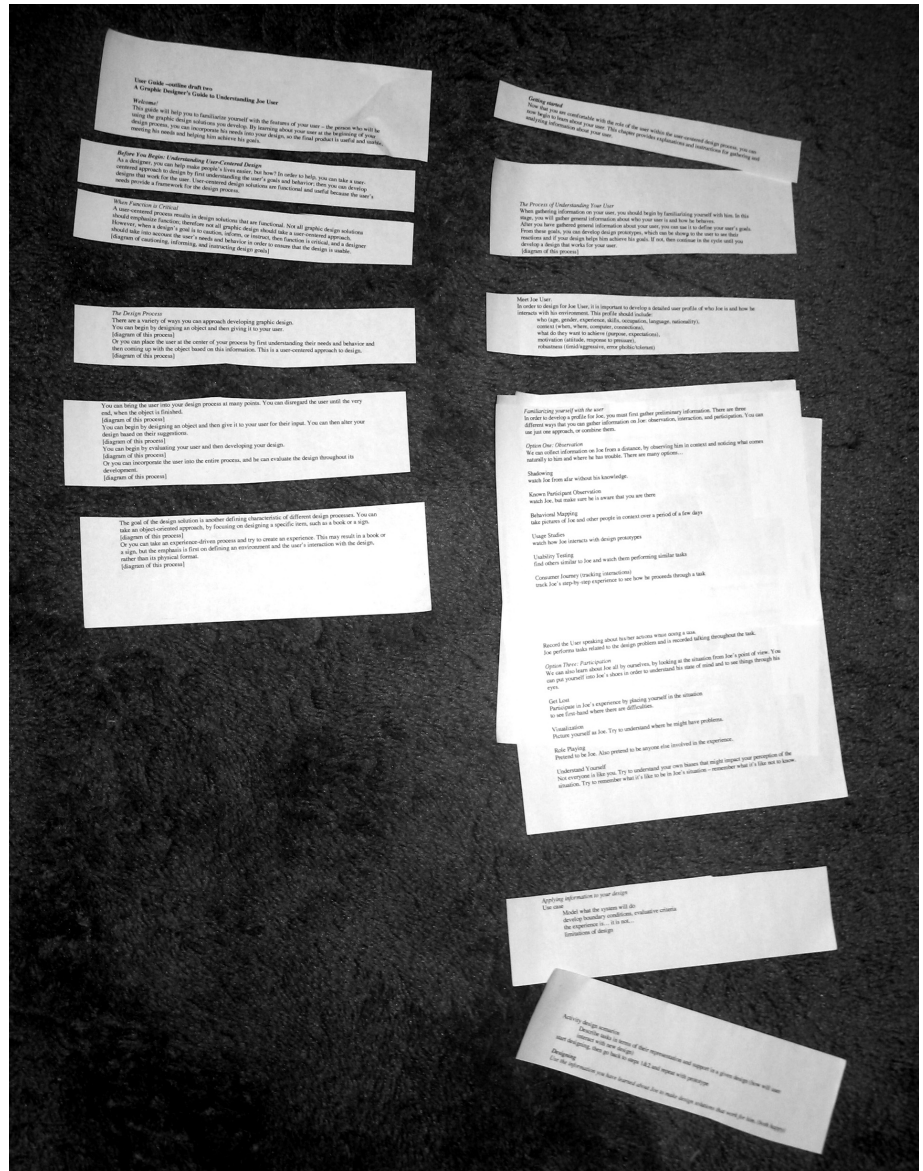
Originally, characters representing Joe User and the Graphic Designer were developed:



However, there was concern that the images might come across as too cartoonish, and other possible imagery that could be used to visually explain the process of understanding a user was explored.

Content Development

Important information that would be included in the application was identified and organized into a logical and cohesive order. From here, preliminary text was written in a format that was appropriate for the manual. To determine the best order for the textual content, the initial text was printed and cut into strips, each with one paragraph or section. These strips were assembled into a variety of sequences to find the best order.

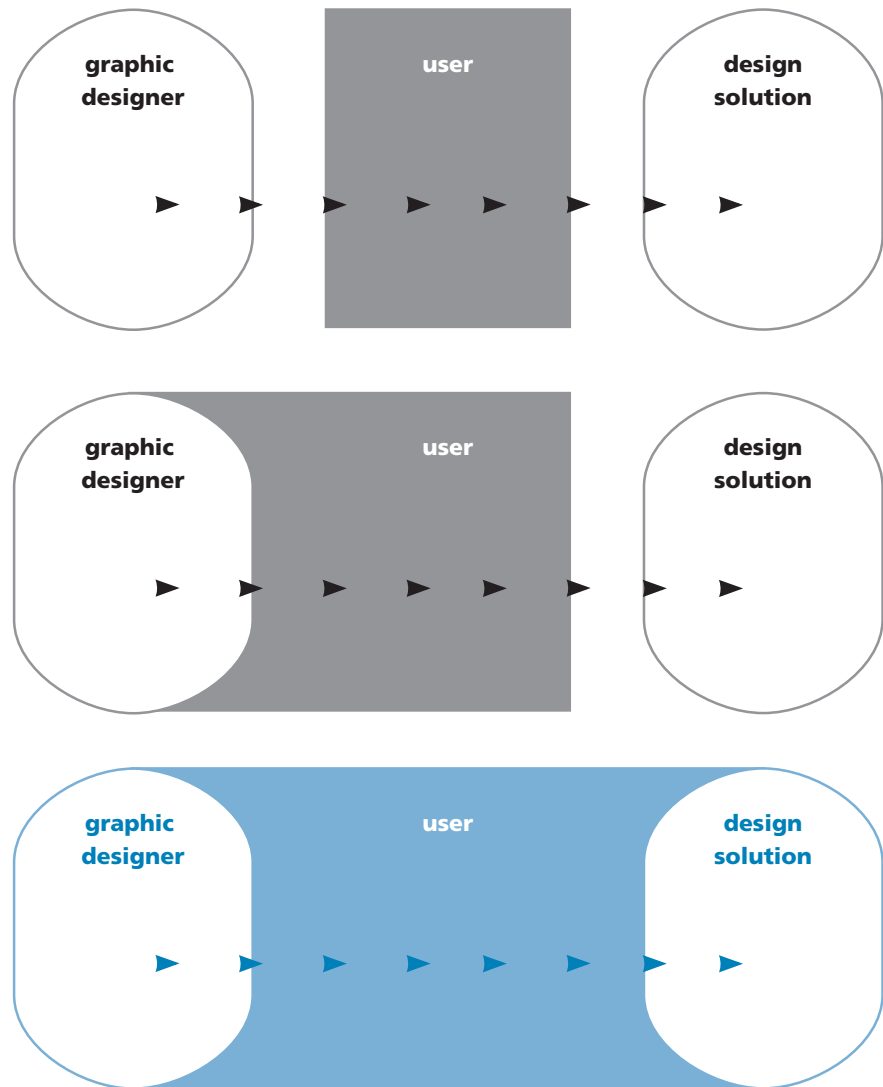


The length and organization of the guide's text was intrinsic to the ideation process, as it clearly defined the design requirements and needs for the overall layout.

Application Format	It was determined that the best vehicle for communicating the desired message was a booklet outlining a set of strategies that can be incorporated into the graphic design process to learn about a user.
Size	Because some of the strategies for learning about a user necessitate leaving the designer's work environment, the booklet needed to be portable. The format also needed to be readable and accommodate groups of textual information in an accessible and visually clear manner. The final booklet size, seven by nine inches, was determined by laying out the longest section of text to see how much space was needed. The additional text was then integrated into this format.
Typeface	Fruitger was chosen as the typeface throughout the application for its clean, accessible look and friendly style. Because the booklet is somewhat short, it was decided to use one typeface throughout the document to reduce any unnecessary visual clutter. Different weights, 75 Black and 55 Roman, were used to define the visual hierarchy within the text.
Color	<p>At the onset of ideation, a variety of colors were chosen to represent each section within the manual. Preliminary layouts used color as follows:</p> <ul style="list-style-type: none"> ■ introductory material ■ design process ■ strategies for learning about the user ■ next steps and additional information <p>In addition, black and white were used within this preliminary design. This use of multiple colors distracted from the main focus of the guidelines. The design may have been successful for a longer document; however, within the booklet it was overly complex. To reduce the visual clutter and emphasize the strategies presented within the guide, only black, white, and one additional color are used within the application. This decision, in addition to making the visual design clearer, also made it possible for color to function in a more meaningful way to highlight key information relating to understanding user needs and goals.</p>
Imagery	<p>To make the design engaging and fun, imagery is used within the booklet. However, in response to the committee's feedback on the preliminary figures developed for the manual, different possible strategies were examined for reinforcing the content of the guide through imagery. These ranged from using only simple geometric shapes to represent characters and interactions, to using representative photographic images.</p> <p>One concern of the committee was that the focus of the guidelines should be predominantly on presenting the strategies outlined within the text and not on image production by the designer. The images within the guidebook should function to reinforce the message within the text and not detract from the words through visual complexity. It was decided that the images should represent a balance between symbolic and iconic representation, and should support the text.</p>

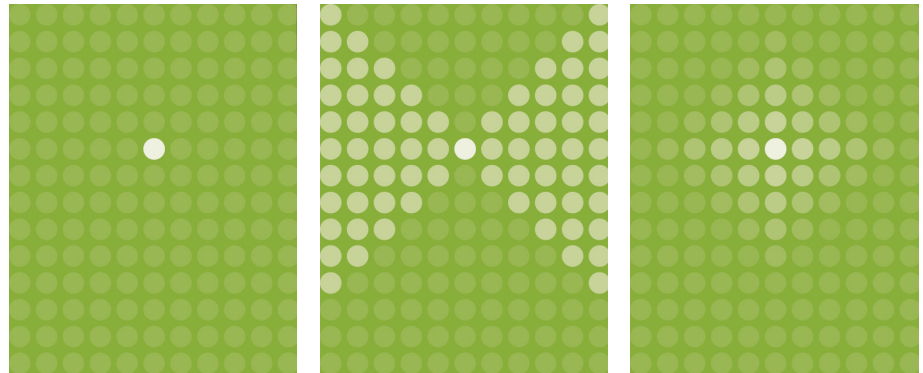
Initial Application Design

The design of the application began by laying out the text in page spreads, which helped show the number of pages needed for the guidelines. Sections of the manual that could be improved or strengthened through visual diagrams or images were identified. Based on the explanatory diagram showing the direction of the thesis project developed at the beginning of the study, new diagrams were developed to show various design processes.



These new illustrations, however, were lacking in visual interest and the shapes used did not meaningfully represent the user, designer, or design process. Additionally, blue was chosen to highlight user-related information; however, because blue is often stereotypically representative of males, more gender-neutral color options were explored.

Within the next layout, illustrations representing different strategies for learning about a user were designed using a pattern of circles. These images, although visually interesting, seemed vague and did not adequately represent the accompanying text.



Meet Joe User

Familiarization

Analysis and Synthesis

Page spreads from these initial layouts can be found in Appendix D.

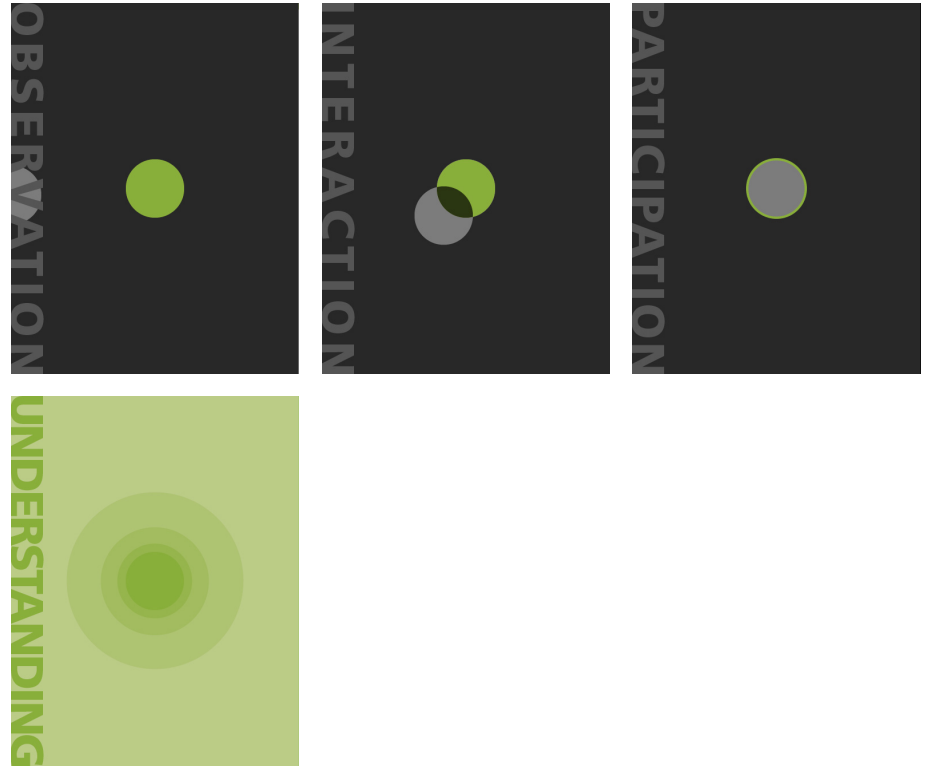
To develop a more meaningful, symbolic representation of the user-centered design process, the initial illustrations representing Joe User and the Designer were revisited. They were simplified from their original form and it was agreed that these refined images resolved the initial concern about giving a childish impression. The new images, constructed of simple geometric shapes, were friendly and engaging, but, at the same time, sophisticated. An illustration was also developed to represent a graphic design solution.



The layout was updated using these new illustrations to show the role of the user within the design process. In addition to the revised images, green was chosen to identify and highlight user-related information throughout the guidelines. To focus the reader's attention and reduce visual clutter, the guidelines were designed using only shades of black and green.

Revised Application Design
continued

It was decided that the use of illustrations to highlight the portion of the guide that outlines strategies designers can use to understand their user was a good decision; however, the original composition of dots was unclear and visually distracting from the text. New images were developed that better represented the related content in the guidebook and also helped distinguish and emphasize that portion of the book.



These new illustrations make use of the circular shape of Joe User's and the Designer's heads and their representative colors in an abstracted form to depict the various techniques that can be used to learn about the user. The first three illustrations show the initial step in the process and have the same grey background to visually connect them. The final image is representative of the second step within the process and is green to distinguish it and to reinforce that it is in this stage that the designer begins to understand the user's needs and goals.

Progress Presentation

A presentation explaining the overall thesis project, goals, research, and synthesis and ideation to date was given on February 2 to a group of 15–20 Rochester Institute of Technology’s School of Design graduate students and faculty members. Presentation slides can be found in Appendix E.

At the time of the presentation, ideation had just begun and it was suggested to explore different ways in which the information gathered could be used. One recommendation was to consider possible audiences outside the graphic design community, for instance, users of graphic design, for whom the application could be targeted. Additionally, it was suggested to explore further possibilities regarding how best to communicate the message of the thesis to the target audience.

Outside Evaluation

After revising the layouts into a final draft, the document was digitally sent to Tim Scanlon, a usability expert at Agnew Moyer Smith, for his feedback. Scanlon thought the application was good, but suggested that it would be beneficial to go into more depth to describe when each user testing method should be used so the reader could effectively choose the best technique for their situation. Due to the timeframe and scope of the thesis, this suggestion, although sound, was not incorporated into the final application; however, it would be a good next-step for this project to expand the application after the thesis concludes.

Another suggestion was to offer more polarity within the text, to not only explain what something is, but also what it is not. Related to this, it would be helpful to explain when it is appropriate to introduce Joe at the beginning, middle, or end of the design process. The text could also provide pros and cons to the different approaches to better explain the benefits and downfalls of each option.

Scanlon also made a number of comments that were feasible within the project’s timeframe and were incorporated into the design, resulting in the final application. He remarked that it was very good that the manual states that “one size does not fit all,” and also suggested clarifying that there is often more than one Joe for a design problem. He remarked that the manual’s inference that design makes people’s lives easier is correct, but it can also enable them to be more productive and reach their goals.

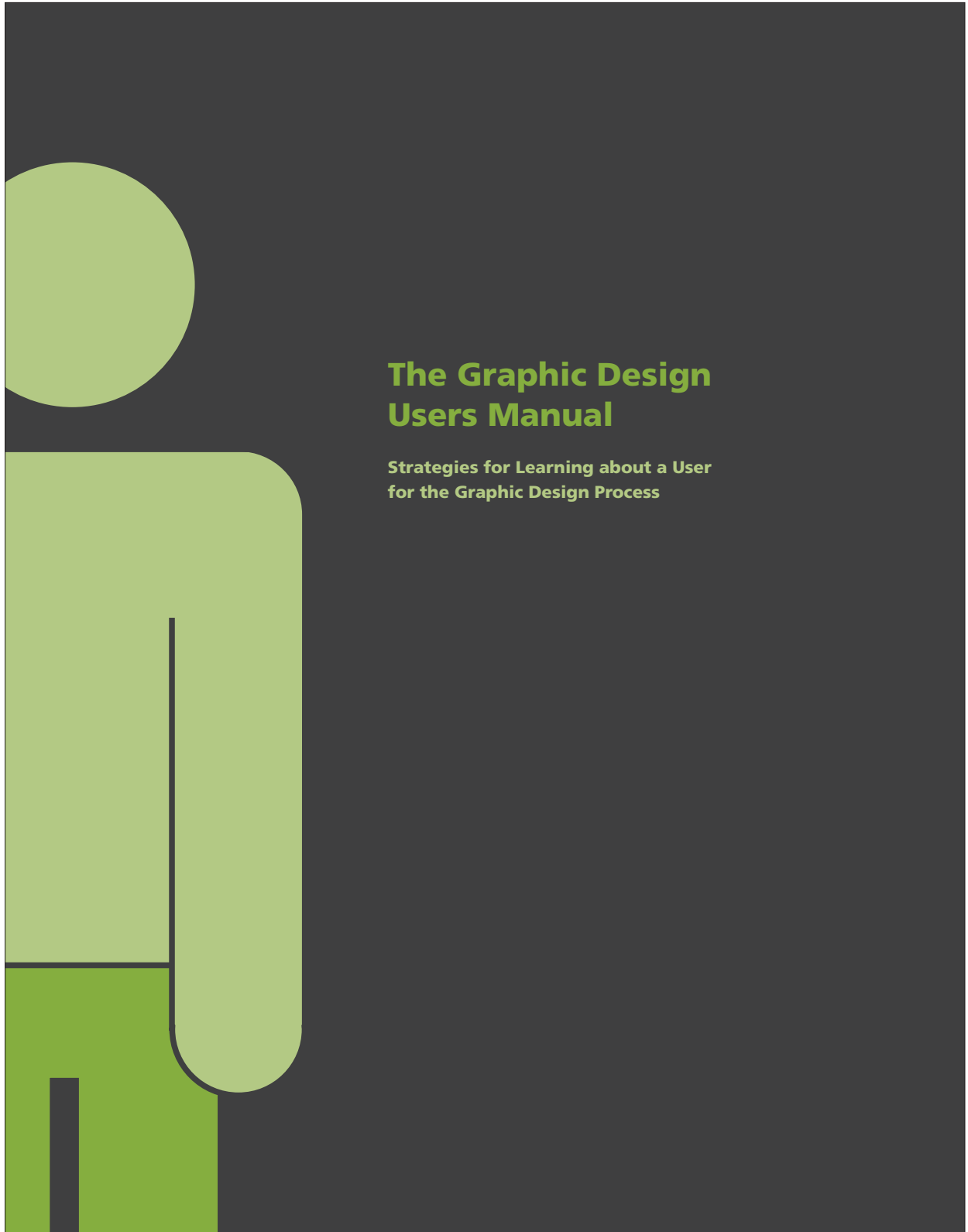
Within the categories of design where function is critical, he was concerned that the levels of information seemed a bit muddled. Upon further conversation, it was decided that it would be helpful to more clearly explain that a graphic design solution will not necessarily fall into only one of these categories, but may instead span many.

A semantic concern was the use of the term “a piece of graphic design.” Scanlon pointed out that not all design solutions are physical, so this term might be misleading. A simple solution was removing the words “a piece of” or using the phrase “a graphic design solution.”

Scanlon also remarked that a common misconception is that usability testing is expensive, requires a laboratory setting, is very time consuming, and necessitates many resources. He suggested making clear within the manual that there is a wide range of options, from the a formal contextual inquiry to an informal study conducted quickly with few resources.

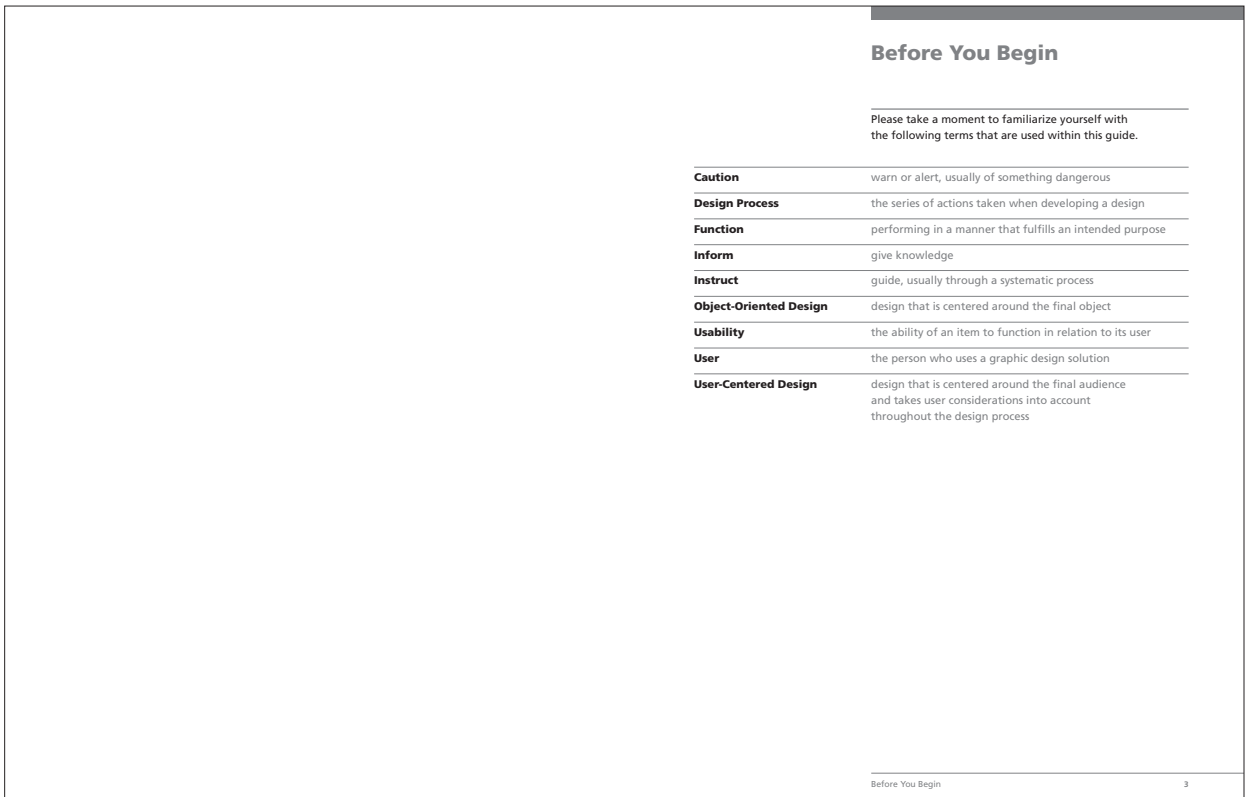
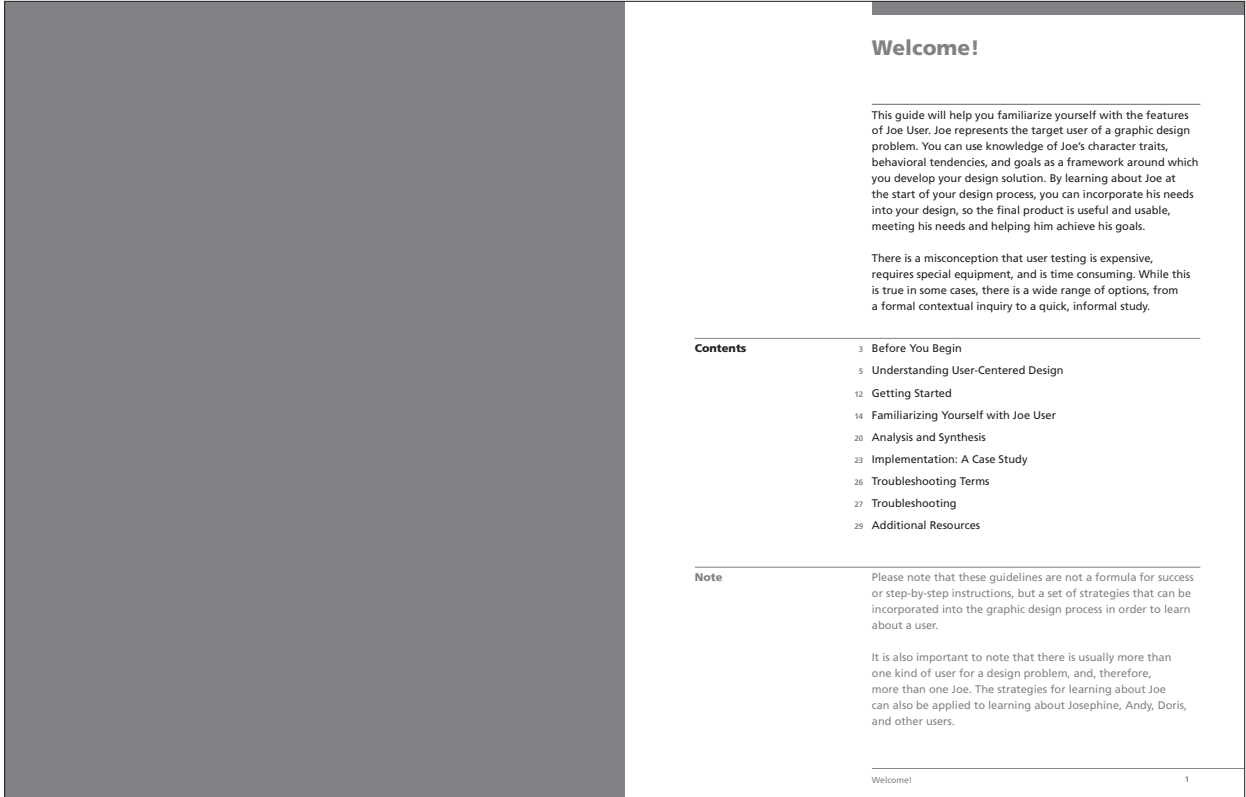
Final Application Design

The application draft was updated to reflect feedback from committee members and from the outside evaluation. The completed manual was 16 2-page spreads, excluding the cover, and was spiral bound. Full sized images of each page can be found in Appendix F.



Introductory Material

The manual begins with an introductory section that outlines the document, its purpose, and gives preliminary information on user-centered design. This section uses only shades of black and white to stay neutral and to diminish emphasis, since the purpose of the content is introductory.



Overview of User-Centered Design

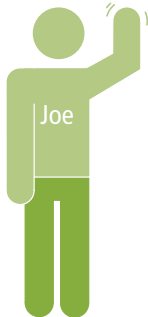
The next section of the manual introduces Joe User, outlines user-centered design, explains when function is critical, and demonstrates the role of the user within the design process. Green is introduced here to identify content associated with the user.

Understanding User-Centered Design

As a designer, you can help make people's lives easier and enable them reach their goals, but how? In order to help, you can take a user-centered approach to design by first understanding the user's goals and behavior; then you can develop designs that work for the user. User-centered design solutions are functional and useful because the user's needs provide a framework for the design process.

Meet Joe User

This is Joe User. Joe interacts with graphic design every day. Sometimes design is extremely helpful, but at other times it causes him unnecessary frustrations. As a designer, it is important to understand Joe and his behavior in order to develop designs that work for Joe and meet his needs.



Understanding User-Centered Design
5

When Function is Critical

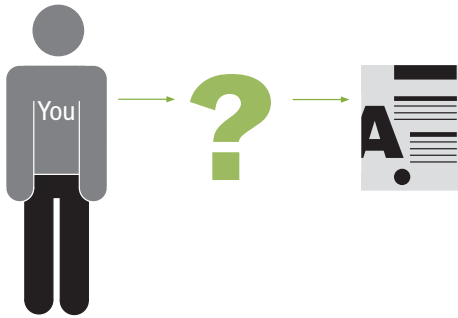
A user-centered process results in design solutions that are functional. Not every graphic design solution should emphasize function, therefore, it is not necessary for every graphic design problem to take a user-centered approach; however, when a design's goal is to **caution, inform, or instruct**, then function is critical. In these instances, a designer should take into account Joe User's needs and behavior in order to ensure that the design is usable.

<p style="font-size: 0.8em; margin: 0;">Caution</p> <ul style="list-style-type: none"> • warn users of danger warning labels • provide users with directions in case of danger emergency exit map emergency signage 	<p style="font-size: 0.8em; margin: 0;">Inform</p> <ul style="list-style-type: none"> • spatial understanding maps • communicate complex information clearly and accurately graphs diagrams matrices charts typography 	<p style="font-size: 0.8em; margin: 0;">Instruct</p> <ul style="list-style-type: none"> • gather information from the user forms • demonstrate an object's functions and controls • direct the user and help the user navigate through a space wayfinding graphical user interfaces • guide the user through a series of steps sequential directions
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A design may have one communication goal or a mix of different goals; it will not necessarily fall into only one of these categories, but may instead span many. It is important in situations where function is critical to consider the user throughout the design process.

The Design Process

The design process is the series of actions you take when developing a graphic design solution. It begins with the designer and ends with the final graphic design. What comes in between is up to you.



You need to determine where Joe fits into your process. You can begin by designing an object and then giving it to Joe.

Or you can place Joe at the center of your process by first understanding his needs and behavior and then develop your design based on this information. **This is a user-centered approach to design.**

Understanding User-Centered Design
7

Overview of User-Centered Design

continued



The Process of Understanding At this point, the information in the manual begins to get more specific and the process and strategies for learning about and analyzing the user are introduced. The image on the left page supports the text on the opposite page through a diagram of Joe User that identifies some of Joe’s characteristics.

Joe User

- height: 6' 2"
- education: undergraduate degree
- goal: find way around building
- weight: 185 lbs
- gender: male
- mobility: good
- context: unfamiliar location

Getting Started

Now that you are comfortable with the role of the Joe User within the user-centered design process, you can now begin to learn more about him. This chapter provides explanations and instructions for gathering and analyzing information about him.

The Process of Understanding Joe User

When gathering information on Joe User, you should begin by familiarizing yourself with him. In this stage, you will gather general information about who Joe is and how he behaves. After you have gathered general information, you can use it to define his goals.

The next step, which is touched upon briefly towards the end of this guide, is to use the information you have gathered about Joe and his goals as a framework for developing design prototypes. These designs can be shown to Joe to see his reaction and to determine if your design helps him achieve his goals. This guide deals with this first portion of the user-centered design process.

Design for Joe User

In order to design for Joe User, it is important to develop a detailed user profile of who Joe is and how he interacts with his environment. This profile should include:

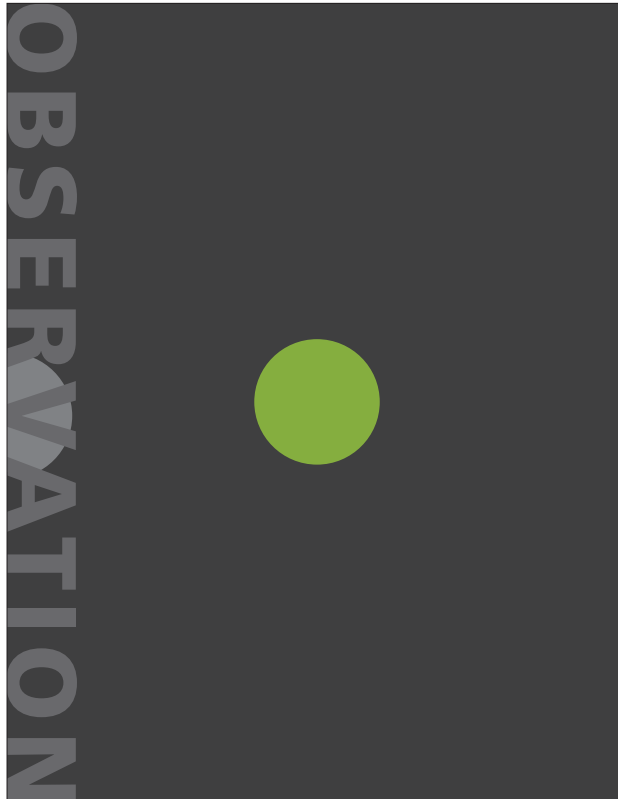
who	age, gender, experience, skills, occupation, language, nationality
context	when, where, with whom, surrounding objects, frequency of use, criticalness
goals	purpose, expectations, what he wants to achieve
motivation	attitude, response to pressure

It can be helpful to write scenarios or stories documenting Joe and his experiences. This will help you to understand Joe and to keep him in mind throughout the design process.

Getting Started
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Familiarization

Strategies for familiarizing oneself with the user are introduced next. Each method – observation, interaction, and participation – is given its own page spread to distinguish the different categories. Additionally, these pages are visually emphasized by the illustration on the left pages.



Familiarizing Yourself with Joe User

In order to develop a profile for Joe, you must first gather preliminary information. There are three different strategies that you can use during this step: **observation, interaction, and participation**. You can use just one option, or combine them.

Strategy One: Observation	You can collect information on Joe from a distance, by observing him in context and noticing what comes naturally to him and where he has trouble.
Shadowing	Watch Joe from afar without his knowledge.
Known Participant Observation	Watch Joe, but make sure he is aware that you are there.
Behavioral Mapping	Take pictures of Joe and other people like Joe in context over a period of a few days.
Usage Studies	Watch how Joe interacts with design prototypes.
Usability Testing	Find others similar to Joe and watch them performing similar tasks.
Tracking Interactions	Track Joe's step-by-step experience to see how he proceeds through a task.

Familiarizing Yourself with Joe User

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Option Two: Interaction	Another way to learn about Joe is by interacting with him or others like him.
Storytelling: Interview	Ask Joe to tell stories about his personal experiences related to the design problem.
Storytelling: Photographic Journals (Visual Stories)	Give Joe a camera and ask him to take pictures of his experiences.
Storytelling: Log Book/Journal (Written Stories)	Give Joe a log book and ask him to record his experiences in writing.
Surveys and Questionnaires	Have Joe and others like him complete surveys and questionnaires. Be sure to carefully design the survey to ensure that the information gathered is relevant and your results are qualitatively accurate.
Interview: User	Discuss with Joe his experiences. Use probes to encourage him to respond more clearly and/or meaningfully. Be careful not to lead Joe to answers.
Interview: Representative User	Talk to people similar to Joe to learn about their experiences.
Interview: Group	Talk with a group of representative users. Try to do this in context so that their answers are as accurate as possible, because talking in an artificial situation can lead to artificial answers.
Semantic Differential	Ask Joe and other representative users to rate experiences on a linear scale to find the average answers.
Speaking while Performing	Record Joe talking while performing a task related to the design problem.


Familiarizing Yourself with Joe User

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Familiarization

continued

PARTICIPATION




Option Three: Participation	You can also learn about Joe by yourself by looking at the situation from Joe's point of view. You can put yourself into Joe's shoes in order to understand his state of mind and to see things through his eyes.
Walk in the User's Shoes	Participate in Joe's experience by placing yourself in the situation to see first-hand where there are difficulties.
Visualization	Picture yourself as Joe. Try to understand where he might have problems. Or look from a different point of view. Try to step back from the situation and get a birds-eye view to help widen your field of perspective and find different solutions.
Ask Why? Ask Why Not?	Ask yourself why Joe acts in certain ways. Why does he do certain things? Why does he not do others?
Role Playing	Pretend to be Joe. Also pretend to be anyone else involved in the experience.
Understand Yourself	Try to understand your own biases that might impact your perception of the situation. Not everyone is like you. Try to remember what it's like to be in Joe's situation – remember what it's like not to know.

Familiarizing Yourself with Joe User 19

Analysis and Synthesis

The strategies for analyzing the information gathered during the familiarization stage are differentiated from the preceding section through the use of green, representative of understanding the user and user's experience. The section is still connected visually to the familiarization strategies through the layout and style of the illustration.



Analysis and Synthesis

After gathering information, you can then use it to understand Joe's needs and behaviors.

Understand Influences on the User	Try to understand the cultural, social, and other external influences on Joe.
Develop User Personas	Create a profile for Joe that outlines his characteristics, needs, goals, motivation, and behavioral patterns.
Modeling Research	Make a collage of images that represent Joe and his goals. Or make a collage helps visualize Joe's tone and emotions.
Document the User's Experience/Process	Record Joe's process to see how he approaches a situation and analyze it for opportunities where design can help make things easier.
Storyboarding	Create a visual story depicting Joe's experience from your own point of view.
Map the system from the user's perspective	Develop a storyboard that documents Joe's point of view and experience.
Break the user's process into steps/stages	Break Joe's experience into small steps and analyze each for opportunities where design can help.
Determine a user's goals and performance standards	Use the information you have gathered on Joe to identify his goals and his desires. Then develop design solutions to meet those needs.
Think in verbs, not nouns	Identify Joe's goals using a verb. This lets you think more broadly and avoid an object-oriented solution.
Organize information	Organize the information so the details most important to Joe are given emphasis, which will help facilitate his understanding.
Celebrate Human Behavior	Look at the way Joe actually does things and use this information to guide your design. You don't want to change his behavioral patterns, but instead use them productively.

Analysis and Synthesis

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Strategies in Practice

To reinforce the strategies and explain how they would be put to actual use, a short case study that incorporates the user into the design process is presented.

Implementation: A Case Study

You are working on redesigning the United States tax forms. Because the variety of people who use tax forms is broad, you divide the population into smaller groups of users to better understand for whom you are designing.

Major groups of users include accountants and other paid tax preparers, unpaid preparers (such as relatives), and those who handle their own taxes. Within this last group there is a wide variety of subgroups, from individuals who are assisted by computer programs to those who carry out the entire process by hand. In order to make your design appropriate for the widest audience, you decide to gear your design to a user who:

- has a high school education
- is between 40 and 55
- prepares her taxes manually
- has items to declare
- feels able to complete the task but is frustrated by the process and
- feels responsible for making errors or misunderstanding the forms.

In order to make this persona come alive, you name her Jean and try to think of her as an individual throughout your design process. You can check back in regularly to assess how Jean would react to your findings and solutions.

Implementation: A Case Study

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Familiarization

You start by gathering preliminary information about Jean, before you begin designing.

Observation



To learn about the ways that Jean interacts with current tax forms, you observe people like her in their typical environments as they interact with the tax documents. You look for places where they make mistakes or seem to have trouble, and note what comes easily to them and what works well. You also take note of their behavioral tendencies throughout the process.

Interaction



You also decide to ask users like Jean for their feedback about the tax process to better understand their experiences. You give them a journal and instant camera that they use to document their experiences and make note of problems or areas of confusion, which helps pinpoint areas that users recognize as problem spots.

Participation



In order to place yourself in Jean's shoes, you complete the tax preparation process yourself. This gives you a first-hand look at her experience and helps you better understand for yourself what she goes through. You notice where you trip up, where you make mistakes, and where you are confused. You also note what kind of information might have been helpful to resolve your problems.

Analysis and Synthesis

Once you have gathered this preliminary information, you can then use it to better understand Jean's goals and experiences. You outline her goals, expectations and her entire tax preparation process:

- get required information confusing
- get tax forms easy
- complete forms difficult and daunting
- send to government easy
- get return (not applicable to all) easy

You then examine Jean's current situation and look for opportunities to improve her experience. For instance, if Jean has difficulty determining if she has assembled all necessary documents before she even begins filling out the tax forms, design could help by providing these details or guidelines that Jean could use to evaluate what she has compiled. These opportunities, combined with your knowledge of Jean's goals, behavioral tendencies, and needs, can be used as a framework for your design.

Designing

Your next step is to use the information you have learned about Jean to make design solutions that work for her. After you start designing, run your prototypes by Jean gauge her reaction. Alter your design as needed based on Jean's feedback.

This phase in the design process is not discussed in detail in this guide, since it deals with design methods rather than strategies

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Implementation: A Case Study

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Troubleshooting

In the style of many user manuals, this troubleshooting section outlines and defines applied strategies that can be used to meet specific user-centered design goals.

Troubleshooting Terms	Troubleshooting
Affordance	<p>Are your users having trouble with your design? Use this troubleshooting guide to identify strategies that you can employ to meet your design solution goals.</p>
Chunking	<p>Design Solution Goals functionality satisfaction visibility</p>
Closure	<p>Applied Strategies affordances cues coding conceptual model Gestalt principles (proximity, similarity, closure, continuity, symmetry)</p>
Coding	<p>readability legibility attention (divided/focused)</p>
Cognitive Aids	<p>cognitive aids consistency hierarchy/organization increase motivation increase activity feedback/alerts focus attention</p>
Conceptual Model or Mental Model	<p>retrieval vs recall efficiency</p>
Continuity	<p>affordances chunking cognitive aids meaningful relationships natural constraints (limit choices, limit options) redundancy</p>
Cues	<p>cognitive mapping errors (slips, mistakes)</p>
Cultural Constraints	<p>constraints feedback for errors functional fixedness logical mapping natural thinking</p>
Functional Fixedness	<p>learnability performance aesthetics ease of use</p>
Hierarchy	<p>context cultural constraints knowing how vs knowing that natural thinking representational form standardization</p>
Physical Constraints	<p>26</p>
Proximity	<p>Troubleshooting</p>
Representational Form	<p>27</p>
Similarity	<p></p>
Symmetry	<p></p>

Resources

Because the manual speaks only to the portion of the design process dealing with gathering user information, this section with relevant resources was included at the end of the manual, so readers can find additional information on the role of the user within design.

Additional Resources

Graphic Design	
AIGA Experience Design Community of Practice	This multidisciplinary organization is devoted to developing experiences instead of taking an object-oriented approach. As a leading graphic design organization, AIGA's standards of practice and resources serve as a means for reaching the graphic design community and their offerings can be used to better understand and judge what is currently taking place in the field with regard to user-centered design.
Design for Democracy's Election Design Initiative	This AIGA initiative used a user-centered process to develop clear, understandable materials for all aspects of the voting process, including materials for voters, ballot layouts, information for polling place workers, and all other items with which stakeholders in the election process come into contact.
Information Design Journal + Document Design	<i>Information Design Journal + Document Design</i> is dedicated to investigating and thinking about effective information design, in both print and digital formats. The journal, which resulted from the merger of two publications, is geared towards both practitioners and researchers.
Edward Tufte	A statistician, Tufte is interested in clearly and accurately communicating complex data through visual media. He is a strong proponent of first defining functional needs and using them as a framework upon which a visual design solution can be developed. Relevant works include his books <i>The Visual Display of Quantitative Information</i> , <i>Envisioning Information</i> , and <i>Visual Explanations</i> .
Richard Saul Wurman	Richard Saul Wurman, an architect by trade, is concerned with making information understandable. He coined the term "information architect" in his book <i>Information Anxiety</i> to describe someone who builds structures to organize and present information.

Additional Resources 29

Digital Media	
Alan Cooper	Cooper is one of the leading advocates of user-centered approach in digital media. Cooper advocates taking a goal-directed approach to design, looking at the way people actually do things and developing design solutions around these behaviors. Another main component of Cooper's work is the use of personas within the design process. By first developing a hypothetical persona and then designing for that individual, a solution will effectively address the goals of real end users.
Jakob Nielsen	Nielsen is a leading proponent of usability within website design. Nielsen promotes user testing in order to judge the functionality of a website design. His recommendations for web design are also appropriate for non-digital graphic design. He suggests many methods that can be entailed by designers in order to test a solution's functionality.
Industrial Design	
Donald Norman	Norman, a social scientist by training and self-proclaimed "user advocate" is a design advisor and consultant who emphasizes taking a human-centered approach to design. His book <i>The Design of Everyday Things</i> (originally titled <i>The Psychology of Everyday Things</i>) focuses on the impact of usability on everyday life, particularly with regards to product design.
Red Dot Awards	The Design Zentrum in Essen, Germany awards the Red Dot Design Awards to celebrate high-quality, innovative design. The annual international competition has three categories: product design, communication design, and design concept. Commendations are awarded based not only on visual interest but on function as well.

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Back Cover

The back of the guidelines serves as a colophon, listing credits and production information.



Gallery Exhibition

A work-in-progress exhibit was displayed in Rochester Institute of Technology's Bevier Gallery as a part of the gallery's first of three Graduate Thesis Exhibitions. The display, which presented thesis process and progress, was on view from March 7–March 24, 2005, with an opening reception on March 11.

The display was developed in order to explain the impact of design on daily life and to show the benefits of taking a user-centered approach when designing with the goal of informing, instructing, or cautioning. The panels also presented preliminary methods for familiarizing oneself with a user and for analyzing this data.

Feedback regarding the display's design and content was gathered at the reception and throughout the exhibition. Most comments were supportive and congratulatory. One suggestion for strengthening the panels was to present the content in a more interactive format, so viewers could be more involved in the intellectual aspects of receiving information.

Within the process of developing and exhibiting the thesis show, the most difficulty was had in the fabrication of the panels. Although the final product was effective, the color of the panels was not consistent with the original design. However, since the color was added mainly for visual interest, it did not impact the ability of the display to communicate the thesis' message.

Thesis Display



Larger images of each panel can be found in Appendix G.

Show Opening



Application

The manual developed as part of this thesis was distributed to committee members, the outside evaluator, and selected RIT faculty. In the future, a small quantity could be printed and disseminated to practicing graphic designers for use in the design process and to solicit further feedback.

The manual's content could also be developed into a website, which would make the information easily accessible to interested parties around the world. One major benefit to this format is the current focus of Experience Design within digital media. By digitally publishing and promoting the idea of user experience within all aspects of graphic design, perhaps the work would reach a wider audience within the design community—both print and digital designers.

Another potential application of this study is a published article on the role of the user within graphic design. An article could be featured in a graphic design journal, which would be geared towards designers; however, another possibility would be an article for the general public, the users of graphic design, to explain and demonstrate the impact design has on everyday life.

The original mission of this thesis—to investigate what can be done to increase awareness of user-centered principles as they relate to graphic design problem-solving—was achieved. The cross-disciplinary study revealed many strategies for learning about a specific audience that could be directly applied to the graphic design process. These findings were then presented in an accessible format geared toward practicing graphic designers.

At the beginning of this thesis, the biggest challenge was defining the scope of the project. Because the topic was of great personal interest, it was difficult to narrow the focus to a reasonable yet meaningful study. However, after preliminary research and ideation, the thesis became more clearly directed and relevant to the graphic design community.

Another challenge was conducting a survey of literature that was thorough and complete, yet fit within the short timeframe of the study. The preliminary stages of the thesis project involved tremendous amounts of reading; however, this work was extremely important to the success of the thesis and to truly understand the historical context in which the study was being conducted. Although this phase in the process was more time-consuming than originally intended, it eventually paid off by providing a solid foundation for the thesis. Less research would have resulted in findings with less historical support and a weaker application.

One of the most helpful components of the research phase was the personal interviews conducted with experts from a variety of fields. These discussions helped guide the thesis by providing new insights into the design process, additional resources, and comments specific to the thesis. Also of great assistance were the AIGA Experience Design Community and Interaction Designers email lists. The insights of many of the members were extremely valuable because they provided additional resources and different viewpoints on topics related to the user within design.

The content of the manual was relatively easy to establish, since it drew from a strong foundation set by research and synthesis. The final product reaches the desired objective of providing graphic designers with a set of guidelines that provide information on developing design solutions that take into account user experience.

During the outside evaluation it was suggested that more depth be added to the application; particularly, explaining when a designer should use specific techniques. This suggestion would certainly result in a tool that helps designers not only understand user-centered design, but also help them choose the right technique for specific projects. Due to the scope and timeframe of this project, this suggestion was not incorporated into the final application; however, it would be a valuable addition to the document and could serve as a way to expand upon the thesis.

The committee members provided valuable insight and support throughout the thesis process. Each member was extremely helpful in offering suggestions and guidance, but also keeping an open mind about the various possible outcomes of the study. Many of the accomplishments of this thesis are directly related to the input of the thesis committee members.

Much of the success of this thesis can be attributed to the fact that the subject matter was personally engaging. Because of this intellectual and emotional interest in user-centered design and making connections across disciplines, the study was embarked upon with great enthusiasm. This excitement helped to fuel the study throughout the entire process.

Attention to the user and user experience is increasing within many fields, including graphic design. Additionally, many designers and design organizations are taking a cross-disciplinary approach to the design process. This thesis successfully combined these areas by examining strategies for gathering and analyzing user information from many fields and applying them to the graphic design process.

In graphic design, the user frequently relies on design to communicate important information. By considering user experience and understanding user behavior, a graphic designer can develop design solutions that are appropriate for the audience and are, therefore, both usable and useful. It is also important to take an experience-driven approach, rather than an object-driven one, enabling the designer to take a broader view of the design process and to develop a solution that meets the user's goals.

Not all designs need to place emphasis on function. In fact, designs that are meant to persuade or entertain might work best when visual appearance dominates; however, function is critical when a design's goal is to caution, inform, or instruct. It is more important for an emergency exit map on a hotel door to ensure a safe escape in the event of a fire than to simply look good.

This project looked at different techniques that designers can use to better understand their audience, the users of graphic design. Some of the suggested methods and techniques come from design while others are from outside disciplines; however, they can all be integrated into the graphic design problem-solving process.

From a personal standpoint, this project has provided insight into the historical role of the user within graphic design and has illuminated new ways of working on projects in which user needs are critical. The outcome of this is an increased awareness of the user throughout the design process, not only at one or two points of a project. This new approach has already affected the design process of multiple projects that were developed while this thesis was in progress. Additionally, this thesis has reinforced the need for increased awareness of the user within all aspects of graphic design, prompting further exploration within this subject area. The end result of this project is a fervent beginning to a long-term interest in developing graphic design solutions that not only accommodate user needs but surpass them.

Affordance	the perceivable use of an object
Behavioral Psychology	a segment of psychology that focuses on actions and reactions
Chunking	developing meaningful groups within a large quantity of information, such as a phone number, which is broken into smaller groups of three or four numbers
Coding	tools, often direct mappings or real-world analogies, to help users better understand similarities and differences; for example, color coding
Cognitive Psychology	a segment of psychology that focuses on minds, memory, and perception
Comprehension	understanding or conceiving concepts fully
Constraints	a limit on choices, options, or functions
Cues	tools that serve to remind the user
Ergonomics	“the scientific study of the efficiency of man in his working environment” (oed.com), the study of physical human factors in relation to the environment, particularly used with respect to objects in a work environment, such as furniture and tools.
Experience Design	a cross-disciplinary approach to design that focuses on developing user experiences, not objects, and emphasizes the wants and needs of the intended audience
Function	performing in a manner that fulfills an intended purpose
Human Factors	the study of human interaction with devices, especially with respect to mechanical objects, often used in relation to computers, user interface, and product design
Interaction	the way two or more things reciprocally act upon one another
Mental Model or Conceptual Model	the way the user imagines a system works or how it is used; a correct model allows a user to easily interact and use the object, however an incorrect model can lead to errors
Persona	a detailed description of a hypothetical user, and his/her needs and goals
Solution	in graphic design, the final application or product
Usability	the ability of an item to function in relation to its user
User-Centered Design	design that is centered around the final audience and takes user considerations into account at the beginning of the design process
Visibility	making important information or functions perceivable

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User-Centered Design Awareness in Graphic Design

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Thesis Planning Report

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Thesis Committee Members

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Thesis Proposal

Problem Statement

Finding the appropriate balance between form and function is a main component of effective design; however, aesthetic and stylistic concerns frequently dominate over usability and understanding. The practice of “experience design,” a term used by the American Institute of Graphic Arts, has its origins in internet technology but has expanded into a multidisciplinary group of professionals that places emphasis on designing user experiences, not objects. Experience design principles are extremely relevant within graphic design and although the importance of user-centered design has gathered strength in recent years, its focus has been mainly on digital and product design and there is still a need for increased awareness of this practice within graphic design.

Documentation of Need

This designer is personally interested in the importance of function and user understanding within graphic design and believes in creating useful, usable design solutions. Many graphic design professionals could benefit from more information on usability, making use of experience design and other user-centered principles to develop solutions that are both aesthetically and functionally sound. Additionally, design that focuses on individual users benefits larger society by providing focused, practical solutions to many everyday problems, eliminating frustrations and making life easier.

Situation Analysis

Consideration of the user is a practice that is growing across disciplines, including engineering, business, and design. In graphic design, the user frequently relies on a design to communicate important information; by considering user experience and understanding user behavior, a graphic designer can develop solutions that are appropriate for the intended audience and are therefore both usable and useful. This thesis project will be directed primarily toward the graphic design community to help bring awareness to the importance of considering and understanding the user. Subsequently, it will also reach out to general society to explain the role of usability within design. One challenge will be to determine what has already been accomplished within the practice of user-centered design and what has yet to be done.

Mission and Goals

This thesis will investigate what can be done to increase awareness of user-centered principles as they relate to graphic design problem solving and to act on these findings with the ultimate goal of improving user experiences.

Objectives

From this research, graphic designers will be provided with a set of guidelines that offer information on developing design solutions that take into account user experience. This will result in solutions that fit the needs of the intended users and are also aesthetically sound.

Processes and Strategies

Matrices will be used to compare the ways different disciplines are placing emphasis on user experience. The semiotic model can help demonstrate the balance between form and function and how emphasis can vary based on the communicative, formal, and technical aspects of a design problem. Research will be carried out using books, magazines and journals, and over the Internet. Personal interviews will be conducted with sources directly involved with experience design, usability, and usability awareness.

Possible Applications

Conclusions gathered from this research could be presented in a defined set of guidelines outlining methods of considering user needs during the design process. Results could also be published in a journal or on a website.

Precedents

Substantiating

These precedents substantiate the basic premise of this thesis, that attention to function is needed within the field of graphic design.

Donald Norman

Donald Norman, a social scientist and self-proclaimed “user advocate,” is a design advisor and consultant emphasizing a human-centered approach to design. His book *The Design of Everyday Things* (originally titled *The Psychology of Everyday Things*) focuses on the impact of usability on everyday life. Norman comments, “If everyday design were ruled by aesthetics, life might be more pleasing to the eye but less comfortable; if ruled by usability, it might be more comfortable but uglier. If cost or ease of manufacture dominated, products might not be attractive, functional, or durable. Clearly, each consideration has its place. Trouble occurs when one dominates all the others” (151).

Impact

Norman’s observations were very influential to this project and spurred consideration of the impact design can have on our daily lives, for better or for worse.

Paul Rand

In his work *A Designer’s Art*, Paul Rand, one of the preeminent American graphic designers, comments, “visual communications of any kind... should be seen as the embodiment of form and function: the integration of the beautiful and the useful” (3).

Impact

Rand believed that design solutions should be relevant, communicate, and function, a concept that is a cornerstone of the thinking behind this thesis.

Edward Tufte’s

*The Visual Display of
Quantitative Information*

In this book, Edward Tufte comments on the impact aesthetics can have on developing accurate graphical representations of statistical information. He asserts that misleading graphics a direct result of “the skills, attitudes, and organizational structure prevailing among those who design and edit statistical graphics” (79). He elaborates upon this, stating that there is a “lack of quantitative skills of professional artists,” that “many graphic artists believe that statistics are boring and tedious,” and “many believe graphical displays should divert and entertain those in the audience who find the words in the text too difficult” (79-80). These comments sparked this thesis topic, bringing the author to wonder if these assertions are in fact true and, if so, what can be done to remedy the problem.

Impact

Within this thesis project, Tufte’s work can be used to demonstrate instances where emphasis on function should outweigh aesthetics.

Richard Saul Wurman

Richard Saul Wurman is concerned with making information understandable. He coined the term “information architect” in his book *Information Anxiety* to describe someone who designs and organized information. His *ACCESS* guides took a new approach to explaining complex and detailed information by organizing the material in a non-traditional format based on the user. The series focuses on what people do, where they like to go, and how they see. For instance, *Boston ACCESS* guides the reader throughout the city not only by category of business but also based on neighborhoods; therefore, users can easily find a place for lunch nearby to their location, not based on the cuisine.

Impact

This approach of focusing first on the users and then shaping the information around their needs was a great influence on the development of this thesis topic.

Precedents continued

Contextual

These precedents help to provide a better understanding of the current state of user-centered design and the context in which this study exists.

AIGA Experience Design
Community of Practice

In 1998 the American Institute of Graphic Arts established a community of practice devoted to experience design, which focuses on developing user experiences instead of taking an object-oriented approach. As a leading organization for designers, AIGA's standards of practice and information serve as a means for reaching the design community and their offerings can be used to better understand and judge what is currently taking place in the field with regard to user-centered design.

Impact

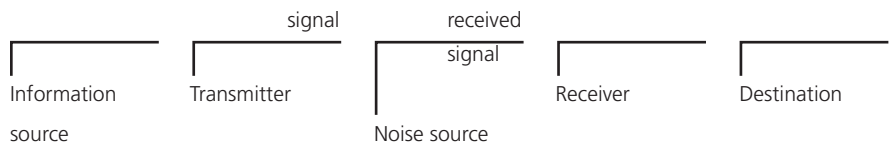
This group can provide particularly relevant experience about current efforts within the design community to focus on the user first and build the design solution from there.

Informative

These precedents offer evaluative tools to help define user-experience.

Shannon-Weaver
Model of Communication

The Shannon-Weaver model of communication demonstrates the cyclical sequence of events that a message undergoes between sender and receiver. Originally developed to explain the structure of switches within engineering, this model can be used within design to show that a solution may be interpreted differently than intended by the designer. Similarly, it can be used as a method of determining where communication discrepancies are occurring and to show the influence of outside forces upon function and user understanding.

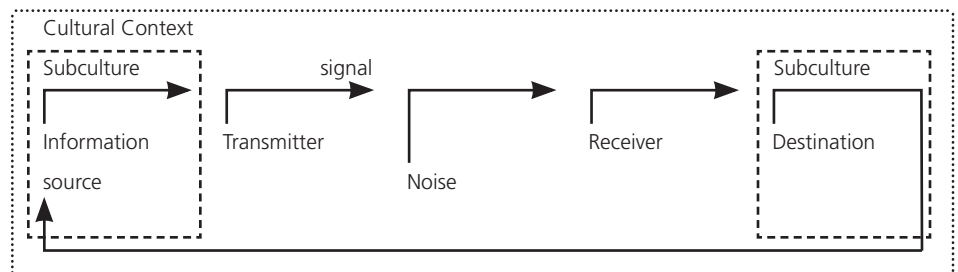


Impact

This model informs this thesis by providing guidelines for better understanding how a graphic design solution is perceived by the audience and by demonstrating the need for feedback in order to be assured that messages are being received.

Type & Typography
Phil Baines & Andrew Haslam
p. 34

This work provides a revised model of the Shannon-Weaver communication theory that was adapted specifically for graphic design.



Impact

This model can be used within the framework of this thesis to help define and assess the weight given to function for specific design solutions.

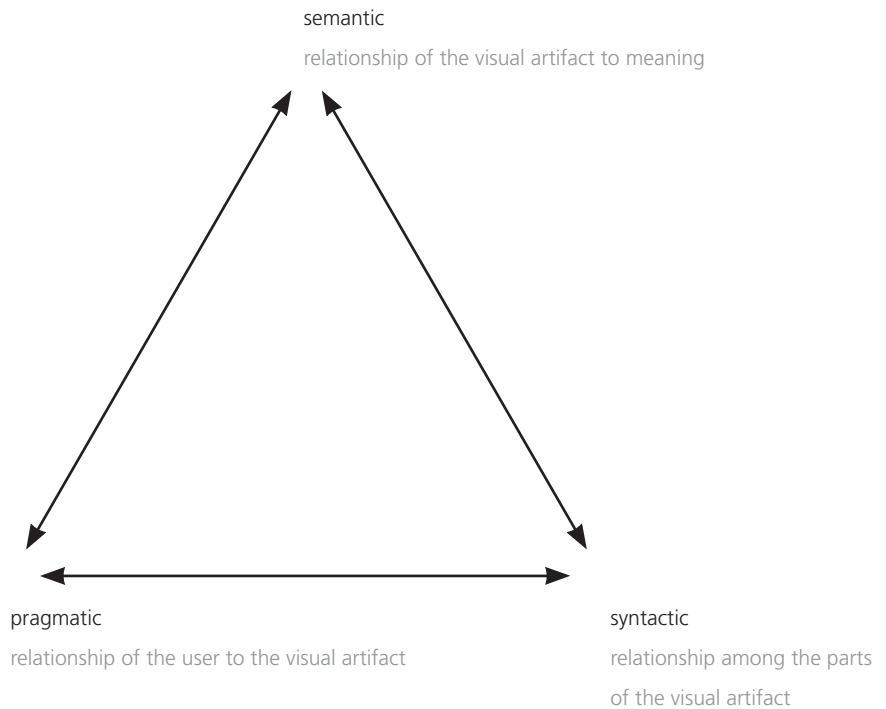
Precedents continued

Informative continued

These precedents offer evaluative tools to help define user-experience.

Semiotic Model

The semiotic model pictured below is a method for evaluating the success of semantic, syntactic, and pragmatic components of a work. It can also be used to examine the ratio of emphasis given to specific attributes.



Impact

This model can be used within the framework of this thesis to help define and assess the weight given to function for specific design solutions.

Symbol Signs
AIGA

This book from the American Institute of Graphic Arts judges the strengths and weaknesses of a variety of visual symbols and evaluates each using the three semiotic model dimensions: semantic, syntactic, and pragmatic.

Impact

This work informs this study by demonstrating a method of applying the semiotic model as an evaluative tool to graphic design. *Symbol Signs* also offers a clear, concise definition of the three dimensions of the semiotic model as they relate to graphic design.

Mission, Goals, Objectives, and Processes

Mission	increase awareness of user-centered design within graphic design
Goal	define usability within graphic design
Objective	establish definitions in order to develop an understanding of usability terminology
Process	<ul style="list-style-type: none">• research and perform content analysis of current literature on user-centered design to create a list of frequently used terminology• develop a set of definitions for found user-centered design terminology
Objective	identify attributes and considerations of usability that should be built into the design process
Process	<ul style="list-style-type: none">• among a variety of disciplines, research attributes that play a critical role in usability and identify similarities by assembling these attributes into a comparative matrix• identify and chart successful graphic design solutions that have different ratios of form and function• develop a model to demonstrate the balance between function and aesthetics• visually diagram ways that emphasis can vary in design solutions
Goal	explain the meaning and benefits of user-centered graphic design
Objective	show the importance of usability in everyday situations
Process	<ul style="list-style-type: none">• gather examples of familiar items or products from a variety of disciplines and explain the role of function in their design• evaluate and diagram the pros and cons of these products with respect to usability• demonstrate through case studies how these products could improve life for the user
Objective	show examples from disciplines outside of graphic design that focus on usability and apply these principles to graphic design
Process	<ul style="list-style-type: none">• assemble examples of user-centered strategies from a variety of disciplines• evaluate the strengths and weaknesses of these strategies• demonstrate through case studies how these strategies could benefit graphic design solutions
Objective	communicate current thinking on user-centered design
Process	<ul style="list-style-type: none">• conduct research on usability in design and the evolution of user-centered design processes• diagram the history of user-centered design• interview user-centered design advocates• compare usability standards among different design fields

Mission, Goals, Objectives, and Processes continued

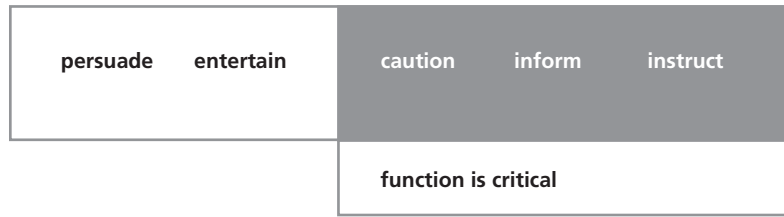
Goal	explain the interrelationships between user-centered design and usability and define scope
Objective	explain when graphic design problems require usability considerations because the problem has a functional requirement
Process	<ul style="list-style-type: none">• identify the major pursuits of graphic design to determine where usability is critical• assemble examples of graphic design solutions within the identified categories of graphic design that demonstrate the need for consideration of the user
Objective	determine when graphic design alone can be expected to function and when external factors could decrease the success of a design solution
Process	<ul style="list-style-type: none">• explore outside considerations that may impact the success of a graphic design solution• review and understand cognitive and behavioral factors that may impact the way a user receives a graphic design solution
Goal	provide graphic designers with a set of guidelines for developing design solutions focused on the user
Objective	present and distribute usability guidelines to the graphic design community
Process	<ul style="list-style-type: none">• assemble findings into guidelines that will aid designers in approaching a problem by first considering the audience• examine possible guideline formats and determine the most effective application• determine the best method for distributing guidelines

Explanatory Diagram of Thesis Project

Thesis Phases

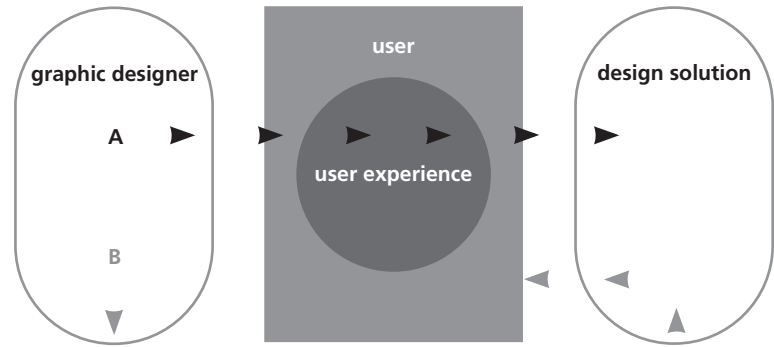
Thesis Navigation

Major Pursuits
of Graphic Design



A User Experience-Driven
Design Process

B Artifact-Driven
Design Process

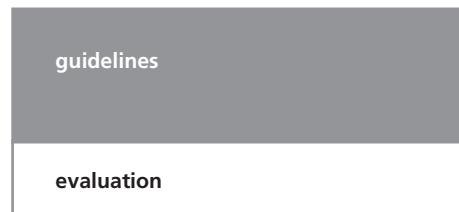


research user considerations
(cognitive ability, behavior,
understanding, language
physical capabilities, etc.)
from case studies
across multiple disciplines

understand drawbacks of B
(success of solution, usability,
emotional response of user,
longevity of solution, etc.)

Final Application

design considerations
for developing
user-centered solutions



Evaluation Plans

Ongoing Evaluation	Weekly discussions will be held with the chief advisor to evaluate overall thesis progress. Full committee meetings will take place periodically to demonstrate progress and receive guidance and feedback.
Preliminary Evaluation	Through personal interviews and questionnaires, professionals directly involved with experience design, usability, and usability awareness will be solicited for feedback regarding the thesis project and its application.
Intermediate Evaluation	The designer will present intermediate findings to a group of peers at Rochester Institute of Technology. Comments, suggestions, and questions in response to this presentation will be considered and may be incorporated into the study. A work-in-progress exhibition will be displayed at Rochester Institute of Technology's Bevier Gallery, which will include surveys and/or questionnaires.
Retrospective Evaluation	The designer, along with the thesis advisor, will personally assess the success of the solution and whether it addresses the mission and goals outlined for the project. The application will also be evaluated by presenting findings to an outside audience that has no vested interest in the outcome of the thesis project.
Dissemination	In addition to seeking feedback from viewers, the thesis exhibition in the Bevier Gallery, as mentioned above, will be the first time conclusions from this study will be publicly shared. Final conclusions from this research will result in a set of guidelines for graphic designers interested in considering user needs when developing designs. These guidelines could be presented in a printed format, such as a book or poster. Additionally, results could be published in a design journal or on a website.

Timetable

Fall Quarter	September	6	Thesis Planning	6	Labor Day	
		13				
		20				
		27				
	October	4				
		11				
		18			23	World Series begins
		25			31	Halloween
	November	1	First Draft of Planning Document Due		2	Election Day
		8	Final Planning Document Due			
		15				
		22		Fall Break	25	Thanksgiving
29			Research, Outline, and Analysis	29	Winter Classes Begin	
Winter Quarter	December	6	Committee Meeting			
		13				
		20		Winter Break	25	Christmas
		27			1	New Year's Day
	January	3				
		10	Committee Meeting			
		17		Preliminary Writing		
		24				
		31		Synthesis	31	Dad's Birthday
	February	7	Committee Meeting			
		14				
21			Ideation and Intermediate Evaluation			
28		Hang Thesis Show	Spring Break			
Spring Quarter	March	7	Committee Meeting	7	Spring Classes Begin	
		14		Implementation		
		21			27	Easter
		28		Evaluation		
	April	4	Committee Meeting			
		11				
		18		Revisions		
		25	Committee Meeting		27	Mom's Birthday
	May	2			8	Mother's Day
		9		Sign Off		
		16			21	Commencement

Glossary of Terms

Comprehension	understanding or conceiving concepts fully
Behavioral Psychology	a segment of psychology that focuses on actions and reactions
Cognitive Psychology	a segment of psychology that focuses on minds, memory, and perception
Ergonomics	“the scientific study of the efficiency of man in his working environment” (oed.com), the study of physical human factors in relation to the environment, particularly used with respect to objects in a work environment, such as furniture and tools.
Experience Design	a cross-disciplinary approach to design that focuses on developing user experiences, not objects, and emphasizes the wants and needs of the intended audience
Function	performing in a manner that fulfills an intended purpose
Human Factors	the study of human interaction with devices, especially with respect to mechanical objects, often used in relation to computers, user interface, and product design
Interaction	the way two or more things reciprocally act upon one another
Solution	in graphic design, the final application or product
Usability	the ability of an item to function in relation to its user
User-Centered Design	design that is centered around the final audience and takes user considerations into account at the beginning of the design process

Bibliography

Usability in Design

Norman, Donald. 2002. *The Design of Everyday Things*. United States of America: Basic Books.

- Norman, a cognitive scientist, discusses the impact of design on product usability and user behavior and advocates a user-centered approach to design. He breaks down human perceptions, thoughts, and reactions to everyday objects and relates them to design, providing suggestions for user considerations from a social science perspective.

Norman, Donald. 2004. *Emotional Design: Why We Love (Or Hate) Everyday Things*. United States of America: Basic Books.

- This book builds off of its predecessor, Norman's *The Design of Everyday Things*, approaching the role of emotion within design and user behavior.

Nielsen, Jakob. 2004. useit.com: usable information technology. Jakob Nielsen: Nielsen Norman Group. <http://www.useit.com> (accessed September 13, 2004).

- Jakob Nielsen, a leading proponent of usability within internet design, offers his thoughts and opinions on his personal website, which is filled with information promoting usability and user considerations, including articles, interviews, news, and book reviews.

Experience Design

2004. AIGA experience design. AIGA. <http://www.aiga.org/content.cfm?CategoryID=347> (accessed September 20, 2004).

- The American Institute of Graphic Arts' community of practice devoted to experience design includes materials on the evolution of, participants in, and general information about the practice of experience design.

Visual Presentation of Complex Information

Tufte, Edward. 1983. *The Visual Display of Quantitative Information*. Cheshire, CT: Graphics Press, Cheshire.

- Tufte discusses methods and guidelines for presenting accurate, statistically correct charts, graphs, and other informational designs. He warns of commonly used visual tricks that misrepresent the data, such as misusing proportion, emphasis, perspective, spacing, exaggeration, and variation. He also asserts that, when developing graphical representations of statistics, designers should take care to place emphasis on the information rather than on aesthetics because when aesthetics take on more weight than data, the solution is likely to be misleading.

Wurman, Richard Saul. 2001. *Information Anxiety 2*. United States of America: Que.

- In this updated version of *Information Anxiety*, Wurman approaches the subject of presenting complicated information in a clear, understandable manner.

Graphic Design

Rand, Paul. 1985. *Paul Rand: A Designer's Art*. South Bend, IN: Mossberg & Company, Inc.

- This compilation of essays offers an overview of Rand's views on graphic design principles. Included in this book are essays on the role of symbols and icons, legibility, integrating form and content, and the beautiful and the useful.

Human Factors

2004. Human Factors and Ergonomics Society. <http://hfes.org/> (accessed October 15, 2004).

- The website for the Human Factors and Ergonomics Society states, “The Society’s mission is to promote the discovery and exchange of knowledge concerning the characteristics of human beings that are applicable to the design of systems and devices of all kinds.” The site offers information on publications, links, society groups, and other information related to human factors.

Evaluative Tools

The American Institute of Graphic Arts. 1891. *Symbol Signs*. New York: Visual Communications Books Books.

- In this book, AIGA compiles, dissects, and analyzes a comprehensive series of symbols, with the goal of providing recommendations for clear, understandable visual symbols. The strengths of individual symbols were evaluated based on three dimensions: semantic, syntactic, and pragmatic. This method of analysis based on the semiotic model offers a comprehensive approach to evaluating a design solution.

Baines, Phil & Andrew Haslam. 2002. *Type & Typography*. United States of America: Watson-Guptill Publications.

- An overview of typography, this work is broken down into seven pieces: definition, function, form, manufacture & design, structure, and conventions. Within the text, Baines and Haslam use an updated version of the Shannon-Weaver model of communication and apply it directly to graphic design.

Thesis Documentation Structure

Thesis Project Definition	Introducing, identifying, and understanding the nature of the problem – including history, situation, and goals
Precedents	Describing other existing projects, case studies, and models that have meaningful relationships to the study
Research	Describing facts, principles, theories, or relationships that have been discovered to help solve the problem
Synthesis	Describing interrelationships and patterns– sorting, sequencing, and ordering information or parts of the problem
Ideation	Describing the generation of conceptual solutions and preparation of a range of preliminary design approaches
Intermediate Evaluation	Describing testing strategies that were used to judge ideation and the resulting selection of possible design solutions
Implementation	Describing how the project was refined, developed, and produced to its final form or application
Dissemination	Describing plans for future audience interaction– how could this product or information be distributed/used in the future?
Retrospective Evaluation	Assessing the final product to determine strengths and weaknesses– how could future versions be improved?
Conclusion	Summarizing overall experience and outcome– what was gained?
Glossary of Terms	Defining particular terms that were used within the written documentation to aid in reader understanding
Bibliography	Listing all sources used for the study by category– books, journals, magazines, websites, etc.
Appendices	Labeling each tool, involvement or activity separately– enabling the reader to refer to more in-depth detail at the end of the documentation

User-Centered Design Awareness in Graphic Design

Thesis Proposal for the Master of Fine Arts Degree

Graduate Graphic Design Program

School of Design

College of Imaging Arts and Sciences

Rochester Institute of Technology

Submitted by	Neva Corbo-Hudak	November 1, 2004
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Chief Advisor	Bruce Ian Meader Associate Professor of Graphic Design College of Imaging Arts and Sciences	Date
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Associate Advisor	R. Roger Remington Professor of Graphic Design College of Imaging Arts and Sciences	Date
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Associate Advisor	Paul Grebinger Professor of Anthropology College of Liberal Arts	Date
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School of Design Chair	Patti J. Lachance Professor and Chairperson, School of Design College of Imaging Arts and Sciences	Date
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Appendices continued

Documentation	Page Reference
A Planning Documentation	6
B AIGA Email Request and Responses	15
C Theories Chart	27
D Initial Application Spreads	35
E Presentation Slides	38
F Final Application Spreads	39
G Exhibit Panels	51

Appendices continued

AIGA Email Request and Responses can be found in the printed copy of this thesis, available in the Wallace Memorial Library, Rochester Institute of Technology.

Appendices continued

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Design for Democracy

- typography - readability & legibility
 - everything has meaning

- User research

- personas / scenarios (i.e. different groups of users)

- observation
- information gathering
- visual stories

become the user
↳ experience what they experience

- track user's experience / process

- look @ each stage, examine user's path

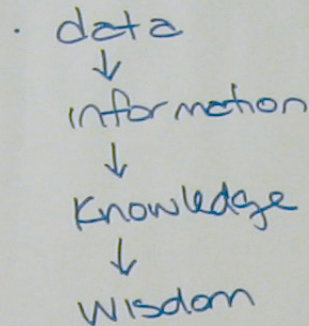
↳ where can design improve the experience?

- need performance standards for a design project

- in order to know if design is successful

Warman

- Info. is not enough,
organization is as
important as context



- make your own
connections first
(understand yourself)

- remember what it is
like not to know

- giving instructions
 - purpose (reason)
 - objective (destination)
 - core (procedure)
 - time (duration)
 - expectation (anticipation)
 - failure (error)

IDEO

- determine goals of the design, develop solution to meet goals
 - ↳ based on observation

Observe

- what comes naturally to people?
 - ↳ celebrate human behavior (don't try to change how people behave, but use it to be more productive)
- don't just ask people what they want/need, watch them!
- Care about the user
 - focus on the verbs/actions in order to create experiences
 - see products as verbs (phoning vs. phone)
- Methodology
 - observation *
 - brainstorm
 - rapid prototyping
 - refining
 - implementation
- observation techniques
 - shadowing
 - behavioral mapping
 - consumer journey
 - camera journals
 - extreme user interviews
 - storytelling
 - unfocus groups

Don Norman

- Visibility
- mapping
- affordances
- constraints
- conceptual model
- feedback
 - amount
 - type
- memory required
 - knowledge in the world
 - vs.
 - knowledge in the head
- possibility & types of errors
 - slips
 - mistakes
- forcing functions

Action steps

- forming the goal
- forming the intention
- specifying the action
- executing the action
- perceiving the state of the world
- interpreting the state of the world
- evaluating the outcome

DN-

"there's a difference between what people think they do & what they actually do"

Jakob Nielsen

- Pay attention to what users do, not what they say

- watch users attempt to do a task

↳ where do they succeed?

fail?

have difficulty?

- Components of usability

- learnability

- efficiency

- memorability

- errors

- satisfaction

- Start user testing early, continue throughout design process

tion

tion

tion

take

take

atome

Alan Cooper

- Interaction design
 - takes the user into account throughout the design process
- create the behavior & information presentation that is best for the user, not what's best for you
- ~~don't~~ think in terms of the goals the human is going to try to accomplish
- bring the interaction designer in early
- think from a goal-directed approach / point of view
- look at the way people actually do things
- base the design on understanding the user by understanding their goals. Understand their goals by understanding the user

Engineering

Quality Function Deployment (QFD)

- identify user requirements in terms of prod. attributes
- determine relative importance of the attributes
- evaluate the attributes of competing products
- draw a matrix of attributes & engineering characteristics
- ID. relationships betw. eng. characteristics & prod. attributes
- ID relevant interactions
- set target

~~QFD arranges the~~

* QFD strategically arranges all aspects of a product according to the customer (user)

- voice of the user has priority in determining product's attributes

Cog Psych

Human Processes

- perception
- attention
- learning
- memory
- language
- concept formation
- problem solving
- thinking

Perception

- sensory modalities
- context
 - affects how we perceive objects
- affordances
 - perceivable uses of for objects
- Gestalt - visual organization
- coding (mapping, color, etc)

Attention

- divided vs focused
- noise
- info that needs immediate attention should be prominently displayed
- action slips
 - ↳ solutions:
 - feedback
 - knowledge of error

Thinking

- problem solving
- decision making
- judgment

Why do people make errors?

- comprehension error
- heuristic inadequacy
- processing error
- users don't share the same thinking experiences

Mental models

- structural (how it works)
- functional (how to use it)

Memory

- Storage vs. retrieval
- short term vs long term

Meaningfulness

- familiarity
- imagery
- episodic (what has happened to you)
- vs
- semantic (knowledge/understanding of the world)

memory for:

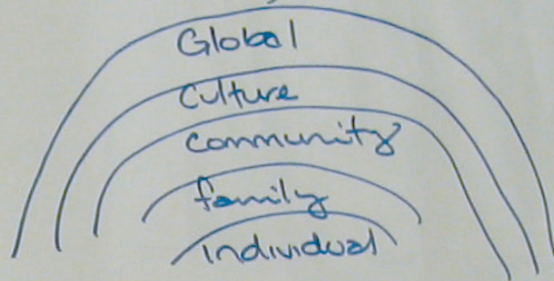
- Arbitrary things
- meaningful relationships
- exploration
- memory cues (cog. aids) (knowledge in the world)

recognition vs recall

- knowledge
- context
- function
- representational form

Antimo

Multicultural understanding
(influences)



- understand yourself
in order to help others

Criteria for understanding cultural groups

- acculturation
- poverty & economic concerns
- history of oppression
- language & the arts
- racism & prejudice
- sociopolitical factors
- child-rearing practices
- religious practices
- family structure & dynamics
- cultural values & attitudes

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Overview

Design is all around us. (picture of joe user surrounded by books, logos, websites, signs, etc)
Sometimes design is cool (psych posters, cd covers)
But sometimes we want design to be clear (e.g. of inform, caution, instruct)
Design can be helpful (clear exit sign)
Or Design can make our lives more difficult (confusing signs)
Sometimes design helps us avoid mistakes (do not enter!)
Other times, design causes mistakes (write on wrong line)

When to be cool and when to be functional

When the goal of a design is to persuade or entertain, looking cool is fine.
(ad, poster?)
But function should be emphasized when the design's goal is to caution
(warn of danger, provide information in case of danger),
inform (give a spatial understanding, communicate complex information
clearly and accurately),
or instruct. (gather information, demonstrate functions and controls, direct
and help navigate through a space, guide through a series of steps).
These functional designs can still look good (nice sign), but should not be so
cool that you can't understand them (confusing but aesthetic sign).

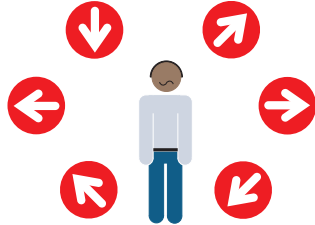
The Story of Joe User Part One: Design in a Bubble



Joe is surrounded by design.
Many of the designs are helpful to Joe.



However, many of the designs make Joe's life difficult and confusing.



When Joe wakes up he takes a shower. Joe grabs the conditioner instead of shampoo (pic of bottles looking similar)
Joe checks the weather and examines the geographic maps (confused joe)
While eating breakfast, Joe watches the news (tv with stuff on screen)
Joe hops in the car and drives to work (controls)
When he gets to work Joe checks his email (computer screen, you have 5,000 new messages)

- Map
- Diagram, graph, chart, etc.
- Forms
- Functions/controls
- Wayfinding, GUI
- Sequential directions
- Warning label
- Emergency signs

What Can I Do?

As a designer, you can help make Joe's life easier, but how?
In order to help Joe, a designer needs to first understand his goals and how he behaves. Then you can develop designs that work for Joe and help him achieve his goals.



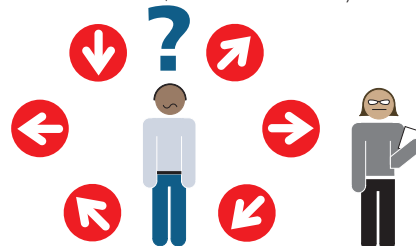
How to Learn About Joe Option One: Observation

We can collect information on Joe from a distance, by observing him in context and noticing what comes naturally to him and where he has trouble. There are many options...

Shadowing
watch Joe from afar without his knowledge.



Known Participant Observation
watch Joe, but make sure he is aware that you are there



Behavioral Mapping

take pictures of Joe and other people in context over a period of a few days

Usage Studies

watch how Joe interacts with design prototypes

Usability Testing

find others similar to Joe and watch them performing similar tasks

Consumer Journey (tracking interactions)

track Joe's step-by-step experience to see how he proceeds through a task

How to Learn About Joe Option Two: Interaction

We can also learn about Joe by interacting with him or others like him.

Storytelling: Interview

Asks Joe to tell stories about his personal experiences related to the design problem

Storytelling: Photographic Journals (Visual Stories)

Give Joe a camera and ask him to take pictures of his experiences

Storytelling: Log Book/Journal (Written Stories)

Give Joe a log book and ask him to record his experiences in writing

Surveys and Questionnaires

Joe fills out surveys and questionnaires

Interview: User

Talk to Joe to discuss his experiences. Use probes to encourage him to respond more clearly and/or meaningfully. Be careful not to lead Joe to answer

Interview: Representative User

Talk to people similar to Joe to learn about their experiences

Interview: Group

Talk with a group of representative users. Try to do this in context so that their answers are as accurate as possible because talking in an artificial situation can lead to artificial answers.

Semantic Differential

Ask Joe and other representative users to rate experiences on a linear scale to find the average answers.

Record the User speaking about his/her actions while doing a task

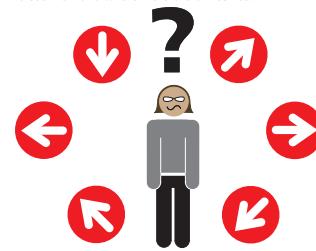
Joe performs tasks related to the design problem and is recorded talking throughout the task.

How to Learn About Joe Option Three: Participation

We can also learn about Joe all by ourselves, by looking at the situation from Joe's point of view. You can put yourself into Joe's shoes in order to understand his state of mind and to see things through his eyes.

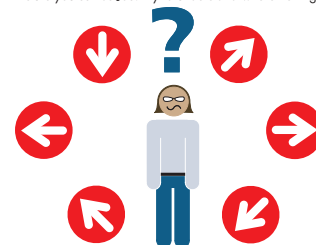
Get Lost

Participate in Joe's experience by placing yourself in the situation to see first-hand where there are difficulties.



Visualization

Picture yourself as Joe. Try to understand where he might have problems.



Role Playing

Pretend to be Joe. Also pretend to be anyone else involved in the experience.

Understand Yourself

Not everyone is like you. Try to understand your own biases that might impact your perception of the situation. Try to remember what it's like to be in Joe's situation – remember what it's like not to know.

Understanding Joe Analysis and Synthesis

After gathering information, you can then use it to determine Joe's needs and to develop design solutions.

Understand influences on the user

Try to understand cultural, social, and other influences on Joe and who he is.

Develop user personas

Create a profile for Joe that outlines his characteristics, needs, goals, motivation, and behavioral patterns.

Modeling research: photographic collage

Make a collage of images that represent Joe and his goals

Modeling research: mood board

Makes a collage helps her visualize Joe's tone and emotions

Hawking it

Try to step back from the situation and get a birds-eye view to help widen your field of perspective and find different solutions.

Ask why? Ask why not?

Ask yourself why Joe acts in certain ways. Why does he do certain things? Why does he not do others?

Document the user's experience/process

Record Joe's process to see how he approaches a situation and to analyze it for opportunities where design can help make things easier.

Storyboarding

Create a visual story depicting Joe's experience from her own point of view

Map the system from the user's perspective

Develop a storyboard that documents Joe's point of view and experience.

Break the user's process into steps/stages Break

Joe's experience into small steps and analyze each for opportunities where

The Story of Joe User Part Two: Design for Joe



Troubleshooting

Are your users having trouble with your design? Use this troubleshooting guide to identify possible problems:
[Design solution goals and applied strategies (from indd chart)]

User considerations

Nielsen: Learnability, efficiency, memorability, errors, satisfaction

Norman: visibility, mapping, affordances, constraints, conceptual model, feedback, memory required, errors, forcing functions

The Graphic Design Users Manual

Your Guide to Understanding Joe User
and User-Centered Design

Welcome!

This guide will help you to familiarize yourself with the features of your user. By learning about your user at the beginning of your design process, you can incorporate his needs into your design, so the final product is useful and usable, meeting his needs and helping him achieve his goals.

Before You Begin

Please take a moment to familiarize yourself with the following terms that are used throughout this guide.

Affordance

the perceivable use of an object

Caution

warn or alert, usually of something dangerous

Design Process

the series of actions taken when developing a design

Function

performing in a manner that fulfills an intended purpose

Inform

give knowledge

Instruct

guide, usually through a systematic process

Object-Oriented Design

design that is centered around the final object

Usability

the ability of an item to function in relation to its user

User

the person who uses a graphic design solution

User-Centered Design

design that is centered around the final audience and takes user considerations into account throughout the design process

Understanding User-Centered Design

As a designer, you can help make people's lives easier, but how? In order to help, you can take a user-centered approach to design by first understanding the user's goals and behavior; then you can develop designs that work for the user. User-centered design solutions are functional and useful because the user's needs provide a framework for the design process.

When Function is Critical

A user-centered process results in design solutions that are functional. Not all graphic design solutions should emphasize function; therefore not all graphic design should take a user-centered approach. However, when a design's goal is to caution, inform, or instruct, then function is critical, and a designer should take into account the user's needs and behavior in order to ensure that the design is usable.

Inform

- spatial understanding
maps
- communicate complex information clearly and accurately
diagrams
graphs
matrices
charts
typography

Instruct

- gather information from the user
forms
- demonstrate an object's functions and controls
- direct the user and help the user navigate through a space
wayfinding
graphical user interfaces

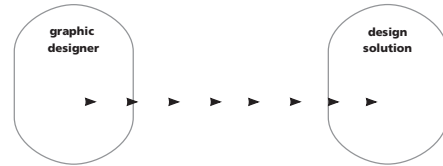
Caution

- warn users of danger
warning labels
- provide users with directions in case of danger
emergency exit maps
emergency signage

- guide the user through a series of steps
sequential directions

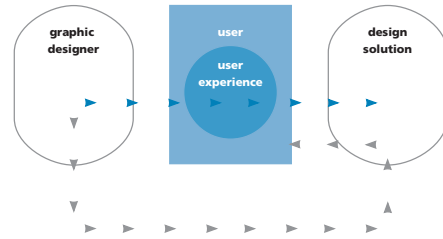
The Design Process

The design process is the series of actions you take when developing a piece of graphic design. It begins with the designer and ends with the final graphic design solution. What comes in between is up to you.

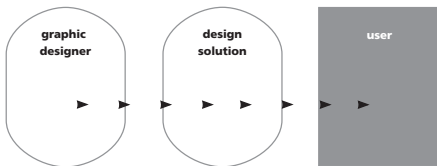


There are many ways you can approach developing a graphic design solution.

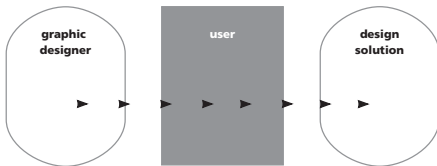
You can begin by designing an object and then giving it to your user. Or you can place the user at the center of your process by first understanding their needs and behavior and then design the object based on this information. This is a user-centered approach to design.



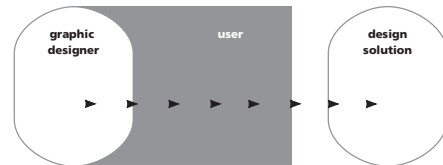
You can bring the user into your design process at many points. You can introduce the user at the very end, when the object is finished.



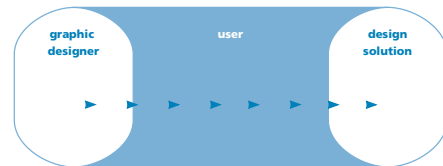
You can begin by designing an object and then give it to your user for their input. You can then alter your design based on their suggestions.



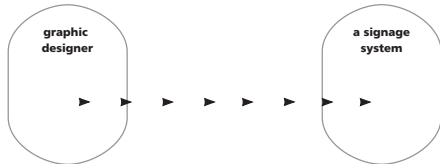
You can begin by evaluating your user and then developing your design.



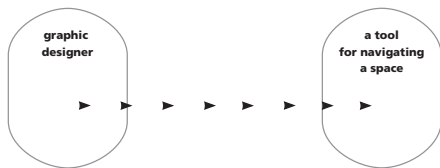
Or you can incorporate the user into the entire process, and he can evaluate the design throughout its development.



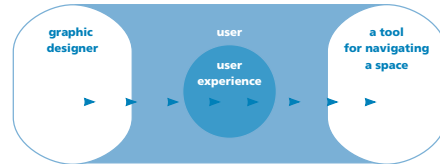
The goal of the design solution is another defining characteristic of different design processes. You can take an object-oriented approach, by focusing on designing a specific item, such as a book or a sign.



Or you can take an experience-driven process and try to create an experience. This may result in a book or a sign, but the emphasis is first on defining an environment and the user's interaction with the design, rather than its physical format.



This guide recommends taking a user-centered and experience-oriented approach to design that involves the user throughout the graphic design process. This will result in usable, useful designs.



The Process of Understanding Your User

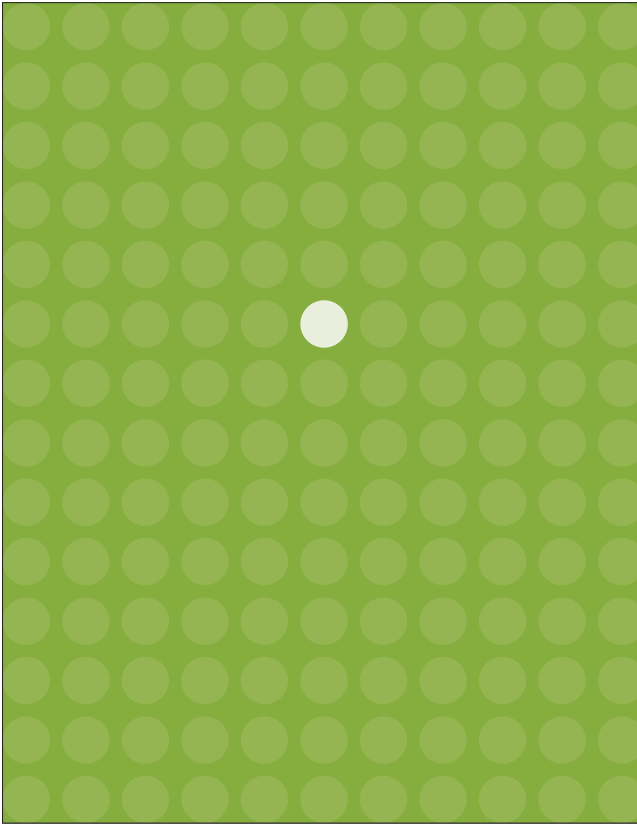
When gathering information on your user, you should begin by familiarizing yourself with him. In this stage, you will gather general information about who your user is and how he behaves. After you have gathered general information about your user, you can use it to define your user's goals.

From these goals you can develop design prototypes, which can be shown to the user to see their reactions and if your design helps him achieve his goals. If not, then continue in the cycle until you develop a design that works for your user.



This guide deals with learning about the user and his behavior.





Getting Started

Now that you are comfortable with the role of the user within the user-centered design process, you can now begin to learn about your user. This chapter provides explanations and instructions for gathering and analyzing information about your user.

Meet Joe User

In order to design for Joe User, it is important to develop a detailed user profile of who Joe is and how he interacts with his environment. This profile should include:

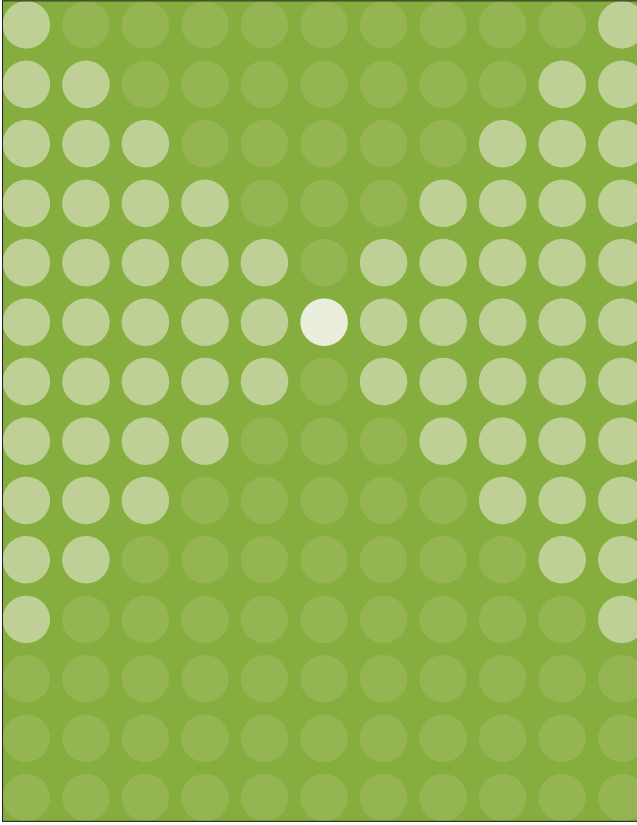
who
age, gender, experience, skills, occupation, language, nationality

context
when, where

goals
purpose, expectations, what he wants to achieve

motivation
attitude, response to pressure

It can be helpful to write scenarios or stories documenting Joe and his experiences. This will help you to truly understand Joe and to keep him in mind throughout the design process.



Familiarizing Yourself with Joe User

In order to develop a profile for Joe, you must first gather preliminary information. There are three different ways that you can gather information on Joe: observation, interaction, and participation. You can use just one approach, or combine them.

Option One: Observation
You can collect information on Joe from a distance, by observing him in context and noticing what comes naturally to him and where he has trouble. There are many options...

- **Shadowing**
Watch Joe from afar without his knowledge.
- **Known Participant Observation**
Watch Joe, but make sure he is aware that you are there.
- **Behavioral Mapping**
Take pictures of Joe and other people in context over a period of a few days.
- **Usage Studies**
Watch how Joe interacts with design prototypes.
- **Usability Testing**
Find others similar to Joe and watch them performing similar tasks.
- **Tracking Interactions**
Track Joe's step-by-step experience to see how he proceeds through a task.

Option Two: Interaction

Another way to learn about Joe is by interacting with him or others like him.

- **Storytelling: Interview**
Ask Joe to tell stories about his personal experiences related to the design problem.
- **Storytelling: Photographic Journals (Visual Stories)**
Give Joe a camera and ask him to take pictures of his experiences.
- **Storytelling: Log Book/Journal (Written Stories)**
Give Joe a log book and ask him to record his experiences in writing.
- **Surveys and Questionnaires**
Joe fills out surveys and questionnaires.
- **Interview: User**
Talk to Joe to discuss his experiences. Use probes to encourage him to respond more clearly and/or meaningfully. Be careful not to lead Joe to answers.
- **Interview: Representative User**
Talk to people similar to Joe to learn about their experiences.
- **Interview: Group**
Talk with a group of representative users. Try to do this in context so that their answers are as accurate as possible because talking in an artificial situation can lead to artificial answers.
- **Semantic Differential**
Ask Joe and other representative users to rate experiences on a linear scale to find the average answers.
- **Record the User Speaking About His/Her Actions While Performing a Task**
Joe performs tasks related to the design problem and is recorded talking throughout the task.

Option Three: Participation

You can also learn about Joe by yourself by looking at the situation from Joe's point of view. You can put yourself into Joe's shoes in order to understand his state of mind and to see things through his eyes.

- **Walk in the User's Shoes**
Participate in Joe's experience by placing yourself in the situation to see first-hand where there are difficulties.
- **Visualization**
Picture yourself as Joe. Try to understand where he might have problems. Or look from a different point of view. Try to step back from the situation and get a birds-eye view to help widen your field of perspective and find different solutions.
- **Ask Why? Ask Why Not?**
Ask yourself why Joe acts in certain ways. Why does he do certain things? Why does he not do others?
- **Role Playing**
Pretend to be Joe. Also pretend to be anyone else involved in the experience.
- **Understand Yourself**
Not everyone is like you. Try to understand your own biases that might impact your perception of the situation. Try to remember what it's like to be in Joe's situation – remember what it's like not to know.

Analysis and Synthesis

After gathering information, you can then use it to determine Joe's needs and to develop design solutions.

Understand Influences on the User

Try to understand cultural, social, and other influences on Joe.

Develop User Personas

Create a profile for Joe that outlines his characteristics, needs, goals, motivation, and behavioral patterns.

Modeling Research

Make a collage of images that represent Joe and his goals. Or make a collage helps visualize Joe's tone and emotions.

Document the User's Experience/Process

Record Joe's process to see how he approaches a situation and analyze it for opportunities where design can help make things easier.

Storyboarding

Create a visual story depicting Joe's experience from her own point of view.

Map the system from the user's perspective

Develop a storyboard that documents Joe's point of view and experience.

Break the user's process into steps/stages

Break Joe's experience into small steps and analyze each for opportunities where design can help.

Determine a user's goals and performance standards and develop solutions to meet those goals

Think in verbs, not nouns

Identify Joe's goals using a verb. This lets you think more broadly and avoid an object-oriented solution.

Organize information

Organizes the information so the details most important to Joe are given emphasis, which will help facilitate his understanding.

Celebrate Human Behavior

Look at the way Joe actually does things and uses this information to guide your design. You don't want to change his behavioral patterns, but instead use them productively.

Designing

Your next step is to use the information you have learned about Joe to make design solutions that work for him.



This step might include developing use cases and design scenarios. After you start designing, run your prototypes by the user to gauge his reaction. This phase in the design process is not discussed in detail in this guide, since it deals with design methods, rather than strategies

Troubleshooting

Are your users having trouble with your design?
Use this troubleshooting guide to identify possible problems:

design solution goals

- functionality
- satisfaction
- visibility
- readability
- legibility
- divided/focused
- retrieval vs. recall
- efficiency
- cognitive mapping
- errors
- slips

strategies

- affordances
- cues
- coding
- conceptual model
- Gestalt principles
 - proximity
 - similarity
 - closure
 - continuity
 - symmetry
- cognitive aids
- hierarchy/organization
- feedback, alerts
- focus attention
- most important information prominent
- increase motivation
- increase activity
- consistency
- affordances
- meaningful relationships
- cognitive aids for recall
- chunking
- natural constraints
- limit choices
- limit options
- logical mapping
- functional fixedness
- constraints
- feedback for errors
- natural thinking scripts
- cultural constraints
- standardization

Colophon



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C Theories Chart	27
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User Considerations for Graphic Design Problem Solving

Neva Corbo-Hudak

Thesis Progress Presentation

February 2, 2005

Graduate Graphic Design MFA Program

School of Design

College of Imaging Arts and Sciences

Rochester Institute of Technology

Thesis Progress Presentation

Thesis Definition

Goals

Research and Synthesis

Concept Development

Ideation and Application

Next Steps

Definition of Terms

- user
- user-centered design
- experience design
- usability

Thesis Definition

This thesis investigates methods and strategies that can be applied to graphic design in order to better understand a user or population of users.

Inspiration

Donald Norman
*The Design of
Everyday Things*

“If everyday design were ruled by aesthetics, life might be more pleasing to the eye but less comfortable; if ruled by usability, it might be more comfortable but uglier. If cost or ease of manufacture dominated, products might not be attractive, functional, or durable. Clearly, each consideration has its place. Trouble occurs when one dominates all the others”

Richard Saul Wurman
InformationAnxiety2

“Despite the critical role that graphic designers play in the delivery of information, most of the curriculum in design schools is concerned with teaching students how to make things look good. This is later reinforced by the profession, which bestows awards primarily for appearance rather than for understandability or accuracy.”

Inspiration

Edward Tufte
*The Visual Display
of Quantitative
Information*

“Misleading graphics are a direct result of “the skills, attitudes, and organizational structure prevailing among those who design and edit statistical graphics... Many graphic artists believe that statistics are boring and tedious [and] believe graphic displays should divert and entertain those in the audience who find the words in the text too difficult.”

Paul Rand
A Designer's Art

“Visual communications of any kind... should be seen as the embodiment of form and function: the integration of the beautiful and the useful.”

Alan Cooper

“Cool is not a good design reason.”

Personal Impact

- graphic design can be used to help others
I want to do that!
- make connections between disciplines
very interesting
- I like the topic and want to learn about it

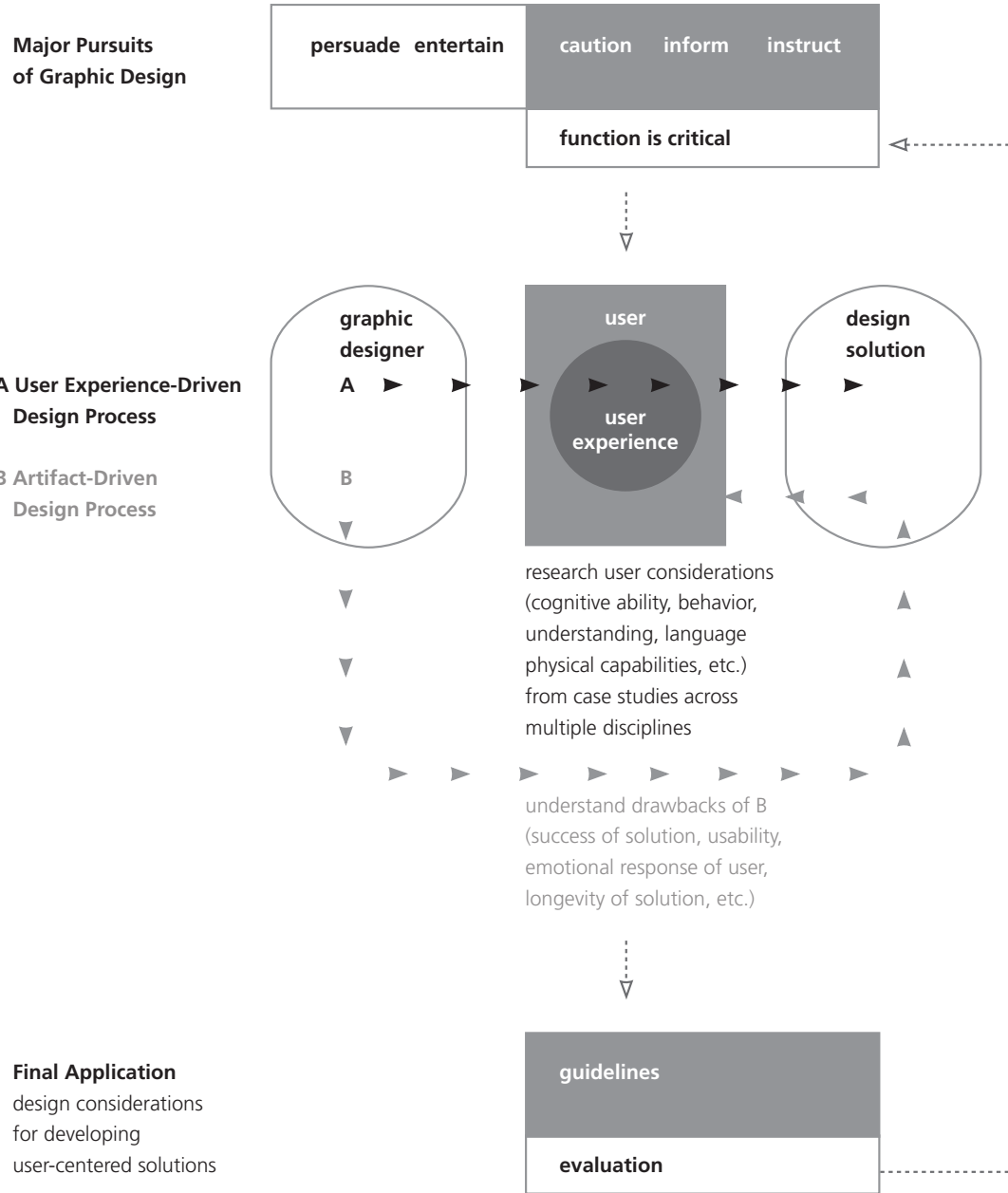
Thesis Content (Graphic Design Problem)

To define methods and strategies that can be used by graphic designers during the design process to understand their target user

Outside Content (Application)

To develop a set of guidelines that can be used by graphic designers in order to better understand and take into account their users

Thesis Definition



Goals

This thesis will investigate what can be done to increase awareness of user-centered principles as they relate to graphic design problem solving and to act on these findings with the ultimate goal of improving user experiences.

What I Hope to Accomplish

- define usability within graphic design
- explain the meaning and benefits of user-centered graphic design to designers and the general public
- explain the interrelationships between user-centered design and usability
- provide graphic designers with a set of guidelines for developing design solutions focused on the user

Intended Outcomes

- develop an understanding of usability terminology
- identify user attributes and considerations that can be used in the design process
- demonstrate the importance of usability in graphic design and other disciplines
- communicate current thinking and theories on user-centered design
- explain when graphic design problems have a functional requirement and, therefore, require usability considerations
- determine when graphic design alone can be expected to function and when external factors could impact the success of a solution
- present and distribute user consideration guidelines to the graphic design community

Contribution to Graphic Design

From this research, graphic designers will be provided with a set of guidelines that offer information on developing solutions that take into account user experience

Research and Synthesis

What information has been gathered or reviewed?

What was done with this information?

What new thinking came out of this research?

Methods for Gathering Information

- survey of literature
 - journals
 - books
 - websites
 - case studies
- content analysis
- face-to-face interviews
- email interviews and requests for resources
- matrices
- diagrams

Information Gathered: Key Sources

Graphic Design

- AIGA Experience Design Community
- Design for Democracy: Election Design Initiative
Marcia Lausen, graphic design director
- Agnew Moyer Smith
- London Underground subway map design and evaluation
Henry Beck, designer

Industrial Design

- Donald Norman
- IDEO; product, services, environment, and digital experience design company

Programming and Digital Media

- Alan Cooper
- Jakob Nielsen

Information Design

- Edward Tufte
- Richard Saul Wurman

Other Disciplines

- Anthropology
- Cognitive Psychology
- Engineering
- Sociology

Information Gathered: Key Sources

Donald Norman

“All good design involves seeing things from the point of view of the user of the design”

IDEO

“...celebrate human behavior... channel that urge into a more productive pattern.”
“Innovation begins with an eye”

Alan Cooper

“...understanding the user by understanding their goals.
And understanding their goals by understanding the user.”

Agnew Moyer Smith

“Get lost.”

Graphic Design Functions

What are the main purposes and goals of graphic design solutions?

Inform

- spatial understanding
maps (weather, geographic)
- communicate complex information clearly and accurately
diagrams
graphs
matrices
charts
typography

Instruct

- gather information from the user
forms
- demonstrate an object's functions and controls
- direct the user and help the user navigate through a space
wayfinding
graphical user interfaces
- guide the user through a series of steps
sequential directions

Caution

- warn users of danger
warning labels
- provide users with directions in case of danger
emergency exit maps
emergency signage

Key Methods and Strategies

- observe the user in context
- think in verbs, not nouns
- track the user's experience (step-by-step)
- become the user, remember what it is like not to know
- understand yourself first
- provide feedback
- let users know when they make an error
- organize information and make it accessible
- make important information/functions visible

Understanding the User and the User's Experience/Process

Familiarization: Initial Audit and Information Gathering

Participation

- put yourself in the user's shoes
- look from the user's point of view
- participate in the experience
- understand the user's state of mind
- see the world through the eyes of the user

methods

- "get lost"
- visualize yourself as the user
- role playing
- participant observation
- understand yourself – not everyone is like you

Interaction

- interviewing current users
- interviewing target users
- interview colleagues, friends, and family

- semantic differential
- ask why? ask why not?
- listen
- storytelling
- surveys/questionnaires
- record the user speaking about his/her actions while doing a task

Observation

- testing prototypes on real users
- testing prototypes in context
- notice the rule breakers

- shadowing
- known participant observation (in context)
- usability testing
- usage studies
- consumer journey (tracking interactions)
- storytelling:
 - photo journals (visual stories)
 - log book/journal (written)

Understanding the User and the User's Experience/Process

Refinement: Analysis and Synthesis

- determine user's goals and performance standards and develop solutions to meet those goals
 - understand influences on the user (cultural, societal, etc)
 - document the user's experience/process
- methods**
- think in verbs, not nouns
 - understand the user by understanding their goal; understand the goal by understanding the user
 - organize information:
 - hatracks
 - patterns/logical groupings
 - matrices
 - semiotic model
 - visual representation
 - develop user personas (characteristics, needs, goals, motivation, and behavioral patterns)
 - modeling research:
 - photographic collage
 - storyboarding
 - map the system from the user's point of view
 - break the user's process into steps/stages, then analyze for opportunities where design can help

Concept Development

What concepts have been developed so far for the thesis application?

Guidelines

Provide a set of guidelines and/or user considerations for graphic designers

Ideation and Application

What has been done so far?

Possible Applications

booklet

brochure

deck of cards

set of tags

poster

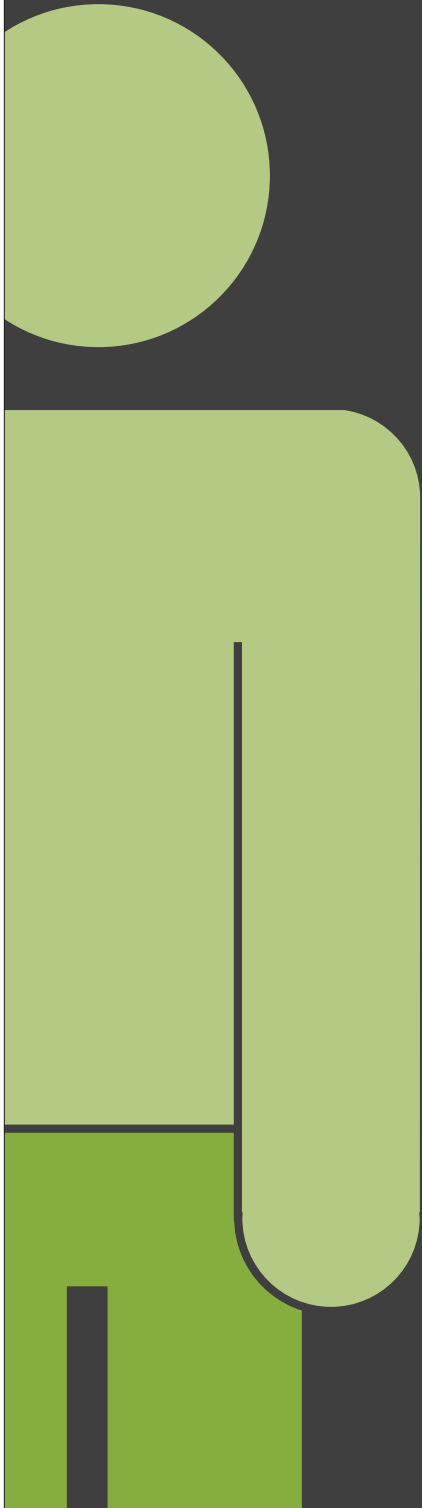
Next Steps

- additional application ideation
look at designer's work space to determine what application is best, what fits, etc
- design the application
- external audit
- preliminary evaluation
continue interviewing
work-in-progress gallery exhibit (March 4 – mark your calendars!)
- writing thesis documentation

Thank you! Any questions?

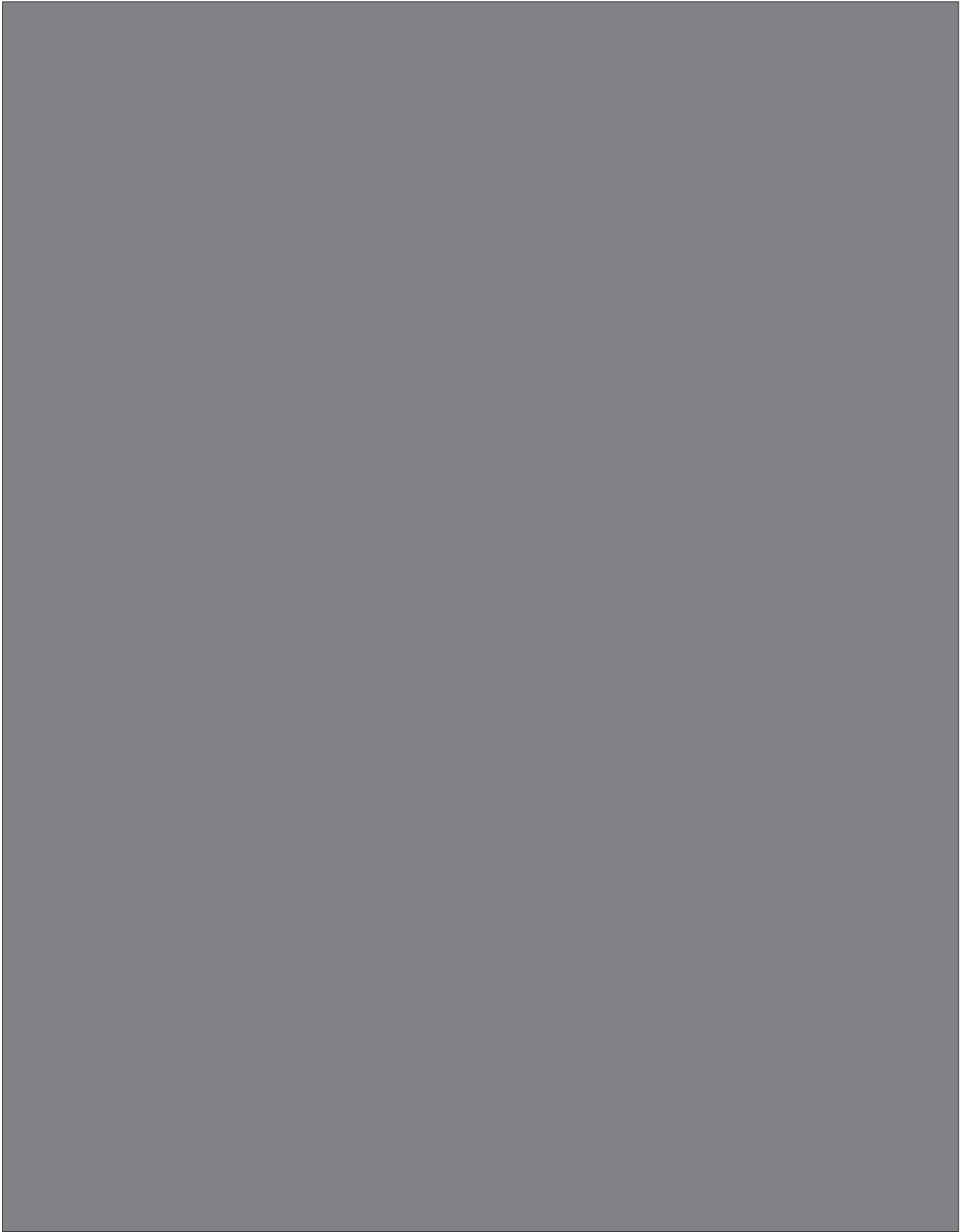
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The Graphic Design Users Manual

Strategies for Learning about a User
for the Graphic Design Process



Welcome!

This guide will help you familiarize yourself with the features of Joe User. Joe represents the target user of a graphic design problem. You can use knowledge of Joe's character traits, behavioral tendencies, and goals as a framework around which you develop your design solution. By learning about Joe at the start of your design process, you can incorporate his needs into your design, so the final product is useful and usable, meeting his needs and helping him achieve his goals.

There is a misconception that user testing is expensive, requires special equipment, and is time consuming. While this is true in some cases, there is a wide range of options, from a formal contextual inquiry to a quick, informal study.

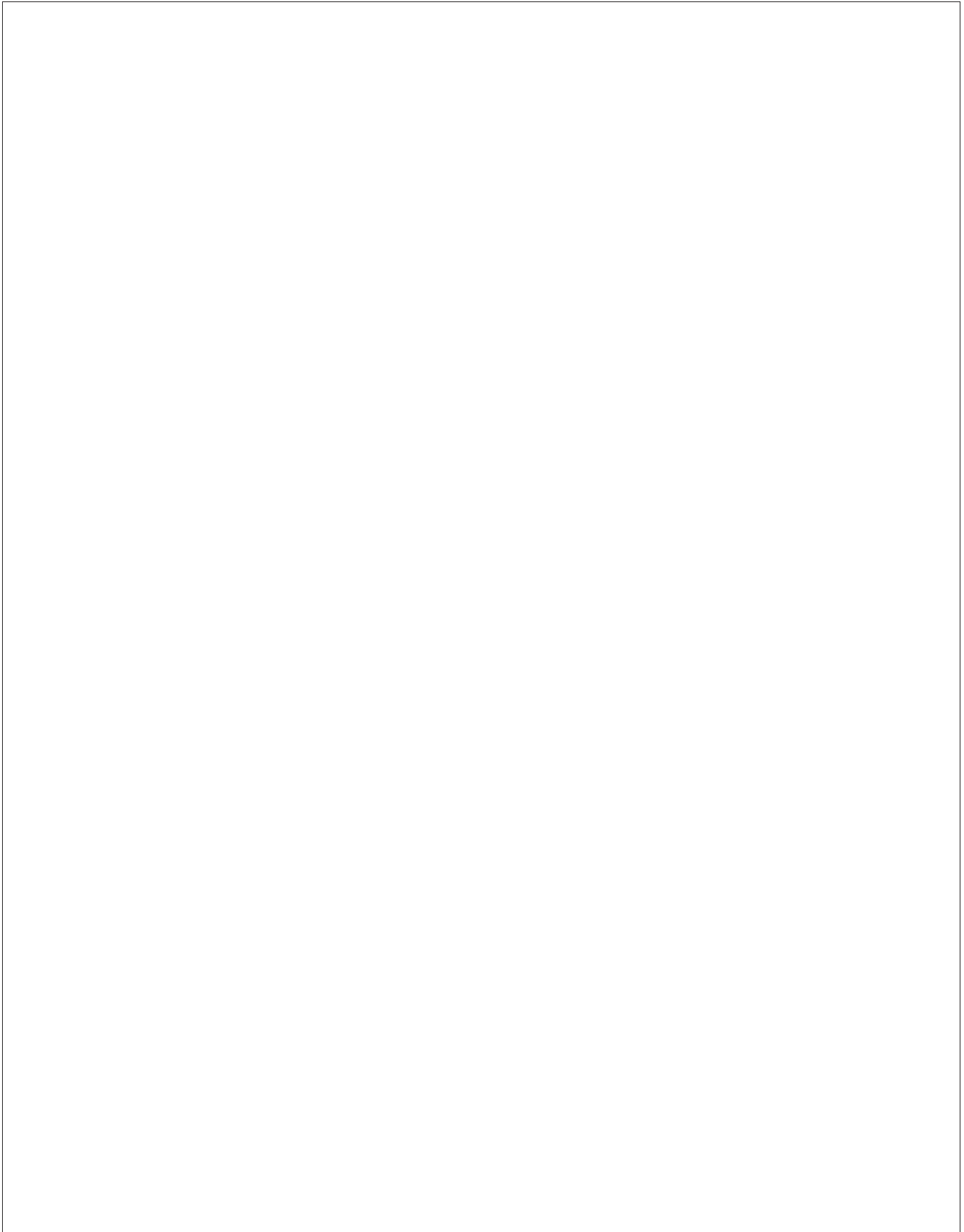
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- 5 Understanding User-Centered Design
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- 14 Familiarizing Yourself with Joe User
- 20 Analysis and Synthesis
- 23 Implementation: A Case Study
- 26 Troubleshooting Terms
- 27 Troubleshooting
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Note

Please note that these guidelines are not a formula for success or step-by-step instructions, but a set of strategies that can be incorporated into the graphic design process in order to learn about a user.

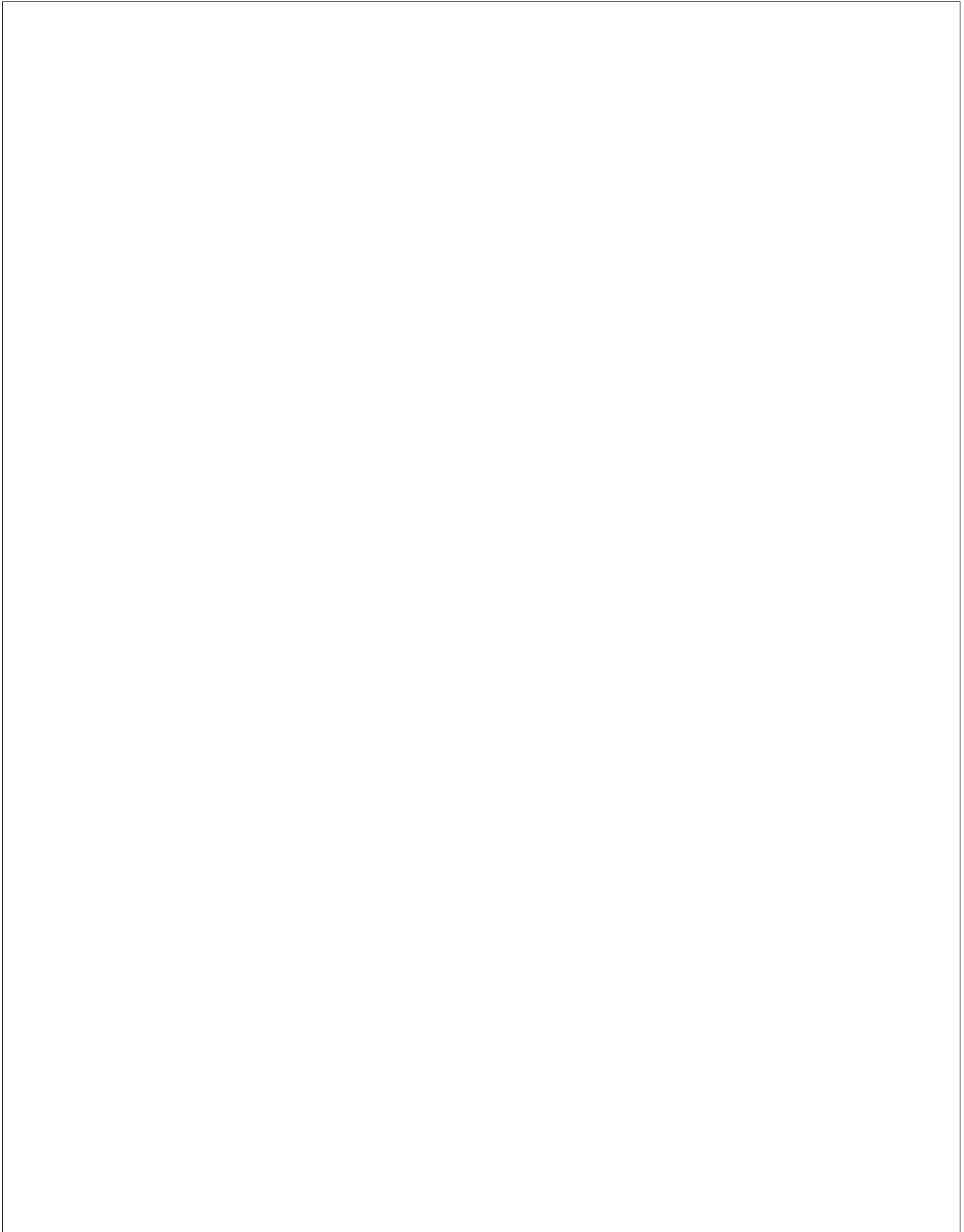
It is also important to note that there is usually more than one kind of user for a design problem, and, therefore, more than one Joe. The strategies for learning about Joe can also be applied to learning about Josephine, Andy, Doris, and other users.



Before You Begin

Please take a moment to familiarize yourself with the following terms that are used within this guide.

Caution	warn or alert, usually of something dangerous
Design Process	the series of actions taken when developing a design
Function	performing in a manner that fulfills an intended purpose
Inform	give knowledge
Instruct	guide, usually through a systematic process
Object-Oriented Design	design that is centered around the final object
Usability	the ability of an item to function in relation to its user
User	the person who uses a graphic design solution
User-Centered Design	design that is centered around the final audience and takes user considerations into account throughout the design process

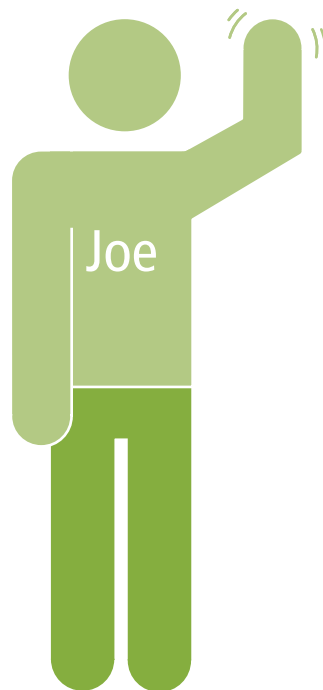


Understanding User-Centered Design

As a designer, you can help make people's lives easier and enable them reach their goals, but how? In order to help, you can take a user-centered approach to design by first understanding the user's goals and behavior; then you can develop designs that work for the user. User-centered design solutions are functional and useful because the user's needs provide a framework for the design process.

Meet Joe User

This is Joe User. Joe interacts with graphic design every day. Sometimes design is extremely helpful, but at other times it causes him unnecessary frustrations. As a designer, it is important to understand Joe and his behavior in order to develop designs that work for Joe and meet his needs.



When Function is Critical

A user-centered process results in design solutions that that are functional. Not every graphic design solution should emphasize function, therefore, it is not necessary for every graphic design problem to take a user-centered approach; however, when a design's goal is to **caution**, **inform**, or **instruct**, then function is critical. In these instances, a designer should take into account Joe User's needs and behavior in order to ensure that the design is usable.

Caution

- warn users of danger
warning labels
- provide users with directions in case of danger
emergency exit map
emergency signage

Inform

- spatial understanding
maps
- communicate complex information clearly and accurately
graphs
diagrams
matrices
charts
typography

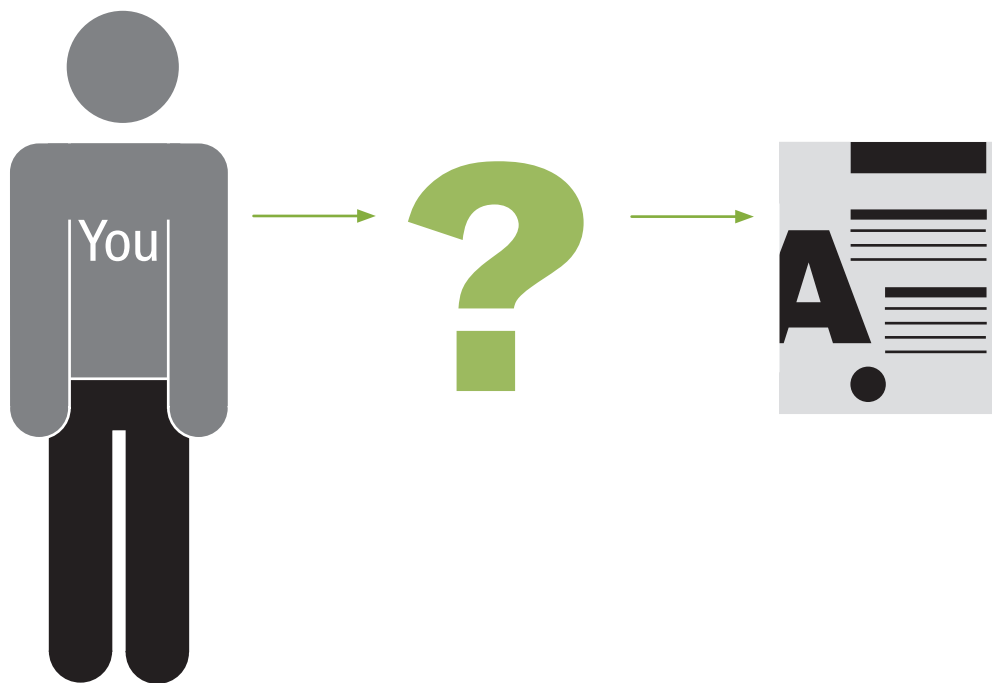
Instruct

- gather information from the user
forms
- demonstrate an object's functions and controls
- direct the user and help the user navigate through a space
wayfinding
graphical user interfaces
- guide the user through a series of steps
sequential directions

A design may have one communication goal or a mix of different goals; it will not necessarily fall into only one of these categories, but may instead span many. It is important in situations where function is critical to consider the user throughout the design process.

The Design Process

The design process is the series of actions you take when developing a graphic design solution. It begins with the designer and ends with the final graphic design. What comes in between is up to you.

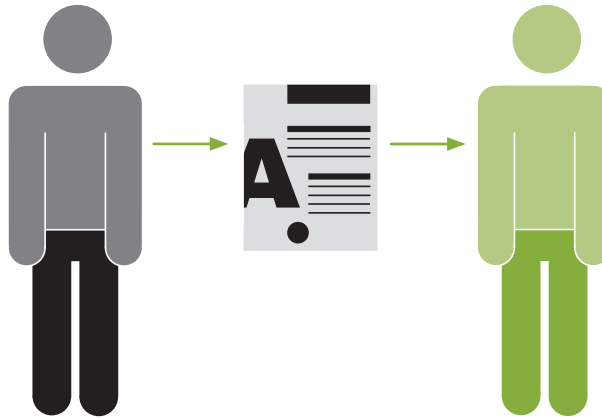


You need to determine where Joe fits into your process. You can begin by designing an object and then giving it to Joe.

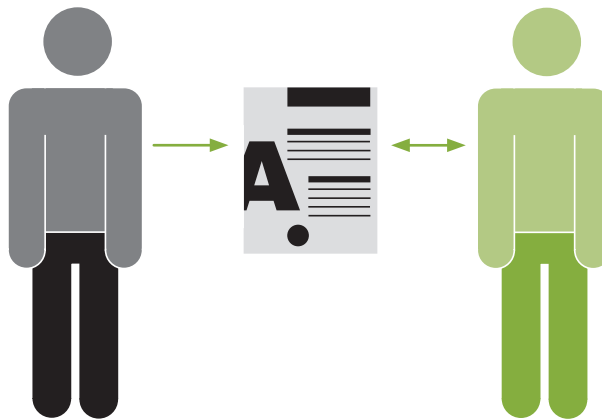
Or you can place Joe at the center of your process by first understanding his needs and behavior and then develop your design based on this information. **This is a user-centered approach to design.**

You can bring Joe User into your design process at many points.

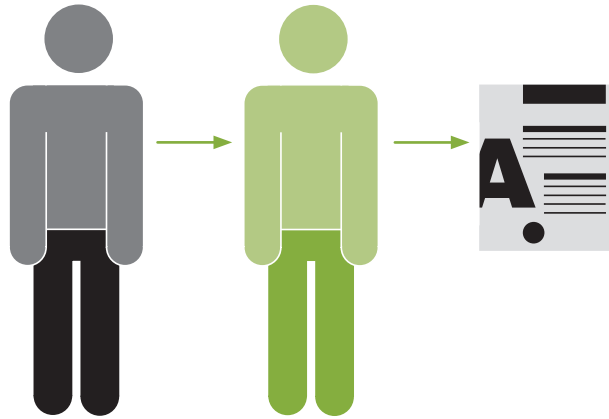
You can introduce Joe at the very end of your process when the object is finished.



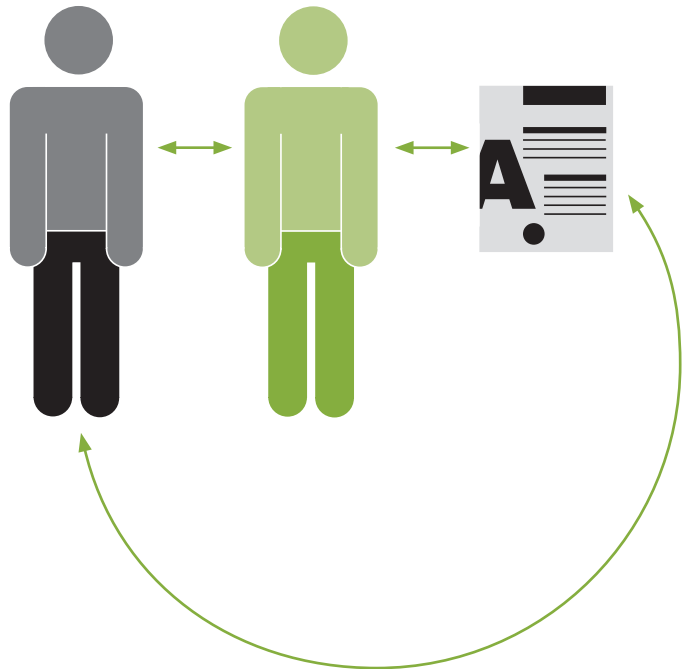
You can begin by designing an object and then give it to Joe for his input. You can then alter your design based on his suggestions and comments.



You can begin by evaluating Joe User and then developing your design based on what you have learned.



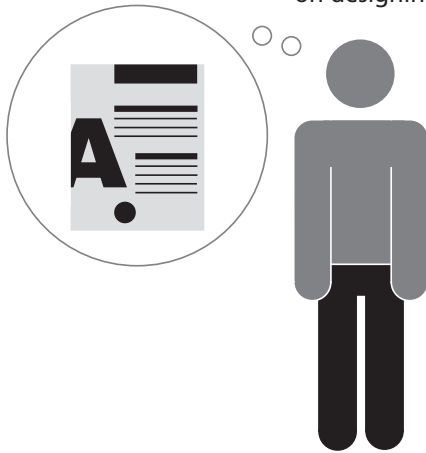
Or you can incorporate Joe into the entire process, and he can evaluate the design throughout its development.



The goal of the design solution is another defining characteristic of different design processes.

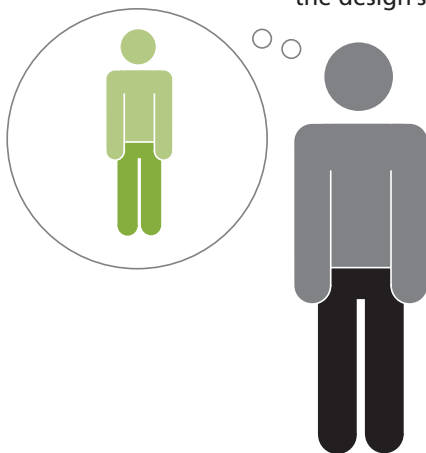
Object-Oriented Approach

You can take an object-oriented approach, by focusing on designing a specific item, such as a book or a sign.

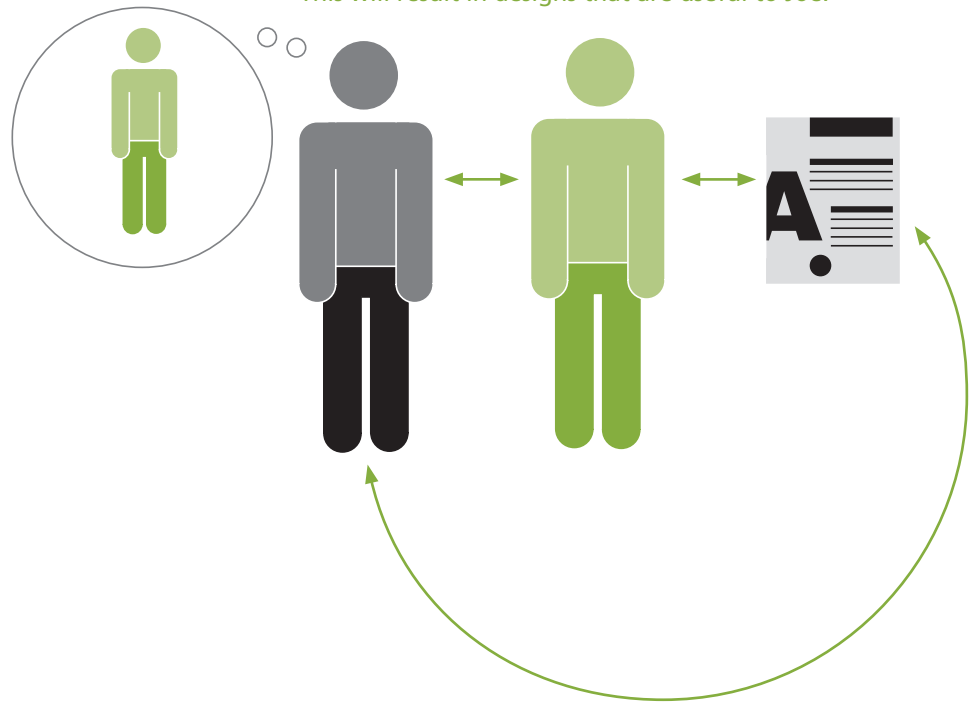


Experience-Driven Approach

Or you can take an experience-driven process and design an experience for Joe. This may result in a book or a sign, but the emphasis is first on defining an environment and Joe's desired interaction with the design, rather than the design's physical format.



This guide recommends taking a user-centered and experience-oriented approach to design that involves the user throughout the graphic design process. This will result in designs that are useful to Joe.



Joe User

height
6' 2"

education
undergraduate degree

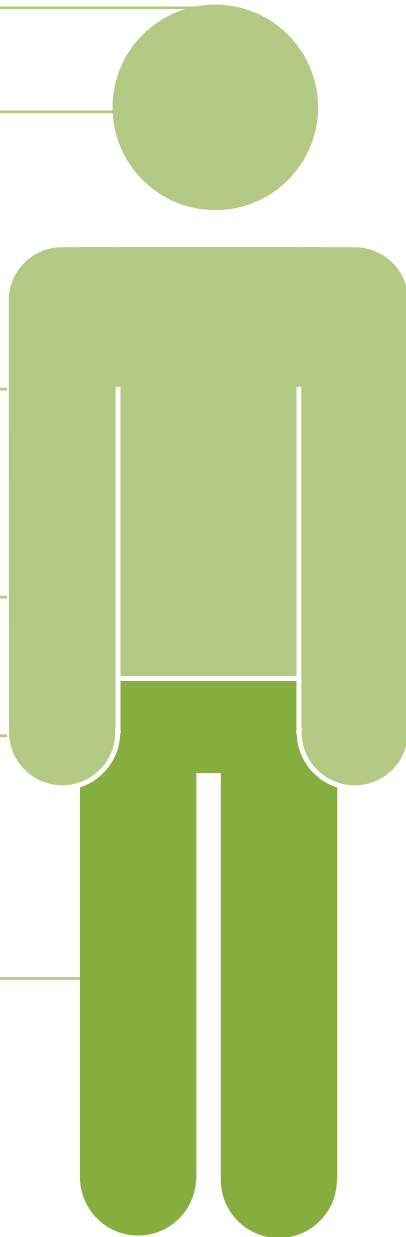
goal
find way around building

weight
185 lbs

gender
male

mobility
good

context
unfamiliar location



Getting Started

Now that you are comfortable with the role of the Joe User within the user-centered design process, you can now begin to learn more about him. This chapter provides explanations and instructions for gathering and analyzing information about him.

The Process of Understanding Joe User

When gathering information on Joe User, you should begin by familiarizing yourself with him. In this stage, you will gather general information about who Joe is and how he behaves. After you have gathered general information, you can use it to define his goals.

The next step, which is touched upon briefly towards the end of this guide, is to use the information you have gathered about Joe and his goals as a framework for developing design prototypes. These designs can be shown to Joe to see his reaction and to determine if your design helps him achieve his goals. This guide deals with this first portion of the user-centered design process.

Design for Joe User

In order to design for Joe User, it is important to develop a detailed user profile of who Joe is and how he interacts with his environment. This profile should include:

who	age, gender, experience, skills, occupation, language, nationality
context	when, where, with whom, surrounding objects, frequency of use, criticalness
goals	purpose, expectations, what he wants to achieve
motivation	attitude, response to pressure

It can be helpful to write scenarios or stories documenting Joe and his experiences. This will help you to understand Joe and to keep him in mind throughout the design process.



OBSERVATION

Familiarizing Yourself with Joe User

In order to develop a profile for Joe, you must first gather preliminary information. There are three different strategies that you can use during this step: **observation, interaction, and participation.** You can use just one option, or combine them.

Strategy One: Observation

You can collect information on Joe from a distance, by observing him in context and noticing what comes naturally to him and where he has trouble.

Shadowing

Watch Joe from afar without his knowledge.

Known Participant Observation

Watch Joe, but make sure he is aware that you are there.

Behavioral Mapping

Take pictures of Joe and other people like Joe in context over a period of a few days.

Usage Studies

Watch how Joe interacts with design prototypes.

Usability Testing

Find others similar to Joe and watch them performing similar tasks.

Tracking Interactions

Track Joe's step-by-step experience to see how he proceeds through a task.



INTERACTION

**Option Two:
Interaction**

Another way to learn about Joe is by interacting with him or others like him.

**Storytelling:
Interview**

Ask Joe to tell stories about his personal experiences related to the design problem.

**Storytelling:
Photographic Journals
(Visual Stories)**

Give Joe a camera and ask him to take pictures of his experiences.

**Storytelling:
Log Book/Journal
(Written Stories)**

Give Joe a log book and ask him to record his experiences in writing.

Surveys and Questionnaires

Have Joe and others like him complete surveys and questionnaires. Be sure to carefully design the survey to ensure that the information gathered is relevant and your results are qualitatively accurate.

**Interview:
User**

Discuss with Joe his experiences. Use probes to encourage him to respond more clearly and/or meaningfully. Be careful not to lead Joe to answers.

**Interview:
Representative User**

Talk to people similar to Joe to learn about their experiences.

**Interview:
Group**

Talk with a group of representative users. Try to do this in context so that their answers are as accurate as possible, because talking in an artificial situation can lead to artificial answers.

Semantic Differential

Ask Joe and other representative users to rate experiences on a linear scale to find the average answers.

Speaking while Performing

Record Joe talking while performing a task related to the design problem.



PARTICIPATION

**Option Three:
Participation**

You can also learn about Joe by yourself by looking at the situation from Joe's point of view. You can put yourself into Joe's shoes in order to understand his state of mind and to see things through his eyes.

Walk in the User's Shoes

Participate in Joe's experience by placing yourself in the situation to see first-hand where there are difficulties.

Visualization

Picture yourself as Joe. Try to understand where he might have problems. Or look from a different point of view. Try to step back from the situation and get a birds-eye view to help widen your field of perspective and find different solutions.

Ask Why? Ask Why Not?

Ask yourself why Joe acts in certain ways.
Why does he do certain things?
Why does he not do others?

Role Playing

Pretend to be Joe. Also pretend to be anyone else involved in the experience.

Understand Yourself

Try to understand your own biases that might impact your perception of the situation. Not everyone is like you. Try to remember what it's like to be in Joe's situation – remember what it's like not to know.

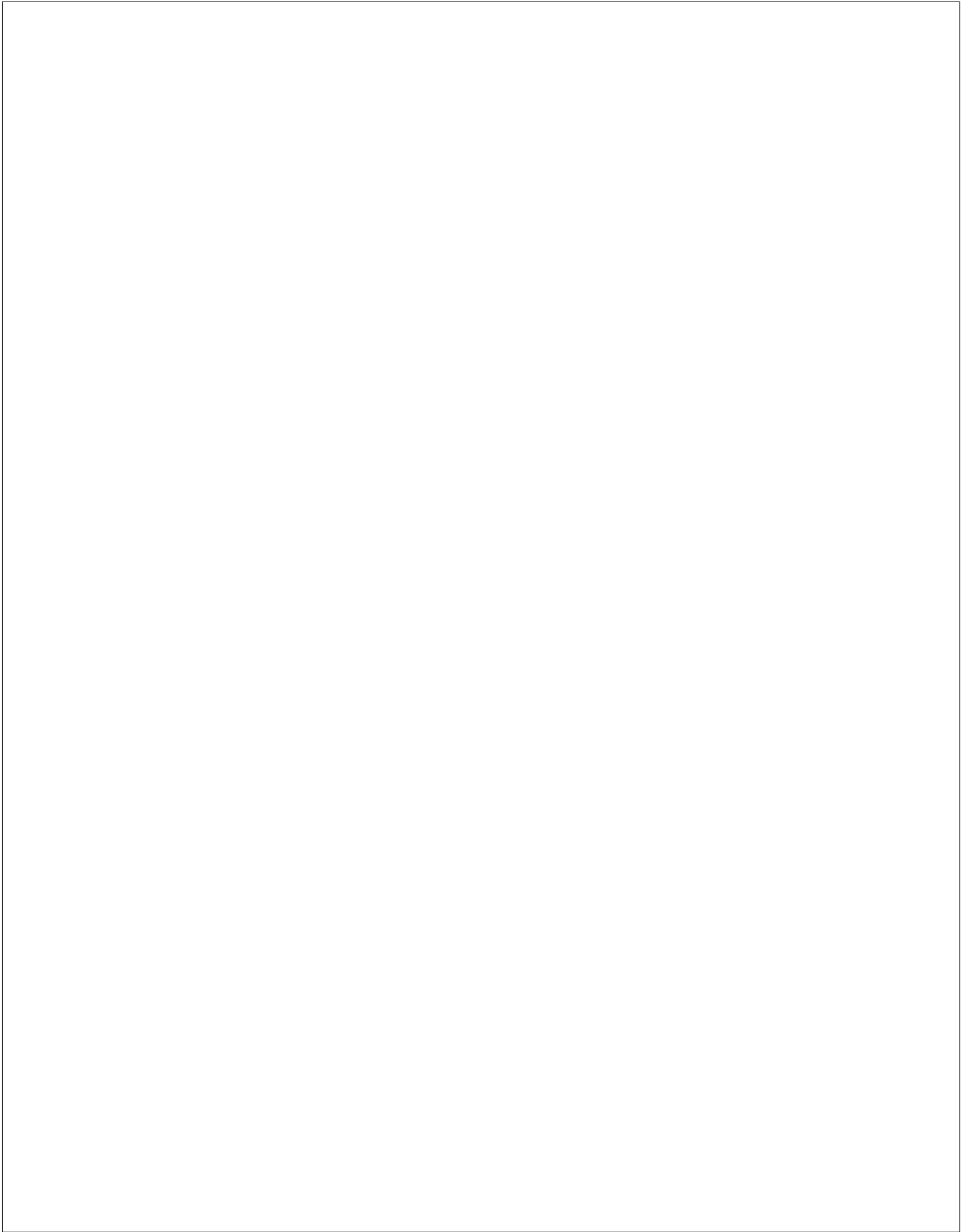


UNDERSTÄNDING

Analysis and Synthesis

After gathering information, you can then use it to understand Joe's needs and behaviors.

Understand Influences on the User	Try to understand the cultural, social, and other external influences on Joe.
Develop User Personas	Create a profile for Joe that outlines his characteristics, needs, goals, motivation, and behavioral patterns.
Modeling Research	Make a collage of images that represent Joe and his goals. Or make a collage helps visualize Joe's tone and emotions.
Document the User's Experience/Process	Record Joe's process to see how he approaches a situation and analyze it for opportunities where design can help make things easier.
Storyboarding	Create a visual story depicting Joe's experience from your own point of view.
Map the system from the user's perspective	Develop a storyboard that documents Joe's point of view and experience.
Break the user's process into steps/stages	Break Joe's experience into small steps and analyze each for opportunities where design can help.
Determine a user's goals and performance standards	Use the information you have gathered on Joe to identify his goals and his desires. Then develop design solutions to meet those needs.
Think in verbs, not nouns	Identify Joe's goals using a verb. This lets you think more broadly and avoid an object-oriented solution.
Organize information	Organize the information so the details most important to Joe are given emphasis, which will help facilitate his understanding.
Celebrate Human Behavior	Look at the way Joe actually does things and use this information to guide your design. You don't want to change his behavioral patterns, but instead use them productively.



Implementation: A Case Study

You are working on redesigning the United States tax forms. Because the variety of people who use tax forms is broad, you divide the population into smaller groups of users to better understand for whom you are designing.

Major groups of users include accountants and other paid tax preparers, unpaid preparers (such as relatives), and those who handle their own taxes. Within this last group there is a wide variety of subgroups, from individuals who are assisted by computer programs to those who carry out the entire process by hand. In order to make your design appropriate for the widest audience, you decide to gear your design to a user who:

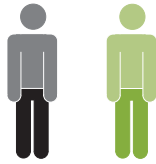
- has a high school education
- is between 40 and 55
- prepares her taxes manually
- has items to declare
- feels able to complete the task but is frustrated by the process and
- feels responsible for making errors or misunderstanding the forms.

In order to make this persona come alive, you name her Jean and try to think of her as an individual throughout your design process. You can check back in regularly to assess how Jean would react to your findings and solutions.

Familiarization

You start by gathering preliminary information about Jean, before you begin designing.

Observation



To learn about the ways that Jean interacts with current tax forms, you observe people like her in their typical environments as they interact with the tax documents. You look for places where they make mistakes or seem to have trouble, and note what comes easily to them and what works well. You also take note of their behavioral tendencies throughout the process.

Interaction



You also decide to ask users like Jean for their feedback about the tax process to better understand their experiences. You give them a journal and instant camera that they use to document their experiences and make note of problems or areas of confusion, which helps pinpoint areas that users recognize as problem spots.

Participation



In order to place yourself in Jean's shoes, you complete the tax preparation process yourself. This gives you a first-hand look at her experience and helps you better understand for yourself what she goes through. You notice where you trip up, where you make mistakes, and where you are confused. You also note what kind of information might have been helpful to resolve your problems.

Analysis and Synthesis

Once you have gathered this preliminary information, you can then use it to better understand Jean's goals and experiences. You outline her goals, expectations and her entire tax preparation process:

- get required information confusing
- get tax forms easy
- complete forms difficult and daunting
- send to government easy
- get return (not applicable to all) easy

You then examine Jean's current situation and look for opportunities to improve her experience. For instance, if Jean has difficulty determining if she has assembled all necessary documents before she even begins filling out the tax forms, design could help by providing these details or guidelines that Jean could use to evaluate what she has compiled. These opportunities, combined with your knowledge of Jean's goals, behavioral tendencies, and needs, can be used as a framework for your design.

Designing

Your next step is to use the information you have learned about Jean to make design solutions that work for her. After you start designing, run your prototypes by Jean gauge her reaction. Alter your design as needed based on Jean's feedback.

This phase in the design process is not discussed in detail in this guide, since it deals with design methods rather than strategies

Troubleshooting Terms

Affordance	the perceivable use of an object
Chunking	developing meaningful groups within a large quantity of information, such as a phone number, which is broken into smaller groups of three or four numbers
Closure	the perceptual tendency to complete an incomplete figure
Coding	tools, often direct mappings or real-world analogies, to help users better understand similarities and differences; for example, color coding
Cognitive Aids	tools to help someone remember or understand
Conceptual Model or Mental Model	the way the user imagines a system works or how it is used; a correct model allows a user to easily interact and use the object, however an incorrect model can lead to errors
Continuity	objects arranged in a manner so that they have direction
Cues	tools that serve to remind the user
Cultural Constraints	a limit on choices, options, or functions based on cultural information, such as the color red representing stop, war, or celebration, depending on the audience
Functional Fixedness	the tendency to fixate on known uses from the past leading to the inability to see or discover new uses or solutions
Hierarchy	the system of order of information in relation to importance; placing the most emphasis on primary content
Physical Constraints	a physical limitation on choices, options, or functions
Proximity	objects that are close together appear as a group
Representational Form	a real-world analogy to help a user understand the use or function of an object or system
Similarity	the perceptual tendency for similar shapes to appear as though they belong together
Symmetry	regions surrounded by symmetrical borders are perceived as coherent figures

Troubleshooting

Are your users having trouble with your design?
Use this troubleshooting guide to identify strategies
that you can employ to meet your design solution goals.

Design Solution Goals

functionality
satisfaction
visibility

Applied Strategies

affordances
cues
coding
conceptual model
Gestalt principles (proximity, similarity, closure,
continuity, symmetry)

readability
legibility
attention (divided/focused)

cognitive aids
consistency
hierarchy/organization
increase motivation
increase activity
feedback/alerts
focus attention

retrieval vs recall
efficiency

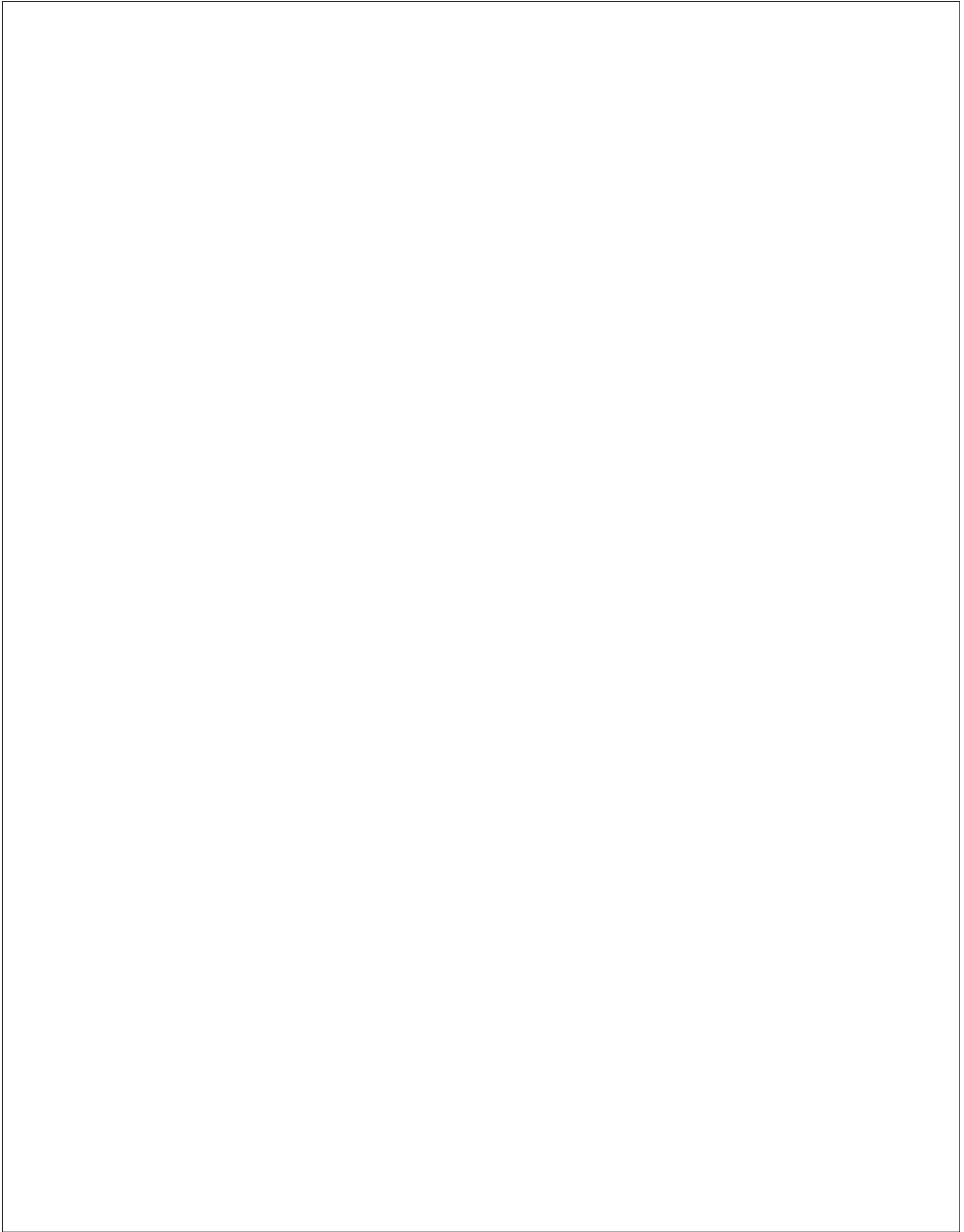
affordances
chunking
cognitive aids
meaningful relationships
natural constraints (limit choices, limit options)
redundancy

cognitive mapping
errors
(slips, mistakes)

constraints
feedback for errors
functional fixedness
logical mapping
natural thinking

learnability
performance
aesthetics
ease of use

context
cultural constraints
knowing how vs knowing that
natural thinking
representational form
standardization



Additional Resources

Graphic Design

AIGA Experience Design Community of Practice

This multidisciplinary organization is devoted to developing experiences instead of taking an object-oriented approach. As a leading graphic design organization, AIGA's standards of practice and resources serve as a means for reaching the graphic design community and their offerings can be used to better understand and judge what is currently taking place in the field with regard to user-centered design.

Design for Democracy's Election Design Initiative

This AIGA initiative used a user-centered process to develop clear, understandable materials for all aspects of the voting process, including materials for voters, ballot layouts, information for polling place workers, and all other items with which stakeholders in the election process come into contact.

Information Design Journal* + *Document Design

Information Design Journal + Document Design is dedicated to investigating and thinking about effective information design, in both print and digital formats. The journal, which resulted from the merger of two publications, is geared towards both practitioners and researchers.

Edward Tufte

A statistician, Tufte is interested in clearly and accurately communicating complex data through visual media. He is a strong proponent of first defining functional needs and using them as a framework upon which a visual design solution can be developed. Relevant works include his books *The Visual Display of Quantitative Information*, *Envisioning Information*, and *Visual Explanations*.

Richard Saul Wurman

Richard Saul Wurman, an architect by trade, is concerned with making information understandable. He coined the term "information architect" in his book *Information Anxiety* to describe someone who builds structures to organize and present information.

Digital Media

Alan Cooper

Cooper is one of the leading advocates of user-centered approach in digital media. Cooper advocates taking a goal-directed approach to design, looking at the way people actually do things and developing design solutions around these behaviors. Another main component of Cooper's work is the use of personas within the design process. By first developing a hypothetical persona and then designing for that individual, a solution will effectively address the goals of real end users.

Jakob Nielsen

Nielsen is a leading proponent of usability within website design. Nielsen promotes user testing in order to judge the functionality of a website design. His recommendations for web design are also appropriate for non-digital graphic design. He suggests many methods that can be entailed by designers in order to test a solution's functionality.

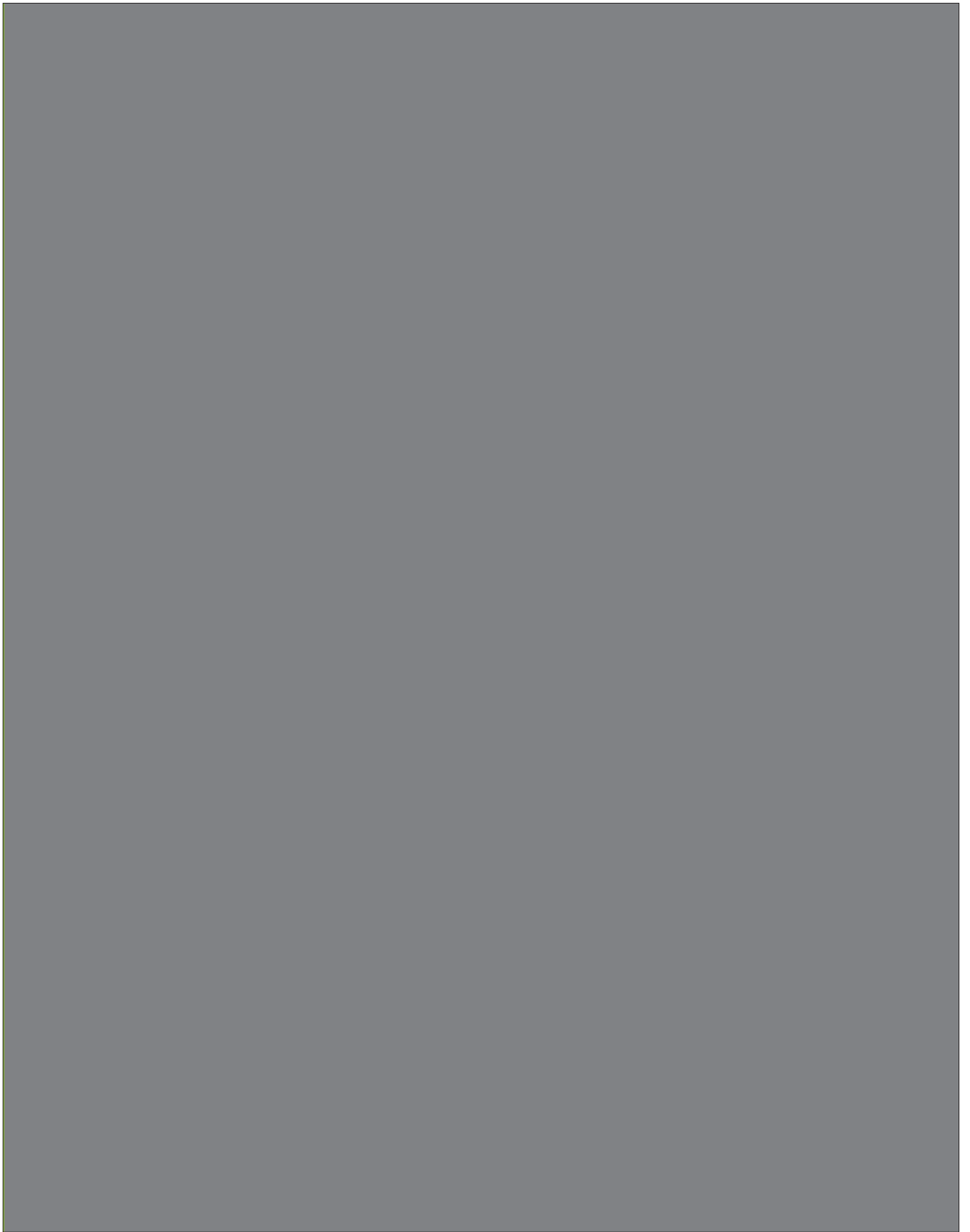
Industrial Design

Donald Norman

Norman, a social scientist by training and self-proclaimed "user advocate" is a design advisor and consultant who emphasizes taking a human-centered approach to design. His book *The Design of Everyday Things* (originally titled *The Psychology of Everyday Things*) focuses on the impact of usability on everyday life, particularly with regards to product design.

Red Dot Awards

The Design Zentrum in Essen, Germany awards the Red Dot Design Awards to celebrate high-quality, innovative design. The annual international competition has three categories: product design, communication design, and design concept. Commendations are awarded based not only on visual interest but on function as well.





This guidebook is a component of
a Master in Fine Arts thesis project
undertaken in 2004–2005
at Rochester Institute of Technology

Author and Designer	Neva Corbo-Hudak
Typeface	Frutiger designed by Adrian Frutiger
Software	Adobe InDesign cs and Adobe Illustrator cs
Paper	Epson Double-Sided Matte Paper
Thanks	Special thanks to
Chief Advisor	Bruce Ian Meader
Associate Advisor	Paul Grebinger
Associate Advisor	R. Roger Remington
Outside Evaluator	Tim Scanlon

Appendices continued

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B AIGA Email Request and Responses	15
C Theories Chart	27
D Initial Application Spreads	35
E Presentation Slides	38
F Final Application Spreads	39
G Exhibit Panels	51

Think about all the visual messages you encounter every day ...

Considering the User in Graphic Design

How Design Impacts You

Graphic design plays a major role in your life, maybe more than you realize. Within 100 feet of where you are standing, you can find books, magazines, websites, logos, diagrams, charts, graphs, maps, posters, brochures, directional signage, invitations, and numerous other forms of graphic design. Need a phone number? Want to check out the score from last night's basketball game? Looking for a restroom? Graphic design is all around.

Some graphic design clearly conveys intended messages, while others can make our lives unnecessarily difficult. For instance, how many times have you filled out a form, only to find you began writing on the incorrect line? How often have you accidentally reread a line in a book? Have you ever become lost because a map or a sign confused you? Drove past a street because you couldn't read the sign? Have you ever had trouble finding something on a website?

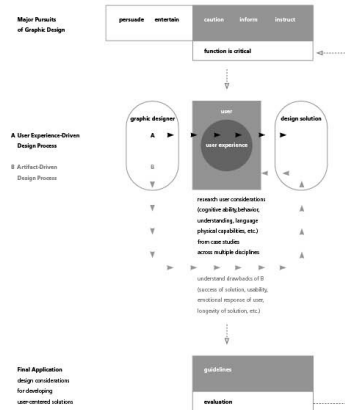
Here is an example of how graphic design can impact a typical day:



Project Overview

In graphic design the user frequently relies on a design to communicate important information. By considering user experience and by understanding user behavior, a graphic designer can develop design solutions that are appropriate for the intended audience and are, therefore, both usable and useful.

Not all designs need to place emphasis on function. In fact, designs that are meant to persuade or entertain might work best when aesthetics dominate; however, function is critical when a design's goal is to caution, inform, or instruct. It is more important for an emergency exit map on your hotel door to ensure your safe escape in the event of a fire than to simply look good.



This project looks at different techniques that designers can use to better understand their audience, the users of graphic design. Some of the suggested methods and techniques come from design while others are from outside disciplines, however these can be integrated into the graphic design problem-solving process.

Research: Some Key Sources

- | Individuals | Organizations | Disciplines |
|-----------------------|--|--------------------------|
| • Henry Beck | • Agnew Moyer Smith | • Anthropology |
| • Ralph Caplan | • American Institute for Graphic Artists | • Cognitive Psychology |
| • Alan Cooper | • Design for Democracy | • Digital Media |
| • Henry Dreyfuss | • IDEO | • Engineering |
| • Jakob Nielsen | • Information Design Journal | • Industrial Design |
| • Donald Norman | | • Information Technology |
| • Paul Rand | | • Sociology |
| • Edward Tufte | | |
| • Richard Saul Wurman | | |

Understanding the User and the User's Experience/Process

The theories and practices of these key individuals and organizations listed above were cross-referenced to identify similarities and connections. Two major steps within the process of understanding became apparent:

- 1 familiarizing yourself with the audience, and
- 2 analyzing and refining the information.

The familiarization process is composed of three techniques for gathering information about users and their behavior: observing, interacting, and participating.

The analysis phase builds upon the gathered information in order to understand the user's goals and needs and identify ways that design can improve the user's experience.



Observation

Familiarization: Initial Audit and Information Gathering

- watching users perform tasks in context
- testing prototypes on real users
- testing prototypes in context
- notice the rule breakers

methods

- usage studies
- usability testing
- shadowing
- known participant observation (context)
- consumer journey (tracking interactions)
- observer participation
- storytelling: log book/journal (written stories) and photographic journals (visual stories)



Interaction

Familiarization: Initial Audit and Information Gathering

- interviewing current users
- interviewing target users
- interview colleagues, friends, and family

methods

- semantic differential
- ask why? ask why not?
- listen
- telling stories outloud
- surveys/questionnaires



Participation

Familiarization: Initial Audit and Information Gathering

- put yourself in the user's shoes
- look from the user's point of view
- participate in the experience
- understand the user's state of mind
- see the world through the eyes of the user

methods

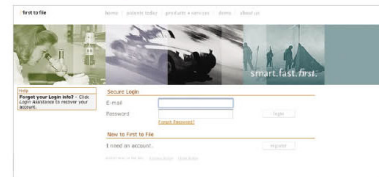
- get lost
- visualize yourself as the user
- role playing
- experience the situation first-hand
- understand yourself, not everyone is like you

Watch and Learn

IDEO: *First to File* Marketing Website and Application Architecture

IDEO is an innovative design company that develops products, services, environments, and digital experiences. Their interdisciplinary design process begins with user observation. Techniques IDEO employs include shadowing, behavioral mapping, and photographic journals. In the design for First to File, a digital system for patent applications, IDEO organized information in a meaningful and accessible way, so the site would be usable and useful. www.ideo.com | www.firsttofile.com/

Case Study: Observation

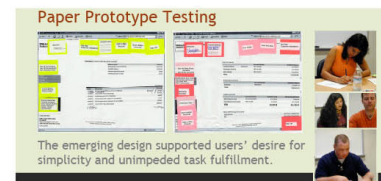


Talk and Listen

Wells Fargo Online Banking Chuck Moore and Robin Beers

Users were observed and surveyed for their input on the layout and functions during the redesign of Wells Fargo's online banking system. Regular users of the website were interviewed to gather information on their needs, desires, and goals related to the site. Users were asked to build paper prototypes to demonstrate which functions were important and should be displayed prominently. www.aiga.org/content.cfm/content.cfm?Alias=2003_case_studies

Case Study: Interaction



Take a Walk in Someone Else's Shoes

Agnew Moyer Smith "Gets Lost"

Agnew Moyer Smith, a design firm based in Pittsburgh, "gets lost" in order to understand the needs of their user when developing wayfinding and other navigation designs. The designer needs to understand what it feels like to be lost in order to develop appropriate directional signage. Signs for the Charlotte Convention Center are raised to enable users to see the signs and are illuminated to aid viewing. Their placement accommodates both the architecture and the needs of the user. www.amsite.com

Case Study: Participation



Draw Conclusions

Refinement

Analysis and Synthesis

- determine user's goals and performance standards and develop solutions to meet those goals

methods

- think in verbs, not nouns
- understand the user by understanding their goal; understand the goal by understanding the user
- organize information:
 - htracks
 - patterns/logical groupings
 - matrices
 - semiotic model
 - visual representation (iconic, indexic, symbolic)

- understand influences on the user (cultural, societal, etc)
- develop user personas (characteristics, needs, goals, motivation, and behavioral patterns)

- document the user's experience/process
- storyboarding
- map the system from the user's point of view
- break the user's process into steps/stages, then analyze for opportunities where design can improve or help the experience

Design for Democracy: Election Design Initiative

The goal of Design for Democracy, an American Institute for Graphic Artists (AIGA) initiative, is to "promote and facilitate inclusive communication between government and the governed." The Election Design initiative focused on creating clear, understandable materials for all aspects of the electoral process. This included materials for voters, information for polling place workers, ballot layouts, and all other items with which stakeholders in the election process come into contact.

The Design for Democracy team began by collecting information through observing users as they participated in the electoral process, interviewing them regarding their likes and dislikes and for feedback on their experiences, and by participating first-hand in all aspects of the voting process. Information gathered was then analyzed and examined to understand the users' goals, needs, and to find ways that design could improve the voting experience.

Case Study: Refinement

Design for Democracy worked closely with Sapient, an experience modeling group, to conduct user research and analyze the data collected. www.designfordemocracy.aiga.org www.sapient.com

The Avid Voter

Who are they?
"Laura" is 42. She has been voting since she was 17 and has only 1 state residence in the process she figures out how to register. She has been living with her husband and children in their suburban housing enough to have established deep roots in local issues and conditions.

Why do they vote?
"When I see people feel empowered to raise their voices, I know it's important to me to help make the school board and district decisions that will impact my future."

How do they go about voting?
As a result, in the most recent election, she made it a priority to become informed about school board candidates by reading about them in the local paper and attending gatherings and "cafés" where the topic. She asked her neighbors for their feedback on candidates, and asked them to accompany her to the polls.

What works for them?

Iconic	Indexic	Symbolic	Verbal	Visual	Audio
Use of icons to represent different types of information.	Use of icons to represent different types of information.	Use of icons to represent different types of information.	Use of icons to represent different types of information.	Use of icons to represent different types of information.	Use of icons to represent different types of information.

voter personas

The voting process

Registration → Getting Information → Voting → Receiving Results

How the user and voter register within the voting process

1. Registration: The user registers to vote, either in person or online. This process involves providing personal information and verifying identity.

2. Getting Information: The user receives information about the voting process, including where to vote, what to bring, and how to cast a ballot.

3. Voting: The user goes to the polling station and casts a ballot. This process involves identifying themselves, receiving a ballot, and marking it.

4. Receiving Results: The user receives information about the results of the election, either through a mail-in ballot or at the polling station.

documenting and analyzing the user's process for ways to improve the overall experience

Images and voter analysis by Sapient as part of the Design for Democracy project

Opportunities to improve the voting process

Opportunity	Description	Name	Rationale
1. Clear instructions for voters	Provide clear, concise instructions for voters on how to use the voting system, including how to register, how to cast a ballot, and how to receive results.	Jane Doe	Clear instructions are essential for ensuring that all voters can understand and use the voting system effectively.
2. Streamlined registration process	Simplify the registration process, making it easier for voters to provide the necessary information and verify their identity.	John Smith	A streamlined registration process reduces barriers to participation and ensures that more voters are able to register and vote.
3. Improved ballot design	Design ballots that are easy to read and understand, with clear instructions and markings for voters to follow.	Emily White	Improved ballot design helps reduce errors and ensures that voters' choices are accurately recorded.
4. Enhanced accessibility	Ensure that the voting process is accessible to all voters, including those with disabilities, by providing alternative methods of voting and assistance.	Michael Brown	Enhanced accessibility is crucial for ensuring that all citizens have an equal opportunity to participate in the electoral process.

What's Next?

Conclusions from this research could be presented in a variety of formats. Some possibilities are:

- For designers...
 - A defined set of guidelines outlining strategies designers could use to better understand their user.
 - Suggested methods and techniques designers can use to understand their user

For users...

- A poster series explaining when design may be to blame for common, everyday errors