

Typography Use in Hypertext Documents:

Why Designers Make Font Choices

Andrew Williams

New Jersey Institute of Technology

Abstract

There are multiple elements that go into the development of Web and hypertext documents that help them to facilitate communication. The font is the first link in the chain of the semiotic transference that culminates in the hypertext user either being able to create a meaning or to receive the intended and desired meaning of the author. The proposed study examines the parameters that inform font choice design decisions in Web and hypertext document composition, as a subset of career maturity. Three designers representing each of the career stages of beginning, mid and advanced level are interviewed. In addition to their philosophies on font usage in design, their portfolios, educational and professional backgrounds are investigated to ascertain how and why font choices are made. Using grounded theory analysis, the interviews will be coded, analyzed and discussed with the goal of formulating theories that may be beneficial in helping designers make font choices that support the designers' creative process in their development of hypertext documents.

Background

Designers originally trained in print media may feel technically and creatively stifled as a result of the growing pains that the young profession of hypertext document design is experiencing due to the limited size of the Web-standard font palette. A major design constraint that the electronic environment places on hypertext designers is the challenge of limited typographic choice. Despite the wealth of fonts available for print document construction, presently there are only nine fonts that are considered Web-safe that when used, a designer can be relatively certain that the font chosen for design will be the font displayed on the end user's computer.

A Brief History

The origin of the typeface is in writing and calligraphy, but the history of typography is primarily, closely related to the history of printing, and eventually to the history of graphic design. Johann Gutenberg is credited with the creation of the apparatus for making movable metal letters, or type, for the mass production of printed books, and in effect created typography in 1440. Print production spread throughout Germany as a cottage industry that developed to meet the demand for scholarly texts (Lewis 11). As printing spread across Europe, increased variety emerged in typeface design. The incipient Roman print trade produced a typeface that was popular with renaissance scholars and is still today referred to as Roman. Developed between 1467 and 1501 with variations in France and Germany, Roman was the typeface of the Renaissance, eventually replacing the tenacious hold that black letter gothic had on Germany around 1500. The Roman typeface completely altered the appearance of books and all kinds of printing from that time forward (Carter 49). However, typefaces continued to be associated with

specific textual genres; "even when roman and italic typefaces were used for other books (e.g., the classics), a form of gothic was still employed for the scriptures" (Greetham 279).

The printing press and the science of typecutting had only minor refinements from the late 1600s to the late 1800s, and the industrial revolution introduced innovations in printing technology and type foundry procedures. With the growth of consumerism during the nineteenth century, the task of ephemera printing was conferred onto commercial printers. While the jobbing printer was generally barely literate, unschooled in aesthetics, and practicing what was deemed a "peasant art," the book printer tended to be a sophisticated tradesman or a scholar (Lewis 11). Printing manuals that the jobbers used for reference stressed technical instruction and print production efficiency. These manuals provided "suggestions" to create page mockups in the interest of saving time, and the layout, typographic, and spacing references in the manual were based on "classical rules of proportion, largely absorbed as habit and convention rather than as articulated precepts" (Drucker 3). Renaissance standards of conservative typography shifted with the influence of Victorian tastes and the 1800s saw a decline in the character of the work produced. Victorian aesthetics were "confused by the belief that ornamentation and design were identical functions" (Heller and Chwast 3).

The Emergence of Graphic Design as a Profession

Owen Jones wrote The Grammar of Ornament in 1856 as a guide to counter what he saw as a lack of design principles. In the book, Jones outlined basic concepts and gave examples of what he considered the best of design in other cultures in its alignment of form with function. The book gave examples of ancient patterns and designs used in architecture and graphics as well as tips on how to achieve balance and harmony in color. Jones' motifs were packaged as a specimen book and became a guide for printers and designers and in effect created the basis for

the profession of graphic design (Heller and Chwast 19). During the same period, Walter Crane, today most noted for his children's books that were the first successful mass market color books for children, was "one of the first illustrators to acknowledge the relationship between illustration, typography and page design" (Heller and Chwast 37). However, the general state of typography in the late nineteenth and early twentieth centuries was often a conglomeration of different styles, usually with broken fonts and discordant typefaces, often within the same word. During this period though, type designers worked with type foundries and began to learn how to make type more readable (Heller and Chwast 24).

The 1920s was the most influential period in design in general, and in typography in particular, prior to the digital age of type. At the forefront of the modernist design movement was the Bauhaus school, which created graphic design as a curriculum that included typography workshops. In order to allow students to develop their individuality, the Bauhaus curriculum attempted to avoid imposing any particular style on its students. The asymmetrical typography of the period formed the so-called "new typography," which was a rejection of the classical rules of typographic symmetry (Heller and Chwast 114-120).

Invisible Type

But even in the midst of this typographic experimentation, designers and artists believed it necessary to assert standards for typographic use. For example, modern artist Lazar El Lissitzky, a proponent of Russian Constructivism, had an approach to graphic design that emphasized "the tension between objects and typography" (Heller and Chwast 98); however, first on his list of the qualities of good typography was that "printed words are seen and not heard" (White 120).

The idea that type should be invisible is based on the contention that neither should type connote meaning, nor can it. Perhaps one of the reasons behind the thought that the written alphabet and, by extension, typography is not or should not be imbued with a culturally and historically inclusive societal gestalt is the dearth of research and theory on the subject of typography and reader response. The majority of the studies that do exist tend to concentrate on typographic efficiency rather than the link between type characteristics and any relevant mediating and moderating factors (McCarthy and Mothersbaugh 664).

But perhaps even deeper than the idea that type lacks connotation is the notion that the alphabet itself is an empty and meaningless vehicle. According to Marshall McLuhan, semantically meaningless letters are used in the phonetic alphabet to correspond to semantically meaningless sounds, and that compared to the hieroglyph and the Chinese ideogram, the phonetically written word carries less meaning and perception. McLuhan also asserts that the wealth of perception and experience inherent in the ideogram is lost in the phonetic alphabet because the "ideogram is an inclusive gestalt, not an analytic dissociation of senses and functions like phonetic writing" (McLuhan 92). Additionally, McLuhan describes all Western cultures' Graeco-Roman letter-derived alphabets as radical translators of the sounds of any language into one visual code. In the course of this translation, the phonetic alphabets separate "both signs and sounds" from any verbal and semantic meaning (McLuhan 94).

Type as a Semiotic Construct

McLuhan asserts the lack of meaning of the alphabet, but he also conversely states that "it is the medium that shapes and controls the scale and form of human association and action. [...] Indeed, it is only too typical that the 'content' of any medium blinds us to the character of the medium" (McLuhan 9). The typeface, as the medium through which the content of textual

messages is sent, is rife with meaning largely because of the cultural and societal associations that shape its history. The elements that make up typography are signs that are composed of semiotic layers, each layer imbued with the ability to convey meaning (Stockl 205).

Post-structuralist and deconstruction theories support typography as playing a vital and active part not only in conveying information but also in how the information is expressed. In the interaction between language and image, typography as a "signing mode" is only recently gaining legitimacy in semiotic theories. Generally, linguists have been "averse to seeing writing and layout as connected with language and verbal communication and refuse to acknowledge typography as a semiotic mode" (Stockl 206). Linguist Ferdinand de Saussure viewed what he called "semiology" as "a science which studies the role of signs as part of social life" (Chandler 6). In Saussure's model, a sign consists of a signifier, which is the form that the sign takes that can be material or non-material, and a signified, which is the meaning of the sign and how the sign is interpreted. Saussure related a chain of signification as the ordinary state of affairs, in which signs refer to other signs and all of the signs have meaning, but the meaning exists only within the context of this system of referential signifying (Chandler 28). However, Saussure's chain of signification did not extend to the alphabet. He felt that writing was inferior to speech and at best an artificial technology for reproducing language wherein the "tyranny of writing distorts its pristine referent through orthographic monstrosities and phonic deformations" (Lupton and Miller).

Roland Barthes expanded on Saussure's concept of signification by equating "myth" to language. Barthes refers to myth as a type of speech, a system of communication, a mode of signification that is a message, or a type of form. Barthes' form contains a reserve of history that stores its meaning, and that can transfer its meaning (Chandler 144-145). Interpreted in this way,

an object such as the letter "a" is a signifier. But if it were weighed with a definite signified it would become a sign, resulting in transference of the meaning inherent in the signifier. For example, in market research at Procter and Gamble, products are never designated by A, B, and C. Even though the symbols may be recognized as arbitrary, the culturally derived hierarchy of the signifier alphabet is transferred to the signified letters, resulting in a sign that connotes A as better than B, which is better than C (Greetham 284).

Deconstruction theories focus on the linguistic and institutional systems that frame the production of texts rather than the themes and imagery of its objects. In Jacques Derrida's theory of deconstruction, he asks how representation inhabits reality. This question is the basis of Derrida's interrogation of the relationship of speech to writing. "By showing how the devalued, empty concept lives inside the valued, positive one," Derrida showed that speech, like the alphabet, could not transparently reflect reality (Lupton and Miller). Essentially, writing inhabits speech; phonetic language exists on its own as a language. In its assertion that phonetic writing and ideographic writing have borders that are in constant flux, deconstruction theory reverses Saussure's contention that they are separate (Lupton and Miller). Additionally, deconstruction theory calls into question McLuhan's contention that the alphabet is "an analytic dissociation of senses and functions," while reinforcing his adage that "the medium is the message."

The Connotative and Denotative Qualities of Type

It is in Barthes' sense of signifier and signified that we speak of the connotative quality of a typeface. In the design process many artists instinctively know what typeface can be used to conform or enhance a document's rhetorical situation because of the connotative attributes inherent in a particular typeface. A typeface draws its connotations from "the import of signs into a specific domain where they have hitherto not formed part of the accepted, conventional

repertoire" (Van Leeuwen 137). This place of origin can be a historical period, a culture, a group, or a professional association. Connotation does not determine the meaning but rather it forms a "meaning potential" for a specific context of font usage, the interpretation of which is culturally grounded (Van Leeuwen 137). However, many typefaces are not immediately recognizable as belonging to a particular context. A typeface's metaphoric potential differs from its connotation in that its metaphoric potential is a more subtle characteristic derived from the significance in the details of a font's specific features and what these features suggest when used in certain contexts. Details such as serifs or sans serif, angularity or long or short descenders can act as metaphor for the intended meaning (Van Leeuwen 137). Such details can convey personality traits, as revealed in studies involving script types that were found to evoke elegance and sophistication (McCarthy and Mothersbaugh 666).

Type's Behavior in the Electronic Environment

A major visual idiosyncrasy that affects text readability on a computer screen is the result of the monitor's luminous flare. The contrast ratio of an average computer monitor to that of a printed page is about 300:1. Additionally, in print, ink spread has the effect of making type appear slightly bolder than it actually is. Conversely, if type is reversed-out, ink spread on paper causes the type to fill in and thus appear thinner. However, for computer screens, the opposite is true; the flare of the luminous source encroaches upon surrounding dark areas, making black-on-white text appear thinner and reversed-out text appear bolder (Macdonald 92).

In creating print documents, the designer has a large amount of latitude in choosing the font that best represents the rhetorical situation of the document and the creative abilities of the designer. The font universe from which to choose a representative font is limited largely by the designer's budget. Similarly to print document creation, in hypertext document creation the font

chosen should be aligned with the document's rhetorical situation. This alignment is made difficult for designers because the environment for which hypertext documents are constructed challenges the designer's ability to support the documents' rhetorical situation or simply to evoke the appropriate connotation through typography.

Theory Under Investigation

The alphabet as symbols derives meaning from "oppositions which are in turn related to other oppositions in a process of infinite semiosis" (Bolter 178). This semiotic process defines the intertextuality of hypertext documents in that hypertext paths are "stressing connections rather than textual independence," and as such, the text can be read only in relation to other texts "which they take up, cite, parody, refute, or generally transform" (Bolter 178). In the hypertext environment wherein users interpret textual symbols that transfer their meaning to linked texts, the semiotic qualities of the font are one of the primary contributors to the process of meaning making. The font that displays the hypertext document's contents is one of the first elements that impress a reader and thusly, the font chosen for the document can affect the meaning that the author attempts to convey or that the reader infers. For designers of hypertext documents, choosing the right font that embodies all required characteristics is a challenge because there are at present only nine fonts that are considered Web-safe fonts.

Literature Review and Related Work

There are many studies that address font efficiency of the Web-safe fonts, but none that investigate why designers make choices about font usage in hypertext documents, or that address the use of fonts in graphics that designers use to augment the meager Web-safe palette. Most of the studies that do exist in Web design research address usability improvement issues and those

studies in font and typography usage largely deal with type efficiency (McCarthy and Mothersbaugh 664).

While there are studies that address the semiotic qualities of type such as the connotative and denotative aspects of a font, these studies are not concerned with the cognitive activities that inform font choice as a function of design. Web Site Designs: Influences of Designer's Expertise and Design Constraints is a study that investigates the constraints that influence the Web designs of novice and professional designers with the intention of using the findings to better support the Web design process. Similar to my proposed study, Chevalier and Ivory sample designers at the different career stages of beginning and advanced; however, their study investigates a wide range of design issues that impact the entire Web design process.

The design process has been defined as consisting of three elementary activities--imagining, presenting, and testing--and the application of the tests is the constraints that the design must satisfy. The design problem's "solution space" holds many possible satisfying answers to the problem (Gero and Maher 12). Chevalier and Ivory's findings are that the constraints that influence designers vary according to (1) the designer's level of expertise (2) the designer's personal preferences and (3) the design problem specifics (Chevalier and Ivory 60).

In Meeting the Needs of Users: Toward a Semiotics of the Web, Smart et al. surmise that the profession of Web design needs guidelines to inform design decisions. These guidelines are contingent upon the development of a "semiotics of the Web that will help us determine how meaning is derived from Web pages and the Web, and in turn how to better design sites to convey intended and desired meanings" (Smart et al. 593). Toward this end, Smart et al. define six categories that can serve as the beginning of a Web semiotics. As a semiotic construct, it is the font that leads the way in meaning derived from Web pages. Typography and font usage

lead's Smart et al.'s list of Web semiotic categories that includes site structure and cognitive design, medium use, message content, appeal and accessibility (Smart et al. 593).

According to Smart, et al. existing research on font design and usage in Web documents "leaves many issues unresolved.[...] We need empirical research to resolve the conflicting findings and recommendations" (Smart et al. 596).

This proposed research will attempt to resolve some of the issues relating to existing research on font usage in Web documents by investigating aspects that involve document creation and will use six major predictor variables for the dependent variable of designer font use in hypertext document creation. Chevalier and Ivory investigated the designer's level of expertise as a function of experience in design practice. The proposed study will address designers' expertise level through designers' professional experience, represented by the independent variable of length of design experience, and will attempt more granular experiential predictors in the two independent variables of experience with fonts in print and experience with fonts in hypertext documents.

Over the length of a design career, general education and design specific education both increase knowledge that can impact a designer's level of expertise as well as creative decisions. This study will investigate possible education and instruction influences that affect font choice other than creativity alone through the major category independent variable of education. Within this major category, sub-categories will be used to measure specific areas of design education. The sub-categories are formal design education and instruction, informal design education and instruction, formal typography instruction, informal typography instruction, formal hypertext typography instruction and informal hypertext typography instruction.

For Chevalier and Ivory, document design problem specifics were the document structural and content requirements for design completion, and these consisted of items that addressed document size, item placement within documents, and reasons for item placement (Chevalier and Ivory 64). How document structural and content requirements affect the dependent variable of font choice in document design in the proposed study will be addressed through independent variables that represent the document's rhetorical situation. The rhetorical situation is defined by a document's subject, the content matter of the document; the audience, the readers of the document; and purpose, what the document is attempting to achieve. These will be represented by the three rhetorical situation sub-category variables of document subject, document audience and document purpose.

The designer's personal preferences in Chevalier and Ivory, which they referred to as aesthetics, regarded designer attempts to be creative and to add visual enhancement to documents. This proposed study will use the independent variable of creativity to address designer personal preferences in their attempts to find font solutions that satisfy the design problem. Lastly, in building on the current research that exists on font readability, the independent variable of type efficiency will be used to gauge the relevance of type readability in designer font choice.

Objectives

Most professional hypertext designers are trained in typography from a print design perspective and any knowledge of typography is generally learned from print standards and practices. Studies show that print on screen behaves differently and readers respond differently to screen text, yet many designers begin their career in designing hypertext documents armed largely with print typographic guidelines. However, time spent on developing hypertext

documents can inform the development of a designer's screen font sensibility. The Web design palette of the neophyte hypertext designer may not be the palette of the experienced designer.

This paper is a proposal for a study of the parameters that inform font choice design decisions in hypertext document composition, as a subset of career maturity. The goal of the study is to examine the challenges that designers of hypertext documents face in relation to font choice. The results will reveal their reasons for font choice in hypertext document creation, as well as their choice of fonts that are embedded in the graphics of hypertext documents.

Research Design

Methodology

The method of the study will be interview and the research analysis will be a qualitative case study. Using purposive/judgment sampling method, a sample of three designers will be chosen as subjects. All subjects are required to have professional experience designing in print and hypertext environments. I will interview one established web designer who has been designing hypertext documents for at least 10 years, one web designer who has been designing for 5-7 years, and one designer at the beginning of a career, with two or fewer years as a professional designer.

Variables

The independent variable (x) predictor variables are six major categories with sub-categories. The major categories generally influence design development across media, but how each is enacted is specific to the medium. For example, all six independent variables described as major categories are influencers in print design but the constraints of the electronic environment and designing for hypertext and the screen have unique considerations for typography. Each of the major categories in Table 1 contributes to produce results in hypertext media differently from

results produced in print. The sub-category independent variables in Table 1 address areas of the major categories that specifically affect font use in hypertext document construction.

Table 1. Major Categories and Sub-categories

Category Number	Major Category Independent Variables	Sub-category Independent Variables
1	Professional Design Experience	<ul style="list-style-type: none"> • Experience with font use in print media • Experience with font use in hypertext media
2	General education	<ul style="list-style-type: none"> • Formal design education and instruction • Informal design education and instruction
3	Typography Instruction	<ul style="list-style-type: none"> • Formal typography instruction • Informal typography instruction • Formal hypertext typography instruction • Informal hypertext typography instruction
4	Creativity	
5	Rhetorical Situation	<ul style="list-style-type: none"> • Subject • Audience • Purpose

6	Type Efficiency
---	-----------------

Experience Variables

The variables that will be used to predict how designers' professional design experience affects the dependent variable are professional design experience, experience with font use in print media and experience with font use in hypertext media.

Professional Design Experience. The length of time practicing design professionally is a predictor of not only familiarity with general typographic principles but also of the extent to which typographic practices and methods are internalized. Not only is an understanding of the differences in type implementation in different media achieved, but also gained is experience and knowledge of font usage as it applies to specific media.

Experience with Font Use in Print Media. Typographic reproduction in print has specific rules that do not translate to electronic and hypertext documents. A basic knowledge of print typographic practice is necessary for hypertext document design but the extent to which knowledge of print-specific typographic practices influence Web and hypertext design is a predictor of effective use of fonts in hypertext document construction.

Experience with Font Use in Hypertext Media. The length of time spent working with type in the electronic environment may serve to develop an innate sense of what fonts work and why, and the reasons for font effectiveness. While education in electronic type technique is important, the experience and knowledge that comes with trial and error plays a major role in design outcomes.

Education Variables

The variables that will be used to predict how designers' education affects the dependent variable are general education, formal design education and instruction, and informal design education and instruction.

General Education. The type of general education is incidental to design practice, as different disciplines allow alternative viewpoints on design practice and problem solving that may or may not parallel formal design education instruction.

Formal Design Education and Instruction. Design professionals' training and education range from no formal training at all, to training from short-term certificate programs, to formal education in universities and colleges. A design-specific education teaches from a perspective that defines rules and standards that serve to support the profession in practice.

Informal Design Education and Instruction. There are many practicing professional designers who receive much of their training on the job and may forego any formal design training. The self-taught or job-trained designer's knowledge acquisition of design principles and procedures provides an approach to implementation that differs from the formal setting of a classroom or studio.

Typography Instruction Variables

The variables that will be used to predict how instruction that designers' receive in typography affects the dependent variable are formal typography instruction, informal typography instruction, formal hypertext typography instruction and informal hypertext typography instruction.

Formal Typography Instruction. The formal instruction in the practice of typography is generally a part of a general graphic design education. Also, professional designers may receive

formal training in typography through certificate or continuing education courses. Formal instruction in typography provides designers with structured approaches to font selection.

Informal Typography Instruction. Similarly to professional designers who receive on-the-job training in general design, font principles and uses may be learned in the practicing environment. As well, the self-taught or job-trained designer's knowledge acquisition of typographic practice procedures provides an approach to implementation that differs from the formal setting of a classroom or studio.

Formal Hypertext Typography Instruction. Presently there are courses that provide instruction in hypertext media design, and within this instruction setting students learn the behaviors of and requirements for fonts specific to the electronic environment. Formal instruction in font use in hypertext documents provides designers with guidelines that enable optimal font usage in the electronic environment.

Informal Hypertext Typography Instruction. Designers who do not receive formal instruction in typography usage as it applies to hypertext media learn its usage generally through on-the-job practice. Some instruction can be provided by a mentor or co-worker who helps the designer learn from mistakes made, or the designer may learn from a series of trial-and-error implementations. Each scenario uniquely affects the designer's font choices.

Creativity

Studies have indicated that designers are biased toward aesthetically pleasing interfaces, regardless of their inefficiency (Chevalier and Ivory 62). According to the Stanford-Makovsky Web Credibility Study 2002, aesthetics in hypertext document design matter to users (Fogg 14). While aesthetics appear to be important to both designers and users, a hypertext document's design must be aligned with its rhetorical situation in order to be credible. The independent

variable of creativity will be used to measure how designers use fonts as graphical page elements to aid in document credibility.

Rhetorical Situation Variables

The variables that will be used to predict how document rhetorical situation affects the dependent variable are document subject, audience and purpose. Specifically, to be examined are how the chosen fonts support each factor in the rhetorical situation.

Subject. The subject of the document reveals what the document is about and what kind of information is presented in the document. The document's subject matter sets the tone for the document, which in turn helps to influence the type of font used in the document.

Audience. The readers of the document are the audience for whom the document is created. The known target audience is a determinant in the type of font used in document creation.

Purpose. The purpose of the document is what the document is attempting to achieve, and also the reason that the document is being created. The typeface used in a document must be aligned with its purpose in order to confer credibility.

Type Efficiency

The ease with which type can be read in documents is perhaps the most researched area of font usage. Informational hypertext documents must be highly legible, while entertainment oriented documents can push typographic creative limits. The independent variable of type efficiency will be used to gauge the relationship of the chosen font to ease of readability in the constructed documents.

Dependent Variable (y), the Outcome Variable

The outcome variable is the manner that the designer uses a chosen font palette in the development of hypertext documents.

Validity

Construct Validity

The construct that is being measured is designers' font use in hypertext documents. The instrument being used to measure the construct are the variables that will reveal the extent that font use in hypertext document creation are affected by a designer's education, experience, attempts at creativity, a document's rhetorical situation, and type efficiency. Each of the variables influences designer font choice in hypertext document construction.

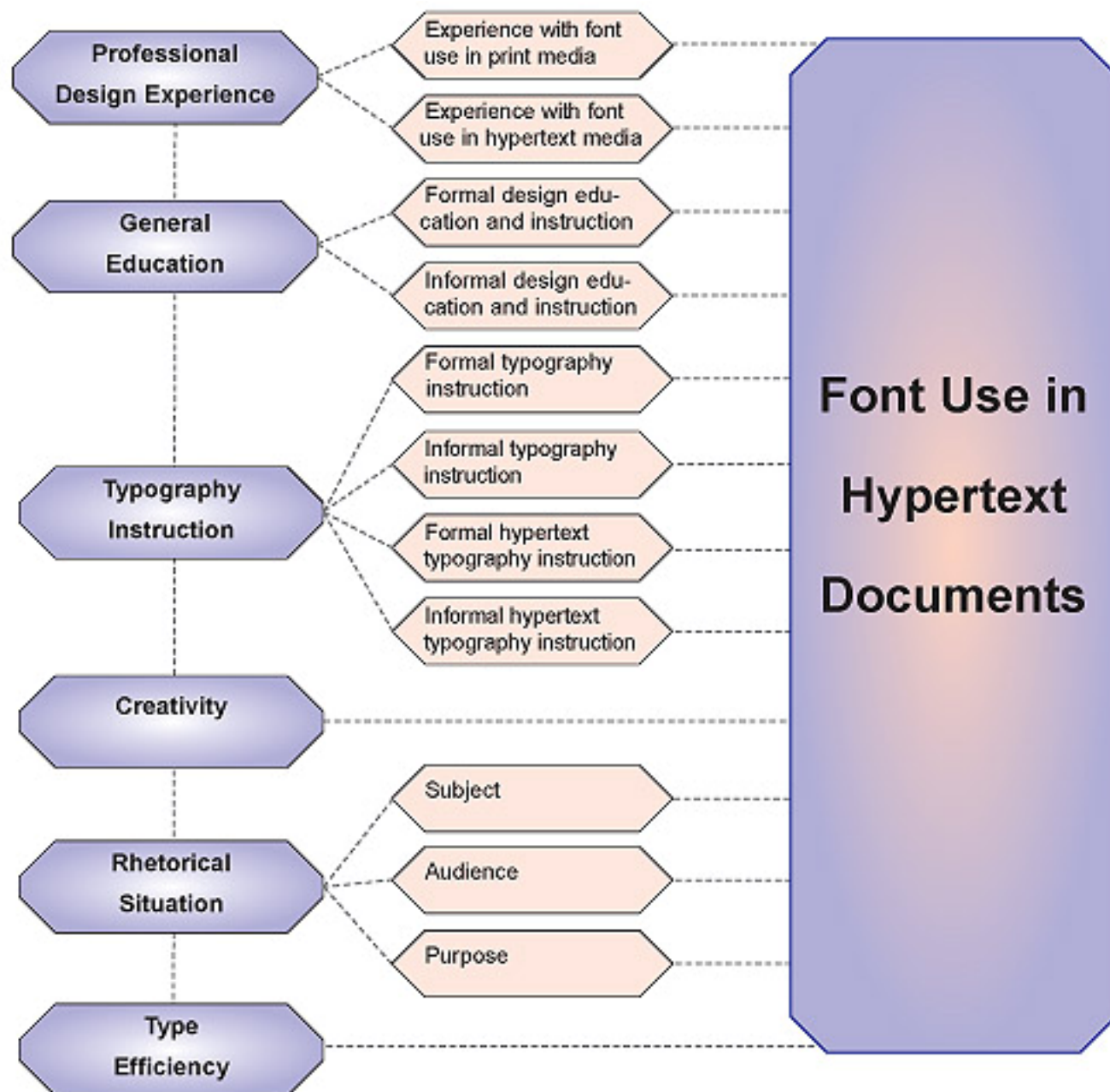


Figure 1. Hypertext Media Font Palette Model

Content Validity

The instrument to be used is one set of subject pre-screening questions to aid in sample selection and one set of interview questions to be answered by the chosen subjects. The pre-

screening questions (Table 2) will serve to ensure that the chosen subjects are qualified to answer fully the second set of questions.

The first grouping of the second set of questions (Table 3A) will cover the designers' educational and professional background. The second grouping of the second set of questions (Table 3B) will interrogate the designers' submitted documents to uncover reasons for font choice as it relates to the designers' creativity, font efficiency and the documents' rhetorical situation and how the chosen fonts support it.

In an in-person or telephone interview, all subjects will be asked an identical set of questions. All subjects will be given the opportunity to answer at length on any of the questions.

Table 2. Pre-Screening Questions

Question	Variable	Literature Review
1. How long have you been a professional designer?	Length of design experience	Length of time practicing design affects design decisions
2. Do you have experience designing for print media?	Experience with font use in print media	Expertise designing in print media affects design decisions made in hypertext media
3. Do you have experience designing for hypertext media (Internet, Web or Intranet)?	Experience with font use in hypertext media	The study requires that designers have experience in hypertext media design
4. Do you have a digital	N/A*	The portfolio is required to

portfolio that includes samples of your print and hypertext media projects?		critique designer font usage
5. What is your ethnicity/race?	N/A*	In order to achieve a representative sampling of designers, a cross section of gender and ethnicity/race will be sought. See Table 3.

*N/A: Not applicable. There is no independent variable that applies to this question;

however, the answer to this question is required to perform the study.

Table 3A. Interview Questions on Experience and Education

Question	Variable	Literature Review
1. What is your general educational background (High school, College)?	General Education	Education influences the development of personal preferences
2. What formal instruction or training, if any, have you received in design?	Formal design specific-instruction	Instruction or training specific to design affects expertise and influences design decisions
2a. If you have no formal training in design, how did you acquire your design skills?	Informal design specific-instruction	General knowledge of design principles affects expertise and influences design decisions

3. What formal instruction or training, if any, have you received in typography?	Formal typography instruction	Instruction or training specific to typography affects design decisions
3a. If you have no formal training in typography, how did you acquire your knowledge of typography?	Informal typography instruction	General typographic knowledge affects expertise and influences font choice decisions
4. What formal instruction or training, if any, have you received in typography specific to hypertext media?	Formal hypertext typography instruction	Hypertext-specific typography training affects expertise and influences font choice in hypertext media design
4a. If you have no formal instruction or training for typography specific to hypertext media, how did you acquire your knowledge of font use in hypertext media?	Informal hypertext typography instruction	General knowledge of hypertext typographic principles affects expertise and influences font choice in design

Table 3B. Interview Questions on Font use in Portfolio Documents

Question	Variable	Literature Review
1. Describe the document's:	Rhetorical situation	Designers are constrained

<p>a. subject</p> <p>b. audience</p> <p>c. purpose</p>		<p>by a document's perceived requirements</p>
<p>2. How do the fonts used in the document support the document's:</p> <p>a. subject</p> <p>b. audience</p> <p>c. purpose</p>	<p>Rhetorical situation</p>	<p>Designers are constrained by a document's perceived requirements</p>
<p>3. In what way do the chosen fonts display your creative efforts?</p>	<p>Creativity</p>	<p>Designer personal preferences influence font choice</p>
<p>4. What influence did ease of readability have on font choice?</p>	<p>Type efficiency</p>	<p>Informational hypertext documents must be highly readable; however, entertainment-oriented hypertext can explore illegibility in font usage</p>
<p>5. Why would you or why would you not choose different fonts to design this document?</p>	<p>The variable to which this answer belongs depends on the answer given:</p> <p>Creativity, type efficiency, rhetorical situation,</p>	<p>The factors of creativity, type efficiency, rhetorical situation and designer experience influence font design decisions</p>

	<p>experience. Designers will be allowed to speak at length, thereby offering multiple answers, each receiving a unique variable assignment</p>	
--	---	--

Reliability

The interview questions about how designers use fonts are valid instruments for discovering how designers use fonts. The recorded responses from the interviews will assure accessibility of this base-line case study, and reliability of the questions will come as other researchers use the variable set and instruments and compare their work.

Information Analysis

The research method to be used is one of qualitative analysis developed by Barney G. Glaser and Anselm L. Strauss called grounded theory, in which one arrives "at theory suited to its supposed uses" by a "systematic discovery of the theory from the data of social research" (Glaser and Strauss 3). Grounded theory is a set of techniques for (1) identifying categories and concepts that emerge from text, and (2) linking the concepts into substantive and formal theories (Bernard 443). The steps of grounded theory that I will follow as outlined in Social Research Methods are:

- (1) Produce transcripts of interviews by transcribing tape interviews

- (2) Identify potential analytic categories or themes that arise (The analytic categories are the six major category and eleven sub-category independent variables of the research study)
- (3) As the categories emerge, pull the data from those categories together and compare (Highlight and code the data according to the categories)
- (4) Think about how categories are linked together
- (5) Use the relations among categories to build theoretical models, constantly checking the models against the data—particularly against negative cases'
- (6) Present the result of the analysis using exemplars—quotes from interviews that illuminate the theory (443)

The basic analytic categories have been identified as the variables listed in Tables 2, 3A and 3B. The variables will be given a code of a letter followed by a number. Any sub-themes (second-order categories) that arise during the analysis process will be assigned the letter belonging to its related theme, followed by a successive number. See Table 6 for a list of the codes and related variables.

Table 6. List of Variables and Related Codes

Variable	Code
Length of time practicing design professionally	A1.1
Experience with font use in print media	A2.1
Experience with font use in hypertext media	A3.1
Education (B)	
General education	B1.1
Formal design education and instruction	B2.1

Informal design education and instruction	B3.1
Typography Instruction (C)	
Formal typography instruction	C1.1
Informal typography instruction	C2.1
Formal hypertext typography instruction	C3.1
Informal hypertext typography instruction	C4.1
Creativity	D1.1
Rhetorical Situation (E)	
Subject	E1.1
Audience	E2.1
Purpose	E3.1
Type Efficiency	F1.1

The interviews will be transcribed and an Nvivo coding process will be used to identify relevant themes. In order to become familiar with the texts, I will read the interviews and highlight areas of text and apply code tags for relevant independent variable associations. Additionally, each code will receive a memo to clarify or interrogate the tagged item. Then using a coding application such as Nvivo, I will import the interviews into the software. The software will facilitate the classification of concept categories that were identified and tagged during the read-through.

In the coding software, the concept categories will be classified into nodes that identify each concept, and the highlighted text, tags and memos will be associated with a node or nodes that classify it in a major and/or sub-category. When tagging, import and categorization at the

nodes is complete, the software will be used to create queries that may display patterns in designer motivations for font use at the level of the independent variables. I will be looking for similarities and differences in each of the designer's responses that address each variable that lead to the chosen font palette. The coding at the nodes will help to reveal patterns in the responses to the questions that fit each independent variable. Analysis of the patterns and the responses will allow conclusions to be reached about how the independent variables affect the behavior of the dependent variable. The reporting analysis will be in narrative, case study format and will be supported by quotes from the subject interviews.

Sampling Plan

The sample type is non-probability, purposive/judgment. It is important that the representative sample for each career stage meets the study criteria. The three career stages that will be examined are advanced (10 or more years), mid (more than five but less than 7 years) and beginning (less than two years). Each subject must have experience designing in the print and electronic areas.

Gender and Ethnicity

The literature review revealed that most Web sites are designed by males or male dominant teams and generally sites display a characteristically male design aesthetic (Moss et al. 94). Ethnicity may be predictive of design outcomes in personal Web site designs; however, ethnicity will not be a variable in the research analysis. Ethnic influences on design may be revealed through other variables, such as education and received instruction, but designers seeking to develop general market portfolios for employment, more often than not, wish to demonstrate a design sensibility that is not specific to any ethnicity. That said, however, the

sample will attempt to provide a sample section of the Web design community that is ethnically inclusive. Two (2) male subjects will be selected and one (1) female subject. See Table 4 for the racial/ethnic and gender composition of the possible sample set population.

Table 4. Possible Sample Populations

Possible Sample Populations	African/Hispanic Descent	Asian Descent	Caucasian
1	Male	Female	Male
2	Female	Male	Male
3	Male	Male	Female

Sample Size

I will be using a representative sample size of three (3). The sample size is based on the variable of career maturity at the three (3) career levels of beginning, mid and advanced. I will choose one representative sample for each career level, and interview designers who have experience designing for print and electronic media:

- One designer who has been designing professionally for at least 10 years (advanced career)
- One designer who has been designing for 5-7 years (mid career)
- One designer who is at the beginning of a career in design, less than 2 years (beginning career)

Sample Population

The sample will be chosen from the population of Web and hypertext designers in local New York City organizations and businesses. I will use cluster sampling to build a list of prospective subjects from local design organizations (e.g., Type Director's Club) and businesses, and I will take advantage of my personal contacts in the publishing industry to recruit subjects who meet the professional criteria of any of the three sample categories.

Research Costs

There are no costs associated with this research project.

Possible Problems

Subject Unavailability

A subject may agree to do the interview and have submitted completed consent forms but may be unavailable when the time arrives to perform the interview.

Potential Solutions

I will identify and solicit consent forms from backup subjects who express a willingness to serve as subject alternates in the event that a chosen subject can not participate. This strategy will require selection of two of each sample demographic type.

Timetable

The research, analysis and reporting will be conducted over the period of one semester. See Table 5 for the timeline and milestones.

Table 5. Timeline and Milestones

Item No.	Item	Milestone	Time

1	Review literature	Review related and supportive literature	The literature review will be largely completed in the proposal stage, yet it will also be ongoing during the research time period
2	Generate preliminary list of interview questions	Generate the list of question that will be used to interview all subjects	The preliminary question list based on the variables will be completed by the end of the research proposal stage
3	Build list and solicit subjects of prospective sample population	Use cluster sampling and personal contacts to solicit subjects. Send out sample screening questionnaires	2 -3 weeks
4	Choose sample and backup sample/ Schedule Interviews	Choose the most qualified for each category as responses to screening questionnaires are received	2 - 3 weeks (There will be overlap in the schedule for items 3 and 4. The combined time to complete items 3 and 4 should be limited to 1.5 months)
5	Solicit design samples/ get consent releases	Send PDFs of consent forms and obtain URLs for subject electronic	2 weeks

		portfolios	
6	Review portfolios/ Create final questions about the submitted samples	Review the portfolios of each subject and create a final list of questions about the font usage in the hypertext documents	3 weeks
7	Conduct the subject interviews	Interview each subject. Each interview should take no longer than 2-3 hours.	2 -3 weeks
8	Code, analyze and report results	Code, analyze and report the findings	1.5 – 2 months

Significance

The significance of the study findings is that the young profession of hypertext design can benefit from the knowledge of how and why font design decisions are made to augment the limited Web-safe font palette. Over the course of a career in hypertext design, designers gain experience and knowledge about the ways that fonts behave in the electronic environment. Either this experience and knowledge can buttress designers' previous education and influences or it can serve to give them a new perspective on designing with type in a hypertext environment. Designers new to the profession of hypertext design can gain insight into how to create more effective hypertext documents from empirical evidence that supports effective font choice.

This study is of one aspect of hypertext document creation in a profession that can require the knowledge of multiple disciplines, from font usage to graphics production to video

editing. Overall, the young profession of hypertext design and production can benefit from research that helps to improve aspects of document construction.

Works Cited

- Bernard, Russell H. Social Research Methods. Thousand Oaks, CA: Sage Publications, Inc. 2000.
- Bolter, Jay David. Writing Space: Computers Hypertext, and the Remediation of Print. Mahwah, NJ: Erlbaum, 2001.
- Carter, Harry. A View of Early Typography. London: Hyphen Press, 2002.
- Chandler, Daniel. Semiotics: The Basics. London: Routledge, 2002.
- Chevalier, Aline and Melody Y. Ivory. "Web Site Designs: Influences of Designer's Expertise and Design Constraints." International Journal of Human-Computer Studies 58(2003): 57-87.
- Drucker, Johanna. "The Critical 'Languages' of Graphic Design" AIGA Conference on Design History and Criticism. Feb. 2001.
- Fogg, BJ, T. Kameda, J. Boyd, J. Marshall, R. Sethi, M. Sockol, and T. Trowbridge. "Stanford-Makovsky Web Credibility Study 2002: Investigating What Makes Web Sites Credible Today." A Research Report by the Stanford Persuasive Technology Lab & Makovsky & Company. Stanford U., Spring 2002.
- Gero, John S., and Mary Lou Maher, eds. Modeling Creativity and Knowledge-Based Creative Design. Hillsdale, NJ: Erlbaum, 1993.
- Glaser, Barney G., and Anselm L. Strauss. The Discovery of Grounded Theory: Strategies for Qualitative Research. New York: de Gruyter, 1967.
- Greetham, D. C. Theories of the Text. Oxford: Oxford UP, 1999.

- Heller, Steven, and Seymour Chwast. Graphic Style: From Victorian to Digital. New York: Harry N. Abrams, 2000.
- Lewis, John. Printed Ephemera: The Changing Uses of Type and Letterforms in English and American Printing. Ipswich, England: W. S. Cowell, 1962.
- Lupton, Ellen and J. Abbott Miller. "Deconstruction and Graphic Design: History Meets Theory." Visible Language. 28.4 (1994). 23 Nov. 2006
<<http://designwritingresearch.org/essays/deconstruction.html>>.
- Macdonald, Nico. What is Web Design? Mies, Switzerland: RotoVision, 2003.
- McCarthy, Michael S., and David L. Mothersbaugh. "Effects of Typographic Factors in Advertising-Based Persuasion: A General Model and Initial Empirical Tests." Psychology & Marketing 19.7-8 (July/August 2002): 663 – 91.
- McLuhan, Marshall. Understanding Media: The Extensions of Man. London: Routledge, 2001.
- Moss, Gloria, Rod Gunn and Krzysztof Kubacki. "Gender and the Services Branding Model: Lessons from Web-Design." Proceedings from the Multimedia Applications in Education Conference, 2006. Papers: Stream Women in IT. Ed. Daniela Grab and Lisa Zimmerman. Graz: Multimedia Applications in Education Conference, 2006. 94-103.
- Smart, L. Karl, Judy Cossell Rice and Larry E. Wood. "Meeting the Needs of Users: Toward a Semiotics of the Web." Proceedings of IEEE Professional Communication Society International Professional Communication Conference and Proceedings of the 18th Annual ACM International Conference on Computer Documentation, September 24 - 27, 2000: Session: Issues in Web Design. Cambridge: IEEE, 2000.
- Stockl, Hartmut. "Typography: Body and Dress of a Text." Visual Communication. 4.2 (2005): 204-214.

Van Leeuwen, Theo. Introducing Social Semiotics. London: Routledge, 2005.

White, Alex. "European and American Typography in the 1920s." Communication Arts 46

(2005): 120-123.

APPENDIX A

Consent To Take Part In A Research Study**CONSENT TO TAKE PART IN A RESEARCH STUDY:****Typography Use in Hypertext Documents:
A Study in Why Designers Make Font Choices**

This consent form is part of an informed consent process for a research study and it will give information that will help you to decide whether you wish to volunteer for this research study. It will help you to understand what the study is about and what will happen in the course of the study.

If you have questions at any time during the research study, you should feel free to ask them and should expect to be given answers that you completely understand.

After all of your questions have been answered, if you still wish to take part in the study, you will be asked to sign this informed consent form.

You are not giving up any of your legal rights by volunteering for this research study or by signing this consent form.

Who is conducting this study?

My name is Andrew Williams and I am a graduate student in the Master's degree program at New Jersey Institute of Technology.

Why is this study being done?

This study is being done as a thesis project for the fulfillment of the requirements of a Master's Degree. The degree is in the Professional and Technical Communications program at the New Jersey Institute of Technology, Newark.

What is this study about?

This study is an investigation in how and why designers make font choices in their creation of hypertext and Web documents.

Who may take part in this study and why have you been asked to take part in this study?

You have been invited to take part in this study as a volunteer because you meet the qualifications of the study requirements. The following are the qualifications for people who may take part in this study:

Professional designer of hypertext documents

Experience working in print and electronic media

Possess a digital portfolio of print and hypertext work samples

How long will the study take and how many subjects will participate?

Three (3) subjects will take part in the study. Your participation time in the study will be between 2-4 hours.

What will you be asked to do if you take part in this research study?

If you agree to take part in this study, you will be asked to undergo an interview. The interview will consist of:

- a. *12 general questions:* The subject of the questions will range from your general and design-specific education, your professional design experiences and your thoughts and philosophy that guide your work with fonts in Web and hypertext document creation.
- b. *An additional number of questions, to be decided, based on your portfolio samples:* The questions will cover your use of fonts in your work and discuss why you made font choices.

How will the portfolio samples be used?

Your sample work will be used in research analysis in the context of font usage. Samples of your work may be used in the study report. If you agree to participate in the study, you will be asked to sign a non-exclusive fair use rights agreement to allow samples of your portfolio content to be used in the study.

Are there any benefits for you if you choose to take part in this research study?

The benefits of taking part in this study may be a gain in insight into the reasons why certain fonts are used in hypertext documents, and what fonts may be optimally suited for hypertext document use.

Will your privacy be protected if you take part in this study?

Your personal identity, that is your name, address, and other identifiers, will be kept confidential and will not be used as part of the study findings or the study results discussion. In the findings of the study, you will not be identified by name unless you want to receive a copyright credit for any images used of your portfolio samples.

If you do not sign this approval form, you will not be able to take part in this research study.

What if I sign the agreement to participate but change my mind later?

You can change your mind and revoke this approval for the use of your data at any time. If you change your mind, you must revoke your approval in writing to Andrew Williams by mail:

Electronic mail: aw59@njit.edu

Post: Andrew Williams, 461 Washington Ave, #2, Brooklyn NY 11238.

You are not giving up any of your legal rights by signing this informed consent form or by taking part in this research study.

What are your rights if you decide to take part in this research study?

You have the right to ask questions about any part of the study at any time. You should not sign this form unless you have had a chance to ask questions and have been given answers to all of your questions

Whom can you call if you have any questions?

If you have any questions about taking part in this study, you can contact:

Andrew Williams
Aw59@njit.edu
917-803-5831

Agreement to Participate

I have read this entire form and I believe that I understand what has been discussed. All of my questions about this form and this study have been answered.

I agree to take part in this research study.

Subject Name: _____

Subject Signature: _____ Date: _____

Signature of Investigator or Responsible Individual:

To the best of my ability, I have explained and discussed the full contents of the study, including all of the information contained in this consent form. All questions of the research subjects and those of his/her parent(s) or legal guardian have been accurately answered.

Investigator/Person Obtaining Consent: Andrew Williams

Signature: _____ Date: _____

Andrew Williams

APPENDIX B

Consent for Non-Exclusive Rights to Portfolio Images**Consent for Non-Exclusive Rights to Portfolio Images**

You, the Research subject agree to the following:

1. The Research subject agrees to grant Andrew Williams (the Researcher) the non-exclusive rights to use and publish for research purposes, image representations of the Research subject's portfolio contents.
2. The Research subject warrants and represents that the material s/he submits is original with him/her: that it does not infringe upon any copyright, proprietary right, or any other right of any kind, that it does not libel or invade the privacy of any person and that the Research subject has the unimpaired right to convey the rights s/he has granted the Researcher in this Agreement. The Research subject will indemnify the Researcher and hold the Researcher harmless against all claims, losses and expenses (including reasonable attorney's fees) which result from breaches of the Research subject warranties and representations.
3. Should the Research subject desire image copyright credit, the Research subject agrees to provide the Researcher in writing with a name that will copyright identify the Research subject's material.
4. There is no time-limit on this contract.

I agree to the terms and conditions above:

Subject Name: _____

Subject Signature: _____ Date: _____

Andrew Williams
Researcher

Date: _____

APPENDIX C

Questionnaire for Research Sample Screening Process

My name is Andrew Williams and I am seeking volunteers for a research study that I am conducting. I am looking for professional designers of Web and hypertext documents who have experience working in print and electronic media, and also have a digital portfolio of their print and hypertext work samples.

The reason for the study is to fulfill the degree requirements for a Master's in Professional and Technical Communication at New Jersey Institute of Technology. The subject of the study is an investigation of the font choices that designers make in creating hypertext documents.

Your participation in the study will add to the body of knowledge of font use in hypertext document creation and you may have the opportunity to gain further insight into the process of how and why typographic choices are made.

If you are chosen for the study, you will be asked to undergo an interview of questions about your professional experience, educational background and questions about how and why you make font choices in your work. The interview should take about 2-4 hours.

If you choose to take part in the study, your personal identity, that is your name, address, and other identifiers, will be kept confidential and will not be used as part of the study findings or the study results without your written permission.

If you would like to participate in the study, please take a minute to answer the short list of questions below.

Length of Design Experience

1. How long have you been a professional designer?

- Less than 2 years
- 2 to 4 years
- 5 to 7 years
- 8 to 10 years
- 10 or more years

Experience with Font Use in Print Media

2. Do you have experience designing for print media?

- Yes No

Experience with Font Use in Hypertext Media

3. Do you have experience designing for hypertext media (Internet, Web or Intranet)?
__Yes __No

The portfolio is required to critique designer font usage

4. Do you have a digital portfolio that includes samples of your print and hypertext media projects?
__Yes __No

In order to achieve a representative sampling of designers, a cross section of gender, ethnicity/race will be sought.

5. What is your ethnicity/race?

Your Name: _____

Email Address: _____

Home/Cell Phone: _____

Best time to contact you: _____

APPENDIX D

Research Interview Questions

General Education

1. What is your general educational background (High school, College)?

Formal Design Education and Instruction

2. What formal instruction or training, if any, have you received in design?

Informal Design Education and Instruction

2a. If you have no formal training in design, how did you acquire your design skills?

Formal Typography Instruction

3. What formal instruction or training, if any, have you received in typography?

Informal Typography Instruction

3a. If you have no formal training in typography, how did you acquire your knowledge of typography?

Formal Hypertext Typography Instruction

4. What formal instruction or training, if any, have you received in typography specific to hypertext media?

Informal Hypertext Typography Instruction

4a. If you have no formal instruction or training for typography specific to hypertext media, how did you acquire your knowledge of font use in hypertext media?

Rhetorical Situation

5. Describe the document's:

- a. subject
- b. audience
- c. purpose

Rhetorical Situation

6. How do the fonts used in the document support the document's:

- a. subject
- b. audience
- c. purpose

Creativity

7. In what way do the chosen fonts display your creative efforts?

Type Efficiency

8. What influence did ease of readability have on font choice?

The variable to which this answer belongs depends on the answer given: Creativity, type efficiency, rhetorical situation, experience

9. Why would you or why would you not choose different fonts to design this document?