WEB FONTS: BREAKING LIMITATIONS TO FORM

CUSTOMER-FOCUSED BRAND COMMUNICATION

THESIS

Presented to the Graduate Council of
Texas State University-San Marcos
in Partial Fulfillment
of the Requirements

for the Degree

Master of FINE ARTS

by

Thomas C. Berno

San Marcos, Texas
August 2010

WEB FONTS: BREAKING LIMITATIONS TO FORM

CUSTOMER-FOCUSED BRAND COMMUNICATION

Committee Members Approval:

_____

Jeffrey G. Davis, Chair

_____

Brian Row

_____

Mark Judson

Approval:

_____

J. Michael Willoughby
Dean of the Graduate College

DEDICATION

This thesis is dedicated to my wife Diana, who has been a constant source of strength and inspiration throughout my journey through the Communication Design MFA program, and in particular throughout the research and writing of this thesis.

I also dedicate this work to my mother, Helen Schultz, and my brother, Michael, for a lifetime of love and support.

ACKNOWLEDGEMENTS

I would like to thank all of the faculty, staff, and fellow students of the

Communication Design MFA program for their invaluable contributions and camaraderie

through the program.

I am grateful for the guidance and support of my thesis committee members,

Jeff Davis, Mark Judson, and Brian Row, who have each played instrumental roles in

my education and career in communication design.

I wish to express my appreciation for the tireless efforts of Professor William

Meek in the development and subsequent founding of the Texas State Communication

Design MFA program.

I also wish to thank Dr. Erik Nielsen and Dean Richard Cheatham for their

unqualified support of my participation in the Communication Design MFA program.

This thesis was submitted on May 19, 2010.

TABLE OF CONTENTS

LIST OF FIGURES

ABSTRACT

WEB FONTS: BREAKING LIMITATIONS TO FORM

CUSTOMER-FOCUSED BRAND COMMUNICATION

by

Thomas C. Berno, BFA, Communication Design, Texas State University-San Marcos

Texas State University-San Marcos

August 2010

SUPERVISING PROFESSOR: JEFFREY G. DAVIS

Brand communication expanded rapidly during the last decades of the 20th

century and throughout the first decade of the 21st century. Brand valuation emerged as

an important metric to evaluate business performance, and brands penetrated society at an

unprecedented level over the course of that time. Brands emerged as social agents, and it

became common for individuals to express identity and community via the brands they

embraced and the lifestyles they indicated.

As brand communication evolved, so too did the World Wide Web as a communications medium. From 1995, when commercialization of the web commenced in earnest, communication designers faced a host of challenges and limits of web-based design. Software improvements and bandwidth expansion removed many of these limits, and the aesthetics of the web evolved to match its communications capabilities. One notable area of design witnessed a near-total lack of progress from the state of the early web—the availability of fonts. The digital age ushered in a tremendous proliferation of fonts for use in computer based design, with over 13,000 fonts available to designers by the mid-1990s. For a variety of reasons, the web never adequately addressed the designer's need for font options that matched those available for printed communications, and there remain only a small set of fonts that functioned on a universal basis.

This significant challenge witnessed the emergence of a genuine solution with web font technology. A string of developments began from late 2008 forward that addressed font technology, design and licensing issues. These developments gave communication designers greatly expanded resources to design with type on the web.

In *Web fonts: Breaking limitations to form customer-focused brand communication*, the full historic consequence of typography (i.e. design of type using fonts), web communications, and brand communications formed the context for evaluating this technology. Applications revealed new possibilities to not only use typography without many of the previous limits, but also to connect message and typography in ways that create new relevance to customers, based on their expressed and implied needs. This emerging view of brand communication placed a much higher premium on the customer's viewpoint and allowed the customer to actively connect with

brands via the web's unique two-way message and information conduits. Web fonts

brought visual manifestation to these new connections. In doing so, web fonts enabled a

higher level of intuitive communications with customers, and brought a powerful—and

previously untapped—resource to brands.

Chapter I

INTRODUCTION

In recent years the communication design industry, and its practitioners, faced two overriding realities: brand communication became a pre-eminent influence on design (Blackett, 2009, p. 25), and the World Wide Web became more prominent as a media for brand communication (Feldwick, 2009, p. 129).

Meanwhile, the advent of social networks, and the availability of information on the web, had profound impact on customers. These developments brought forth a new premium of confidence when it came to customers and brands (Frampton, 2009, p. 3). Brands needed a new means to attract and retain customer confidence.

Customer-centered branding defined a new approach to capitalizing on the customer's involvement with brands via two-way communication, and included a fundamental shift in communication strategy. This new model required much more effort in understanding and meeting customer expectations, rather than generating demand via one-dimensional marketing campaigns (Bhalla, et. al., p. 96).

There remained a fundamental disconnect between the critical activity of brand communication and one of the most prominent and powerful communications media: the World Wide Web. Typography was central to communication design as a means of expression (Bringhurst, 1997, pp. 22–23). Typography was also central to brand identity

and communication (Wheeler, 2006, p. 114). However, typography on the web was tightly constrained; most web sites utilized one of a small group of universally installed fonts on personal computers. Communication designers used these fonts regardless of their relevance or appropriateness, or else resorted to time-consuming conversions of text to graphics. In most cases, these compromises caused a substantial loss of compatibility with critical information functions, such as search queries (tdc.org, 2010, paras. 3–4).

Web font technology promised a potential solution to the existing limitations of typographic design on the web. Additionally, web fonts offered a compelling new capability to forge new connections of meaning with customers, and thus revolutionize customer-centered brand communication on the web.

Chapter II

STATEMENT OF THE PROBLEM

Through the first decade of the 21st century, web design remained unacceptably

hindered by the lack of a suitable means to incorporate typographic design and

expression fully and seamlessly throughout the medium. The result was an avoidance of

the web as a media by many well-qualified communication designers, and sub-par results

when contrasting web design with other established print media (e.g.: brochures,

catalogs, advertising, etc.) created within the communication design field (Neumeier,

2006, p. 98).

Hypothesis

Web fonts provided a potential solution to the longstanding typographic weakness

of web design by providing new resources: extensive font families for web page design

accessible to a broad audience. This capability supplied communication designers with

unprecedented opportunity to unify web design with all other phases of design,

particularly in the realm of complex brand communications programs.

Web fonts possessed an unprecedented possibility to create communication with

meaning to its audiences via typography. The web, with its keyword-driven searches and

the like, offered the ability to define fonts used in pages according to keyword

associations, customer profiles, and other database-driven information. This offered an

unprecedented and revolutionary capability for brands to connect with customers, as this

typographic communication reflected the personality of its customers via the personality of its design. This opened entirely new applications for web design in the context of brand building.

For the first time, design informed by information associated with audiences or affinities was possible, and cascading style sheets (CSS) enabled the creation of such pages in real time, according to designer-specified parameters.

<div align="center">Three Critical Tests</div>

Evidence revealed that web font development recently met three critical tests that were conditional for the technology's evolution.

The first of these was a licensing test. Like all software, licensing agreements specified tightly controlled usage for fonts, particularly on the number of computers allowed to install the font under a single license (Adobe, Inc., 2010). The web font standard created a new licensing model based on the host, rather than the receiving audience, bearing responsibility for proper licensing. This was a new business model for the industry, and specific aspects of the technology made licensing practical, even for large-scale application (Typekit.com/plans, 2010).

The second test was a usability test. Web fonts were worthless if the installed base of browsing software was incompatible with the new standard. Recent developments achieved a benchmark of 90% compatibility (FontShop.com, 2010, para. 5), with near universal adoption on the horizon.

The last was a communications test. Web fonts fulfilled the communication designer's need for greater flexibility and expression in the use of type than previously

practical in HTML-generated web pages. Brand relied on typography as an important means of communication and differentiation.

<div align="center">Reasoning and Evidence</div>

The connection between typography and design developed over the 500 years that elapsed since Gutenberg's invention of moveable type circa 1450. Many contemporary practices in communication design originated through the full span of that history. Evidence of the means and effectiveness of typographic expression in both a verbal and visual sense emerged over that time as well. An examination of typographic evolution demonstrated the importance of type to communication designers as a predominant communications medium.

The development of the World Wide Web, and its convergence with communication design, illustrated the importance of design within that medium over the past fifteen years. This history emphasized the importance of web font technology as a breakthrough relative to the current state of web design and communication.

The critical connection between brand development and communication design also emerged as a dominant influence on design from the late 20th century through the present. A relatively new development was the concept of customer-centered brand communication. This viewpoint of brand placed the customer's needs first, and upended traditional brand marketing in many respects. The role of the web as both a means of sharing information among peers, and collecting data, shaped this development. Web fonts possessed a strong potential to address these customers in uniquely personal ways.

Web Font Technology and Communications

Web font technology emerged as a critical development in web design. The technology capitalized on new ways of managing intellectual property rights, and linking to font resources utilizing CSS. The technology eclipsed more complex means of dealing with the typographic limitations of the internet, many of which required widespread use in order to satisfy overriding design and communication imperatives.

Web fonts also elevated the standard of typographic possibilities on the web. Because of typography's unique communications capabilities, this constituted an important breakthrough that potentially changes the nature of web communications at a fundamental level.

Implementation and Outcomes

The accompanying exhibit "A demonstration of web fonts and customer-centered communication" showed a basic implementation illustrating the hypothesis. Specific keywords defined font selection for specific content via CSS style sheets. Content updates formatted to the specified variables, thus demonstrating the feasibility of this powerful new application of web fonts in a designed context.

Chapter III

THE HISTORY AND RELEVANCE OF TYPOGRAPHY

TO THE FIELD OF COMMUNICATION DESIGN

Gutenberg and the Invention of Typography

It is necessary to understand the important role that typography played in communication design to understand the significance and potential of web font technology. Typography represented a fundamental element of design—similar to shape, color, form, line, etc.—and its study and mastery remained one of the hallmarks of the profession.

The original definition of typography illuminated its importance as a part of the technological revolution of the printing trade and its primary product: the printed book. Typography referred to "…printing with independent, movable, and reusable bits of metal or wood, each of which has a raised letterform on one face" (Meggs & Purvis, 2006, p. 64). Johann Gutenberg (d. 1468 AD) was universally recognized as the creator of the system involving moveable type for the purpose of printed reproduction. Gutenberg possessed a combination of intellectual vision and skilled craftsmanship— including mastery of gem-cutting and metalsmithing—that enabled him to construct each component of the complex system needed to create the first typographically printed books, including the Gutenberg, or forty-two-line, bible (see Figure 1) (Meggs & Purvis, 2006, pp. 69–71).

Figure 1. Gutenberg Bible. The Gutenberg Bible launched the era of typographically printed books. From *Meggs' History of Graphic Design* (p. 74), by P. B. Meggs and A. W. Purvis, 2006, Hoboken, NJ: John Wiley & Sons, Inc. Copyright 2006 by John Wiley & Sons, Inc.

Gutenberg was responsible for multiple innovations—the synthesis of which enabled the technological advances in printing and typography he was credited for. The first was the actual creation of a font, which served as the template for his moveable type. The resulting font compared favorably in its aesthetic merit to the scribe-rendered calligraphy upon which it was based (Meggs & Purvis, 2006, p. 70).

Once he had completed the font design, Gutenberg next needed a means to cast the individual pieces of type that would compose the printed page. While the concept of moveable type—once theorized—was relatively easy to describe, the technology and precision necessary to convert it into a practical production method presented many obstacles. It was necessary for each letterform (called a sort) to be parallel on all sides,

perpendicular when stood on end, and of constant height. These technical requirements were critically important, as they ensured that every combination of letters would form seamlessly into blocks to present a consistent printing surface. Gutenberg's experience as a metalsmith allowed him to develop both the molds and a casting metal that fulfilled the tight tolerances necessary for moveable type to work. Gutenberg also perfected new formulas for printer's inks specific for his metal type, and adapted contemporary presses to serve his printing needs (Meggs & Purvis, 2006, pp. 70–71).

The expansion of printing was a direct cause of the great enlightenment of knowledge that accompanied the Renaissance. As the printing trade spread throughout Europe, the craft evolved from imitations of the scribe's manuscripts to new conventions involving the use of type and the layout of pages (Meggs & Purvis, 2006, p. 79). From these origins, it was possible to trace the development of typography as a unique practice, and with it, the parallel development of craft that would eventually become the present-day practice of communication design.

<p style="text-align:center">Early Typographic Development</p>

The evolution of typography mirrored the development and spread of printing technology (Meggs & Purvis, 2006, p. 93). Present day communication designers made use of a vast array of font designs that owed their origins to a particular technological development in printing—each classified along a historical timeline that described the period by its accompanying typographic style. In the course of the development of typography, fonts not only served their utilitarian purpose, but also capitalized on the latest advances in papermaking, typecasting, and printing press refinement. Each succeeding generation of typographers refined the developments of its predecessors.

A rapid evolution of the typographic alphabet commenced from Gutenberg's original Textura (a font style also referred to as Blackletter). In 1465, two German printers: Conrad Sweynheym (d. 1477) and Arnold Pannartz (d. 1476), created a new style of letterform while in the employ of an Italian cardinal. It was a hybrid combination of the Caroline miniscule and capital letters derived from ancient Roman architecture (Meggs & Purvis, 2006, p. 91). This style of alphabet became known as roman, and it established the upper and lower case letter system. Other late-fifteenth century printers and typecutters rapidly refined the new alphabet for printing (Meggs & Purvis, 2006, pp. 94–95).

Important innovation in typographic design in Italy was visible in the work of Aldus Manutius (1450–1515). Through his printing press in Venice, Manutius created many important printed books (see Figure 2) notable for their artistic merit and scholarly value. He not only supervised creation of his own roman types that further evolved the typographic standard (including the model for the present-day font Bembo), but also broke new ground in the design of the printed book page, created a small-format precursor to the paperback, and introduced the first italic font design (Meggs & Purvis, 2006, pp. 100–102). Venetian printers, with the innovation of the roman font, established a set of core principles for sound typographic design that have survived to the 21st century remarkably intact (Bringhurst, 1997, p. 10).
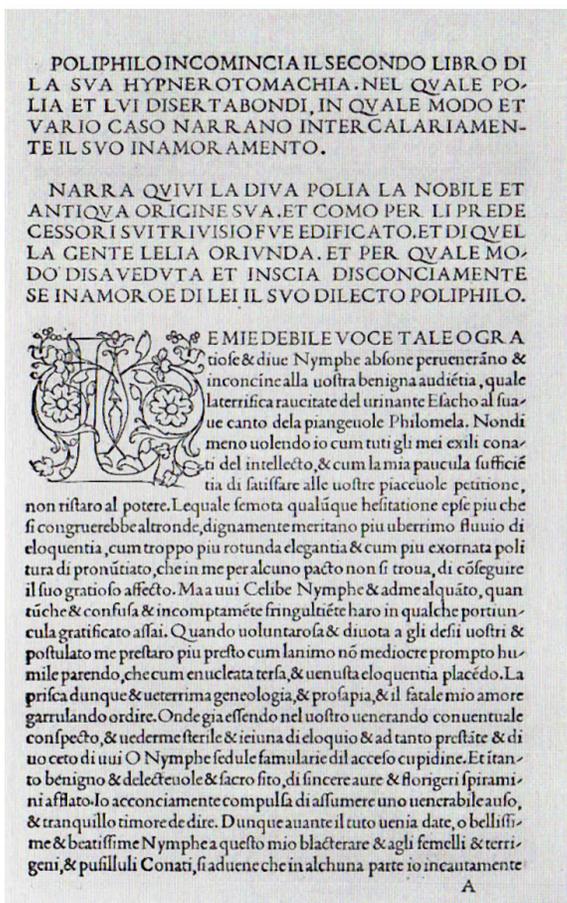
Figure 2. Printing by Aldus Manutius, 1499AD. Substantial improvement in page organization and legibility distinguished the typography in this 1499 A.D. printed book from Italian printer Aldus Manutius from that of Gutenberg's bible. From *Meggs' History of Graphic Design* (p. 100), by P. B. Meggs and A. W. Purvis, 2006, Hoboken, NJ: John Wiley & Sons, Inc. Copyright 2006 by John Wiley & Sons, Inc.

Contemporary designers classified the earliest of the Venetian type designs as Humanist (Austen and Perfect, 1997, p. 52). The term Humanist stemmed from the new ideals of the Italian Renaissance (Meggs & Purvis, 2006, p. 100), and was one of a distinct set of classifications used to organize typographic fonts according to their visual characteristics. Following the decline of the Venetian printing presses, a new phase of innovation in type design commenced elsewhere in Europe.

By the early 1500s, much of the most innovative work in the printing of books and typographic design shifted to France. One of the leading French figures of the early 1500s was Geoffroy Tory (1480–1533). His seminal work, the *Champ Fleury*, consolidated a new relationship between type, image, and decorative elements. The resulting book pages were notably airy when compared with earlier printed books, with a more refined letter design attributed to both Tory and another Frenchman, Claude Garamond (1480–1561) (Meggs & Purvis, 2006, pp. 104–108).

Garamond began his career as a punchcutter, and he designed a lighter weight roman font (when compared to Venetian types then in vogue) that earned quick adoption by France's finest printers. The aesthetic qualities of his letters, combined with notable technical refinements, accounted for Garamond's esteemed reputation as a typographic innovator. His font design resulted in superior legibility, and a lighter, more open page design. By Garamond's time, typographic design had separated further from its origins as a reflection of the scribe's art, and became more of an independent practice from printing. Garamond also produced his fonts as an independent craftsman, eventually becoming a manufacturer of fully populated metal fonts that were ready to sell to any printer. This resulted in wide-scale distribution of his type, which was a huge influence on the design of printed materials throughout Europe (see Figure 3). While others made small refinements to Garamond's fonts, the style retained dominant usage throughout Europe for over 200 years (Meggs & Purvis, 2006, p. 107–108).
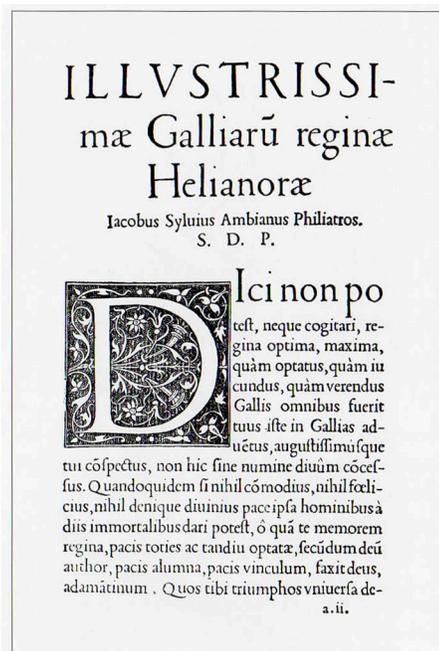
Figure 3. Period and contemporary examples of Garamond font design. A 1531 A.D. book page set in Claude Garamond's font design (left), with comparison to the contemporary digital font Adobe Garamond (right). From *Meggs' History of Graphic Design* (p. 110), by P. B. Meggs and A. W. Purvis, 2006, Hoboken, NJ: John Wiley & Sons, Inc. Copyright 2006 by John Wiley & Sons, Inc.

The name Garamond remained highly visible in modern communication design, due to both historical revivals of his original fonts and derivative designs from classic and contemporary designers. The Garamond font became virtually synonymous with one of communication design's most important classifications (see Table 1) for fonts: Old Style. Many other widely used fonts in modern communication design, including Times Roman, Caslon, Bembo, and Goudy Old Style, were from this class of fonts. Due to their legibility, more refined stroke weights, and elegant proportions, they re-emerged in the 20th century and remained dominant as popular font styles in all phases of modern communication design (Austen and Perfect, 1997, pp. 52–53).

Table 1: Font Classification, Dates of Origin, and Style Examples

FONT STYLE	DATE	FONT FAMILY EXAMPLE
BLACKLETTER	C. 1450 AD	Goudy Text
HUMANIST	C. 1500	Centaur
OLD STYLE	C. 1525	Adobe Garamond
TRANSITIONAL	C. 1760	ITC Baskerville
MODERN	C. 1790	Bauer Bodoni
SLAB SERIF	C. 1815	Rockwell
GROTESQUE	C. 1815	Gothic 13
GEOMETRIC SAN SERIF	C. 1930	Futura
MODERN SAN SERIF	C. 1960	Helvetica

Transitional and Modern Typography

Typographic development accelerated starting in the mid-eighteenth century. While Gutenberg's original technology remained largely unchanged (Meggs & Purvis, 2006, p. 71), additional refinements in the cutting of type punches, the precision of printing presses, and the quality of printing paper drove further innovations.

One influential printer and typographer was the Englishman John Baskerville (1706–1775). Baskerville's original practices as a writing teacher and stonecutter drove

him to seek perfection in the design and printing of books. His signature font design—

which bears his name—was a milestone in the evolution of typographic design. It

displays stark distinctions from Old Style letters, such as more pronounced contrast of

stroke weight, fine-pointed serifs, a shift in visual stress, and a wider letterform.

Baskerville developed new processes in papermaking and printing, as well as new

approaches to design. In his book designs, such as for a 1758 edition of Milton's

Paradise Regained (see Figure 4), Baskerville eschewed ornament and employed more

creative spacing of the type, contrasts of letter sizes, and mixing of roman capitals, lower

case and italic fonts. This constituted an important step towards more type-specific

design approaches (Meggs & Purvis, 2006, pp.122–125).
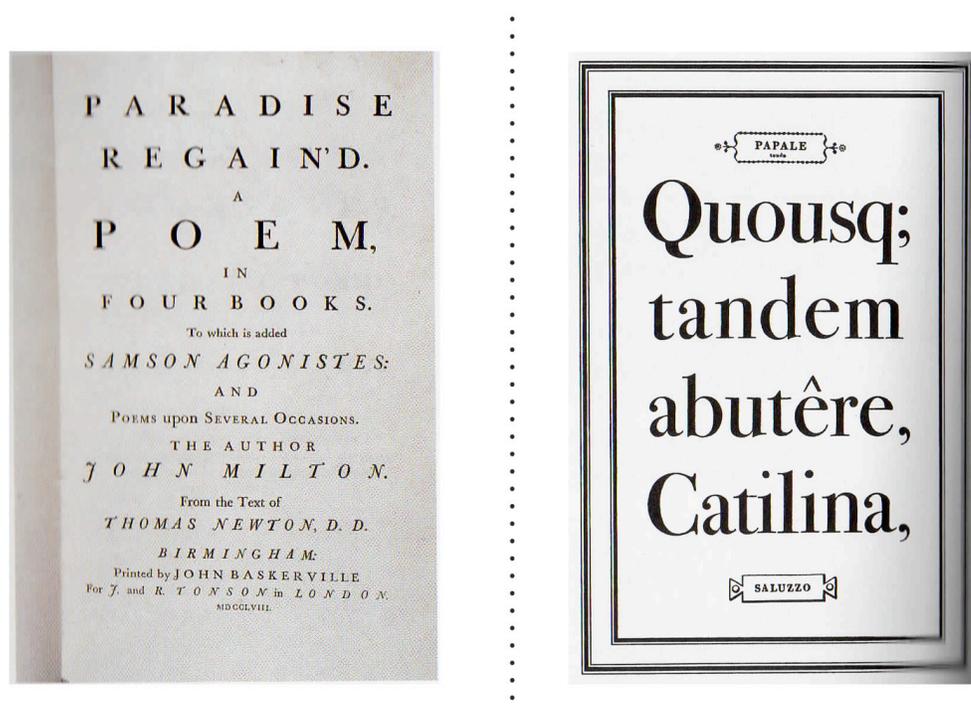

Figure 4. Fonts of Baskerville and Bodoni. Comparison of Baskerville's typography from 1758 (left) and Bodoni's typography from 1818 shows the evolution from Transitional to Modern Style font designs. From *Meggs' History of Graphic Design* (pp. 123, 126), by P. B. Meggs and A. W. Purvis, 2006, Hoboken, NJ: John Wiley & Sons, Inc. Copyright 2006 by John Wiley & Sons, Inc.

The Baskerville font enjoyed wide praise, including a description as "the epitome of neoclassicism and eighteenth century rationalism (Bringhurst, 1997, p. 205)," yet it was classified as a Transitional font design. While Transitional fonts have unique characteristics, the classification required an understanding of both its predecessor: Old Style, and its successor: Modern (Austen and Perfect, 1997, p. 88).

Modern fonts emerged in the second half of the 18th century. The font designs of the Italian printer Giambattista Bodoni (1740–1813), and of the French printer Francois-Ambrose Didot (1730–1804), marked a more complete departure from the Old Style fonts than Baskerville. Bodoni and Didot each designed remarkably similar type. Their namesake fonts displayed a dignified, vertical stress, more extreme contrasts from very thick to very thin strokes, and a precise geometric construction. It was the mathematical proportion of these fonts that marked them as the first truly industrial-age font designs; with a letter that was more of a construction than a drawn letter, thus completing the evolution of type from the scribe's hand to an independent form (Meggs & Purvis, 2006, pp. 126–128).

Modern typography reflected the political and cultural environment of the period. Bodoni abandoned the lush ornament typical of the prior era in his mature work. His book designs displayed a deliberate, sophisticated balance of white space, typographic hierarchy, word and letter spacing, and minimal page borders (see Figure 4). His work may also be described as being predictive of the modernist design era of the 20th century and its well-known dictum: form follows function (Meggs & Purvis, 2006, p. 127). In the meantime, the typography of the Didot family evolved along similar, rational lines. While scholars tend to see the Bodoni fonts as superior in craftsmanship to the Didot fonts

(Austen and Perfect, 1997, p. 110), the Didot family made important contributions that further solidified typography as a separate discipline (Meggs & Purvis, 2006, p. 127).

From Gutenberg's original invention of typography, the design of fonts evolved steadily. The concurrent evolution of printing created demand for fonts, and refinements in technology drove innovation forward. Innovation in the design of books and other printed materials accompanied the development of typography and printing, such that by Bodoni's time, the connection between typography and printing to the prevailing art and cultural trends became apparent (Meggs & Purvis, 2006, p. 127). These developments were an important precursor to the foundation of the field of communication design itself, and of typography's inseparable link to that yet-to-be-founded field. The industrial revolution further influenced the technology and design of typography, and laid additional groundwork for the field of communication design.

<p style="text-align:center">Typography and the Industrial Revolution</p>

The universal impact of the industrial revolution in its social, cultural, economical and technological aspects brought massive changes in typography and created huge demand for graphics. The sudden materialization of massed-produced goods heralded a new consumer market, as low prices for factory production made these items accessible to a far greater percentage of the population than ever before. Concurrently, graphics became an important tool in the selling of these goods. Literacy rates, which had been steadily rising since the advent of typographic printing, continued to advance. This created more demand for reading material, and additional demand for graphics. Most importantly, the factory system, with its divisions of labor, eventually altered the nature

of typographic and graphic creation. For the first time, specialized trades relative to these activities emerged during the 19th century (Meggs & Purvis, 2006, p. 134).

In typography, new media of posters and advertising demanded new typographic solutions beyond that of book design and printing. Typography became more deliberately expressive and energetic, and moved beyond subservience to the phonetic alphabet (Meggs & Purvis, 2006, p. 135). Other technological developments removed limitations on typographic form, and the expanding market for graphics and printing drove rapid expansion in the scope of available type from the foundries that sprang up to meet new demand (Meggs & Purvis, 2006, p. 135).

In terms of typographic style, expansion brought new possibilities in form. Two new font styles, slab-serif (called Egyptian or Antique at the time of its emergence c. 1815), and Grotesque (the earliest san serif fonts, c. 1816), reflected the machine-driven aesthetic of the times (Meggs & Purvis, 2006, p. 137). The early slab serifs mostly originated in England, and reflected the "hearty, stolid, bland, and unstoppable aspects of the British Empire (Bringhurst, 1997, p. 211)." The grotesque fonts materialized with little fanfare, but soon gained broad application in poster printing with wood block fonts used for large-scale applications. By the mid-19th century, the increased demand for posters resulted in specialty printing shops in both Europe and the U.S. These printers worked closely with clients to select and compose type for their designs. This development advanced the importance of typography in design and foretold the eventual emergence of the communication designer (Meggs & Purvis, 2006, p. 139).

Even greater impact resulted from the mechanization of printing, font manufacture, and type composing. Printing presses achieved mechanization first, and

enabled production of 4,000 impressions per hour by 1827. A massive expansion of printing operations resulted (Meggs & Purvis, 2006, pp. 140–141). The composing of type was not successfully mechanized until 1886, with the perfection of the Linotype machine. Ottmar Mergenthaler (1854–1899) created a machine that cast complete lines of type in hot metal. Keyboard input selected and composed a series of brass matrices, which formed a mold for the metal. A similar technology emerged almost simultaneously in the form of Tolbert Lanston's (1844–1913) Monotype machine, which cast single letters as opposed to sold lines. (Meggs & Purvis, 2006, pp. 141–142). Together, these technologies finally eliminated the painstaking process of hand-composed type using individual sorts—over 400 years after Gutenberg originated the process. The invention of the automated punchcutting machine by Linn Boyd Benton (1844–1932) in 1884 automated the handcrafted process for font punch manufacture, and eliminated additional barriers to the manufacture of new fonts. With the Benton machine, the font designer could directly create fonts from his drawings (Austen and Perfect, 1997, p. 22).

The result of the mechanization of printing and typography (along with additional innovation in color lithography and the emergence of photography) was a corresponding explosion in graphics for printed materials. By the dawn of the 20th century, weekly periodicals boasted circulations in the millions, newspapers were more common, and numbers of editorial pages soared. Fiction, history and biography as publishing genres reached broad audiences. This demand resulted in thousands of new jobs for the creation of typography and image, and the field of communication design began to form. (Meggs & Purvis, 2006, p. 142).

Typography and the Modernist Design Movement

Typography advanced as an inherent discipline of graphic design as a part of the modernist movement. At the dawn of the 20th century, artists across many disciplines sought new means of expression. The cultural, social, and economic turbulence that defined the industrial revolution demanded new graphic sensibilities. Late-19th century developments in design, such as Art Nouveau, indicated that greater departures from historic designs were possible. (Meggs & Purvis, 2006, p. 221).

William Morris (1834–1896), a founder of the Arts and Crafts movement in England, proved to be an important influence on typography. In particular, he mandated that type must be legible, and good design of type was necessary to accomplish that goal (Beirut, et al., 1999, p. 2). In his works for his private imprint, the Kelmscott Press, Morris returned to classic Venetian roman types, and initiated a revival of interest in classic type design ((Meggs & Purvis, 2006, p. 172). Through the work of Morris and similar private presses, many long-neglected font designs were made available on the new composition machines (Meggs & Purvis, 2006, p. 188). Morris, in a search for the artistic purity of past eras, germinated the modern ideal of linking form and function, and creating a bridge between art and industry (Meggs & Purvis, 2006, p. 173). The idea of an inseparable link between design and typography solidified further as a result of the philosophical and practical design approaches of early 20th century modernists.

Two designers, El Lissitzky (1890–1941) and Theo van Doesburg (1883–1931), exemplified much of the new design thinking. Lissitzky was a founder of the Russian Constructivist movement that occurred immediately after the 1917 Soviet revolution. Constructivist designers adapted ideas from modern art movements (such as cubism), and

integrated a bolder, more experimental use of typography (Meggs & Purvis, 2006, p. 287). Lissitzky abandoned familiar book layout, and instead created a dynamic typography that "moves the reader rapidly along to the end" (Margolin, 1997, p. 39). Van Doesburg founded the Dutch De Stijl movement, and espoused the use of abstract geometric forms, primary color, logical order, mathematical structure, and natural harmony (Meggs & Purvis, 2006, p. 299). Doesburg considered De Stijl as an "expression that was objective, universal, and representative of machine age values" (Margolin, 1997, p. 49).

The founding in Weimar, Germany of the Bauhaus school in the years following World War I further expanded on the ideas of the early modern design movements, and the Bauhaus is now synonymous with the concept of a "modern design aesthetic" (Meggs & Purvis, 2006, p. 310). Influential in many realms, including architecture and product design, the Bauhaus made lasting impact in communication design and typography (Meggs & Purvis, 2006, p. 310).

One of the early Bauhaus pioneers was Lazlo Moholy-Nagy (d.1947). Moholy-Nagy was also a constructivist, and he became a leader in Bauhaus typography. He advocated for "a new language of typography" that lacked any predetermined style (Meggs & Purvis, 2006, p. 313). He also experimented with a new combination of type and photographic image, which he called the typophoto— a "new visual literature"—that strove for objectivity over expression (Meggs & Purvis, 2006, p. 313). Another important influence in Bauhaus typography was student-turned-teacher Herbert Bayer (1900–1985), who headed the typography and graphic design workshop that opened in 1925 at the Dessau location (where the school had relocated from Weimar). Innovations in font

design, typographic layout and a focus on objective communication dominated the

workshop (see Figure 5). Bayer's successor, Joost Schmidt (1893–1948) drove further

innovation, including the utilization of a grid system to guide the placement of elements

on the page (Meggs & Purvis, 2006, p. 316–317).

Figure 5. Bauhaus graphic design. Herbert Bayer's designs typified the Bauhaus ideals
concerning form and typography inspired by the machine age. From *Bauhaus* (p. 74), by
M. Droste, 2006, Cologne: Taschen GmbH. Copyright 2006 by Taschen GmbH.

The Bauhaus—through the printing and advertising workshop—was the first

institution to describe the practice of graphic design (i.e.: communication design) as a

professional occupation (Droste, 2006, p.148). Experiments combining new printing

techniques with new typographic forms defined the Bauhaus design aesthetic. The

workshop, beginning with its leadership under Bayer, continued the rejection of rote

symmetry, and visual and typographic emphasis deliberately accentuated key information

(Droste, 2006, pp. 148–151). Further evolution of the advertising workshop continued under Schmidt, with "the scope…expanded to incorporate a field for which it was previously impossible to train" (Droste, 2006, p. 180). Bayer and Moholy-Nagy also introduced Bauhaus design principles into the U.S. after emigrating from Europe (Meggs, Nov./Dec. 1989, pp. 71–73), and the philosophy of the school, particularly in terms of page composition and typography, strongly influenced the formative years of American communication design in the 1940s (Meggs, Nov./Dec. 1989, p. 87).

The Bauhaus ideas concerning typography and layout strongly influenced another pioneering modernist: Jan Tschichold (1902–1974). Through extensive design and writing, he publicized the new theories to the broader printing and communication design practices (Meggs and Purvis, 2006, pp. 319–321). Tschichold stated that: "the New Typography is based upon a clear realization of purpose and the best means of achieving it" (Beirut, et al., 1999, p. 47). He emphasized the use of type contrasts to draw attention to key points, establish a sense of movement on the page, and the selection of typefaces that were sympathetic to the messages of the text (Beirut, et al., 1999, pp. 48–49). He further expanded his views in his 1928 book *Die Neue Typographie* (The New Typography), including his philosophy that type and design should reflect the industrial age with unadorned typefaces (i.e.: san serif fonts), asymmetric composition, and an emphasis on function (Meggs and Purvis, 2006, pp. 321–322). The writings of an English type designer: Douglas McMurtrie (1888–1944) provided evidence of the rapid spread of the New Typography. Writing in 1929, he stated " …type must tell its story as directly and vividly as possible," and that "…message, which in typography represents function, is therefore determinant of form" (Beirut, et al., 1999, pp. 40–41).

Typography as an art, design, and communications medium matured steadily during its 500-year evolution from Gutenberg to New Typography. Along that span of history, formative steps—from mimicking the scribe's hand, to defining mature letterforms, to reflecting the technology of its day, resulted in a unique capability to present, organize, and express thoughts and ideas. In many ways, typographic development paralleled the growth of the graphic arts from craft to trade to the communication design profession. By the dawn of World War II, Typographers became "practitioners of communications open to all possibilities" (Heller, 2004, p. 155).

<p style="text-align:center">A Digital Type Revolution</p>

Graphic design continued its growth and development as a profession in the years following World War II. Expanded appreciation for the utility of design as a business tool drove demand for designers' services (Meggs and Purvis, 2006, p. 373). From Europe, the 1950s saw the rise of what is known as the International Typographic Style—which shared the Bauhaus ideals of "clarity and order" (Meggs and Purvis, 2006, p. 356). The 1950's and 1960's also saw increased experimentation in typography—including revivals of historic font designs—via the expansion of phototypesetting. Phototypesetting offered dramatically improved flexibility for the design of fonts as well as their reproduction, leading to a dramatic expansion of font offerings (Meggs and Purvis, 2006, p. 393). Yet its dominance was short-lived, as the digital age eclipsed the analog era in design to dramatically alter the profession of graphic design, including typography.

In the mid-1980s, the introduction of the Apple Macintosh personal computer, and the advent of digital Postscript Type 1 fonts, ushered in a new era of design. For the first time, designers possessed a single platform for the arrangement and manipulation of

type and imagery. In short order, thousands of digitized fonts were available at any designers disposal (Potlatch, 1999, p. 9). Initially called desktop publishing, this all-in-one capability expanded the sphere of type users beyond professional design ranks (Meggs and Purvis, 2006, p. 498). Despite the fact that the graphic outcomes from that expansion were not always of professional quality, the integration of type and design skills became a permanent fixture (Austen and Perfect, 1997, p. 34). Designer Jeffery Keedy applauded this development, when he declared in 1993 that "The most important contribution of computer technology, like the printing press before it, lies in the democratization of information…the digital era will be the most innovative in the history of type design" (Beirut, et al., 1997, p. 29).

Both traditional type foundries and new, digital type foundries contributed to a massive expansion of Postscript fonts for use on personal computers (Meggs and Purvis, 2006, p. 498). Designers also found that old restrictions on their ability to manipulate and customize typographic forms were now lifted (Meggs and Purvis, 2006, p. 501). New aesthetics based on the computer emerged as well. Experimental design studios such as Emigré, designed early, bitmap-inspired fonts (see Figure 6) to diversify typographic design in the computer's formative years. The journal that emerged from these and other experiments—titled *Emigré*—became a design touchpoint for innovation in digital typography (Heller, 2004, p. 173). Paula Scher (b. 1948), a partner at the international design consortium Pentagram, stated that the digital typography "saved the day when a whole new type industry grew up around it" (Jacobs, 2004, p. 74). Concurrent with the

Figure 6. Bitmapped versus Postscript letters. Comparison of bitmapped (left) and Postscript letter outlines shows the jagged effect of low-resolution 72 dot per inch displays versus the fine curves of Postscript's mathematically-rendered outline.

digital revolution and the Macintosh computer, designers acquired more freedom to

integrate text and imagery, which further increased the profile of typography in design

communication (Miller, Nov./Dec. 1989, p. 185).

<div style="text-align:center">The Expression of Meaning in Typography</div>

Typography occupies a unique position as an element of design and

communication—the result of the 500-year evolution of letterforms, font designs, and

design philosophy. By the 1950s, a designer's typographic skills were a principal

benchmark of professional competence (Heller, 2004, p. 167).

As the profession matured, designers formulated new and innovative approaches

to typographic communication. One of the first to expand the boundaries of typographic

expression was Bradbury Thompson (1911–1995). His work in the 1940s for Westvaco

Inspirations opened new possibilities in typographic design, as Thompson—partly due to

limited resources—explored dramatic contrasts in scale and color of letterforms to create

dynamic and whimsical compositions (Meggs and Purvis, 2006, p. 377). His approach to

"talking type" (see Figure 7) blurred the line separating word from image (Heller, 2004,

p. 168). Herb Lubalin (1918–1981) pushed the idea that letterform design itself communicated meaning beyond the text (Heller, 2004, p. 168).
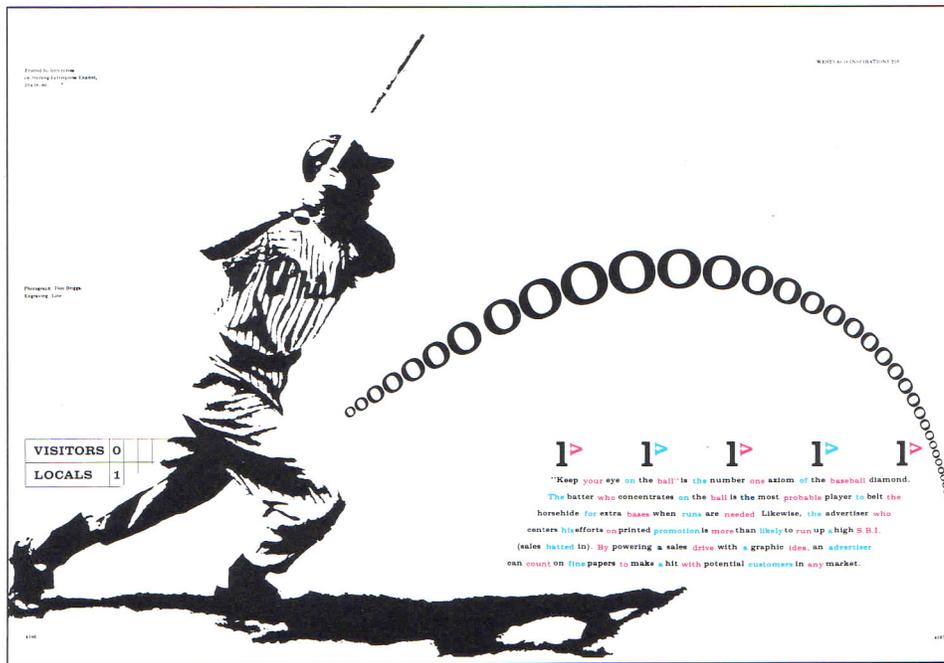
Figure 7. Expressive typography by Bradbury Thompson. American designer Bradbury Thompson integrated type and image to create uniquely expressive messages, such as this 1958 composition. From "The 1950s: Design in Gray Flannel," by L. Wild, 1989, *Print, 43:6*, p. 97. Copyright 1989 by RC Publications, Inc.

Push Pin Studios was another pioneering influence in this modern conception of typography. Push Pin rejected the notion of typographic "neutrality," and utilized long-dormant font styles with the intention of "…giving the written word character and nuance" (Heller, 2004, p. 168). Contemporary designers can deploy a host of typographic styles in their work with the full benefit of historical context, and cultural awareness. Fonts have distinct personalities inherent to their designs, and practical use established these traits. Serif fonts, such as an Old Style Garamond, denoted dignity and elegance, while modern sans-serif fonts denoted a contemporary, and even technical, sophistication

(Austen and Perfect, 1997, p. 202). Bold condensed sans-serif fonts made assertive statements with strong visual impact (Austen and Perfect, 1997, p. 210). The science of semiotics reinforced the concept of the visual style of type as an influence on the reader's perception of the message (Hall, 2007, p. 140).

Designers, through their selection of fonts and design of printed or electronic media, exert considerable influence on both the message and the reader. Typography acted as a lens on the written word, with different applications of type serving to focus or blur the meaning. At its best, typography illuminated richer and deeper meanings than the written word alone (Fenton, 1997, pp. 31–32). Ellen Lupton (b. 1963)—a leading design thinker and writer—reached a similar conclusion when she wrote: " Typography becomes a mode of interpretation… (competing) with the traditional author for control of the text" (Lupton 2006, p. 23). Typography was one of the designer's most powerful tools, but it was critical for designers to consider not only the visual qualities of fonts, but also their "…nuances…" and "…emotional tone" (Potlatch, 1999, p. 12). Designer and author Doyald Young (b. 1926) described the versatility of application of given typographic style associations, some of which appear contradictory. Young described serif fonts as communicating "quality, nature, gender, luxury, medicine, mechanics, science, sports, and leisure" (Young, 2003, p. 26). Young describes sans-serif fonts as hallmarks of architectural restraint, elegant beauty, and industrial assertiveness (Young, 2003, p. 40). Ultimately, the designer possessed both the opportunity and responsibility to elicit a desired reaction through his/her selection and composition of fonts. To communicate most effectively, the designer needed to base decisions on both knowledge of the

historical basis of typography, and the modern cultural and social connotations that create

strong associations between type, message, and reader (Beirut, et al., 1997, p.30).

The value of typographic expression was visible in corporate brand identity in

which type played a leading role. Apple computer was among a list of successful

companies that utilized typography with "intelligence and purpose" (Wheeler, 2006,

p. 114). Figure 8 demonstrates the effectiveness of typographic expression within brand

identity. Amazon.com featured a logotype with lower-case letterforms and an illustrated

arc that both indicated a smile, and literally connected the "a" and "z" to represent its

extensive product line. The overall effect communicated a brand personality that is

whimsical, memorable, and stood out in a crowded marketplace (Wheeler, 2006, pp.

178–179). The Chicago GSB (University of Chicago Graduate School of Business)

combined sans-serif and serif fonts to achieve a personality that is both boldly modern

and classically refined—illustrating the school's focus on innovation and its rich history

(Wheeler, 2006, pp. 204–205). The organic snack food brand Late July illustrated the

utility of historically inspired design to evoke the positive connotations of simpler times

(Wheeler, 2006, pp. 228–229). FedEx achieved universal clarity of purpose with its

simple, direct typography with its strong directional arrow (Wheeler, 2006, pp. 218–219).

Figure 8. Brand identity typography. These brand identities exemplified the effectiveness of typography in evoking an emotional reaction from their audiences, as well as the variety of approaches in brand identity design. Counter-clockwise from upper left: Amazon.com by Turner Duckworth, Chicago Graduate School of Business by Crosby Associates, Late July Snacks by Louise Fili, Ltd., and FedEx by Landor Associates, From *Designing Brand Identity* (pp. 178, 204, 228, 218, respectively), by A. Wheeler, 2006, Hoboken, NJ: John Wiley & Sons, Inc. Copyright 2006 by John Wiley & Sons, Inc.

Designers depended on access to extensive libraries of fonts in their daily practice, a consequence of the vastly increased control and flexibility that the computer platform opened for designers (Miller, Nov./Dec. 1989, pp. 202–203). Yet even as designers acquired near limitless flexibility for typographic design, the internet, and the design of web pages and sites, introduced the most restrictive environment for type design in over a century.

Chapter IV

TYPOGRAPHY ON THE INTERNET: A HISTORY OF LIMITATIONS

The Emergence of Web-based Communication

The World Wide Web emerged as an important communications medium in the mid-1990s. The root technology and network installations that became the internet dated to the 1960s, as part of a U.S. Dept. of Defense initiative to link key defense and research sites. Early protocols established a common language for computer-to-computer communication. By 1991, the European physics consortium known as CERN created the World Wide Web, a breakthrough in communications that allowed for the access and transfer of information (DiNucci, et al., 1997, pp. 6–10). The commercial registration of domains began on March 15, 1985 with the first dot-com: symbolics.com (Andes, et al., March 2010, p. 4). The introduction of graphic elements to web pages, along with web access and browser software, fostered a commercial explosion of web communication.

The era of web design commenced in earnest with the November 1994 introduction of the first consumer-friendly browser for the Web, Netscape Navigator. Netscape Navigator (i.e.: Netscape) succeeded an earlier browser, Mosaic, and much of the Netscape development team migrated from that project. Mosaic's innovations included the inclusion of graphic images, "point and click" navigation, sound playback, and a user-friendly interface (Dupuy, 1995, pp. 30–31). Capitalizing on Mosaic's graphic

capabilities, the firm hotwired.com created the first web advertisements in October 1994, banner ads (Andes, et al., March 2010, p. 6). In the succeeding years of web development, both as a medium and an engine of commerce, serious restrictions and limitations on the design of web pages surfaced.

<div align="center">Communication Design and the Web</div>

By the mid-1990s, designers possessed not only an unprecedented level of control over the visual elements of design, but also an unfettered creative vision, thanks to the digital design revolution (Meggs and Purvis, 2006, p. 488). By contrast, the initial expressions of design seen on Netscape pages were stark and unrefined (see Figure 9), with pictures and text stacked in a single column aligned to the left edge of the page (DiNucci, et al., 1997, p. 80). Most links were in the form of hypertext—text elements indicated normally as underlined blue text in the browser pages (Dupuy, 1995, p. 190). The most severe limitation on the design process was the shocking lack of fonts available for use in web page layout. Only three font choices—Times Roman, Courier, and Symbol (a limited-use set of mathematical characters for scientific formulas)—were universally supported across browsers and computer platforms (White, 1999, p. 167). This was a state of typographic limitations not seen by designers since the earliest days of metal type. A comprehensive font reference book from the same period collected specimens exceeding 13,000 fonts available for computer typesetting (Newman, et al., Eds., 1996, p. vii). The slow transfer speed of the dial up modem (the most common means of web access at the time) placed extensive limitations on the number and size of graphics as well (Garcia, 1997, p. 39). Just as designers acquired near-total freedom from

technological constraints in the print design medium, the design restrictions of the early web materialized to create a new set of challenges.
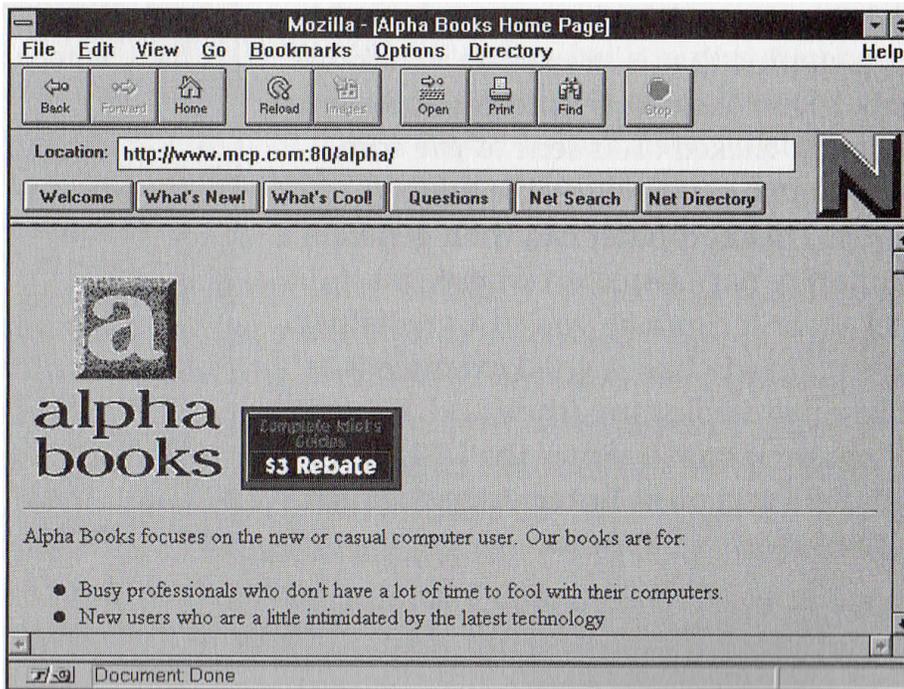

Figure 9. Web page design in Netscape 1.0. This 1995 example of a web page previewed in Netscape 1.0 exemplified the raw aesthetic of early HTML web design. From *The Complete Idiot's Guide to Netscape* (p. 82), by J. Dupuy, 1995, Indianapolis, IN: Que Corp. Copyright 1995 by Que Corp.

As the web expanded as a medium, designers tended to treat the medium as an electronic version of printed communications, such as magazines (White, 1999, p. 164) or newspapers—old media—adapted to the web with visible artifacts of their physical, printed versions (Garcia, 1997, p. 120). The initial design innovations quickly emerged for web browsers to more fully imitate the visual organization of information typical of editorial pages. The first of these was the introduction of HTML tables, first supported by Netscape 2.0 in 1995. The principle innovation of tables enabled precise control of page structure for the web—the absence of such precision was a major weakness in early

efforts for web page design. (DiNucci, et al., 1997, p. 92). Frames—a layout method similar to tables, but with added functionality—followed in short order. While both tables and frames divided web pages into controlled sections, the cells in a frameset accommodated content as a separate HTML file. This allowed pages to update separate sections, while leaving other frames untouched. This simplified downloading and updating of content; static elements, such as navigation, remained live and in place (DiNucci, et al., 1997, p. 96). Tables and frames also served to eliminate the need for deep, scrolling pages, increasing the control of the designer (Garcia, 1997, pp. 77–78).

A more significant upgrade of graphic design capability on the web was the introduction of Flash. Flash offered interactive possibilities well beyond those of pure HTML web sites (Horton and Lynch, 2008, p. 126). Another innovation of Flash delivered vector art to websites. Original graphics for the web utilized bitmapped images—such as GIF and JPEG file formats—that lost image resolution when enlarged (Horton and Lynch, 2008, p. 289). Flash vector art enabled limitless scale changes without degradation of the image (Cloninger, 2002, p. 95). Flash also offered rich motion capabilities for animation, and the spectacle of "…flying letters and logos and shapes (Cloninger, 2002, p. 40)" soon became common. One early use of the technology was as introductory pages for web sites. However, visitors soon tired of these splash pages— they were more of an interruption than a welcome—and the proliferation of Flash introductions soon became another of the web's early design clichés (Bowman and Willis, 2002, p. 44). Web sites constructed completely within Flash offered high interactive capability (see Figure 10), but suffered from the fact that search engines cannot read Flash content (Horton and Lynch, 2008, p. 140), thus hiding site content from
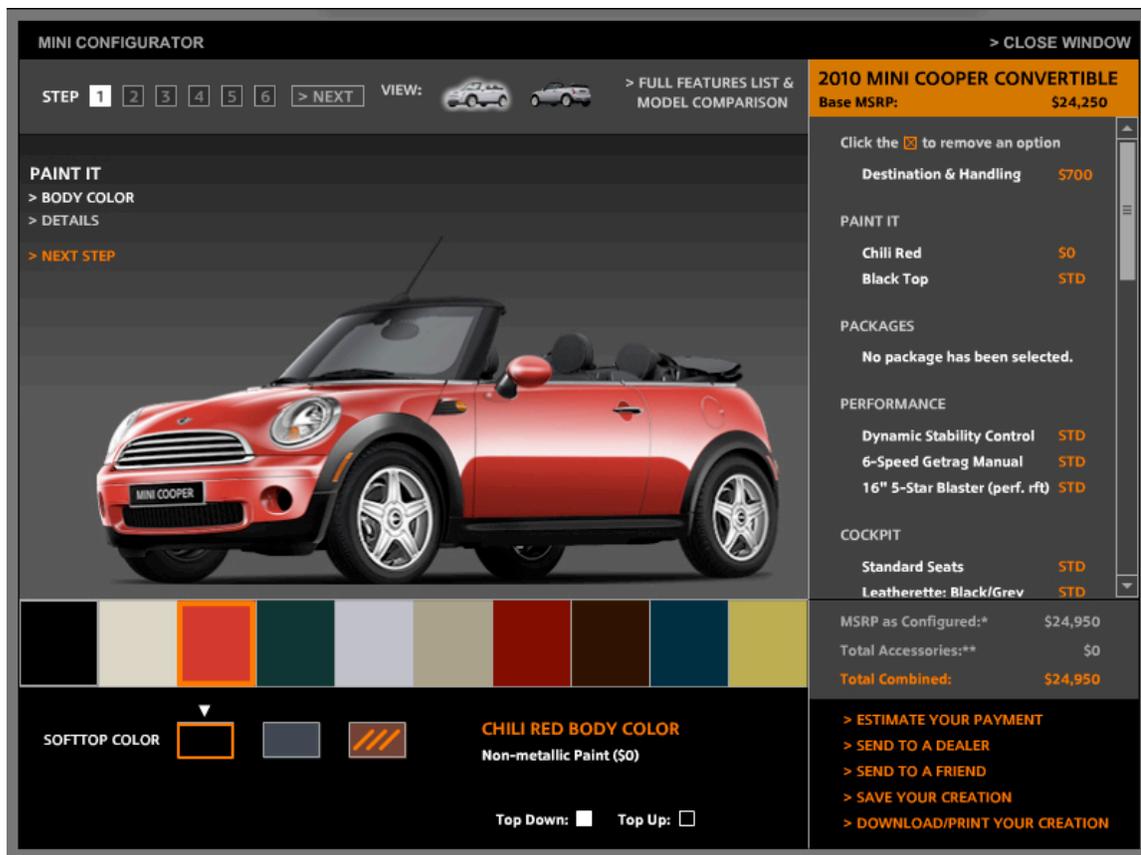
Figure 10. Flash Mini Cooper website design. Flash delivered sophisticated visuals and interactive experiences with few design compromises, but lacked the easier maintenance and search engine compatibility of HTML-based sites. From http://www.miniusa.com/#/build/configurator/mini_conv-m. Copyright 2010 by Mini Cooper, Inc.

Google searches and the like. Despite the format's weaknesses, designers embraced Flash due to its design-friendly technology—such as compatibility with Adobe Illustrator, a widely used vector art drawing program (Cloninger, 2002, p. 47).

Cascading Style Sheets (CSS) brought a new level of control to designers for their web design practice. CSS streamlined application of attributes for text styles, and used the same principle that typified print design and word processing style sheets. Font, size, color, style, and spacing attributes no longer required definition for each individual usage. CSS enabled universal control of these styles across all the pages of a web site,

which streamlined production and coding. CSS included the means to design for best-and worst-case scenarios; if some defined attribute in CSS was not available, specified alternates or even the HTML default substituted automatically. (DiNucci, et al., 1997, p. 101). Bandwidth issues sped the adoption of CSS in web design, as it substantially compressed the amount of data needed to render rich pages, thus accelerating the download speed (Flanders and Willis, 1998, pp. 166–167), a desirable benefit prior to widespread access to broadband. By segregating the look of the information from the structure of the page, CSS incorporated a new means of managing the content of web pages (Horton and Lynch, 2008, p. 208).

The emergence of more sophisticated graphics was a prime factor in the rapid expansion of the web in terms of users—tables, frames, Flash, and CSS were all responses to the need for better presentation of information. The paradox of this graphic innovation remained the fact that the majority of information on the web is text-based in its form (MacDonald, 2003, p. 76). Yet typography suffered from a number of factors that remain substantial constraints on the means of design for the web.

Typography: Limits and Barriers on the Web

Just as Gutenberg's original typography imitated the work of the medieval scribe, early design on the web primarily adapted print design forms—in particular, typography—for web sites (Garcia, 1997, p. 81). Indeed, the adaptation of the page as the leading "metaphor" for an individual screen on a website showed this proclivity to adapt the language of an established medium for a new one (MacDonald, 2003, p. 64). The transition from printed page to on-screen page included a substantial sacrifice of resolution quality for both images and text. System fonts that were common to Macintosh

and PC computers became the defaults for large volumes of text (see Figure 11). To overcome these barriers, designers turned important text elements into graphics (Garcia, 1997, p. 89).

Arial Font 18 point
abcdefgHIJKLMNOP12345?!@#$

Verdana Font 18 point
abcdefgHIJKLMNOP12345?!@#$

Times Font 18 point
abcdefgHIJKLMNOP12345?!@#$

Georgia Font 18 point
abcdefgHIJKLMNOP12345?!@#$

Figure 11. Comparison of common web fonts. Specimens of four fonts used widely for HTML text in web page layouts. Copyright 2010 by Tom Berno.

Designers quickly realized that HTML text offered little as a design element, and the restriction to the small set of browser-compatible fonts did not serve their needs for typographic design (Horton and Lynch, 2008, p. 207). However the need for the majority of text to interface seamlessly with search engines, provide compatibility with browsers, and support ease of updates and revisions overrode the designer's preference for typographic variation (Horton and Lynch, 2008, p. 227). Display typography already constituted a core concept for design with type in printed forms, from printed books to public signage. In print, display typography served to provide emphasis and contrast to capture and hold the viewer's interest (Austen and Perfect, 1997, p. 210). The primary difference was that in print, display typography remained typography; on the web, display typography became graphics (MacDonald, 2003, p. 92).

The earliest graphics on the web took the form of simple GIF and JPEG images (DiNucci, et al., 1997, p. 103). These formats provided universal compatibility with browsers, and allowed designers the use of the full typographic palette for web design. However, designers remained constricted by slow bandwidth, which limited the number and size of such graphics on a given site (DiNucci, et al., 1997, p. 83). Despite significant drawbacks to this graphics-as-text solution—particularly that they were invisible to search queries and are much more labor-intensive to change—the need for typographic variety established this approach as the best available option for many usages (MacDonald, 2003, p. 92). It was preferable to the limited means of creating typographic emphasis and rhythm offered by HTML text (Horton and Lynch, 2008, p. 211), but it remained an unsatisfactory compromise.

HTML code offered another possibility—the specifying of specific fonts for the rendering of web pages. While the base set of fonts with universal support expanded slightly to include Times, Courier, Arial, Helvetica, Verdana, and Georgia, code tags allowed any font to be specified by name. The drawback was that the font had to reside on the reader's computer system for access to the browser. Early experiments with the remote downloading of fonts met with failure, primarily as a consequence of limited bandwidth (MacDonald, 2003, p. 92). The lack of universally compatible and predictably available fonts stifled this solution, and drove designers to yet another alternate strategy.

Flash emerged as a graphically rich and highly interactive technology in the late 1990s. In addition to its rich animation capability, it offered a high level of interactive control. Designers embraced Flash for its less restrictive design capabilities, even creating entire sites from Flash elements (Cloninger, 2002, p. 40). Flash utilized the same

vector rendering for its files as is used by digital fonts, allowing infinite scale variations (Cloninger, 2002, p. 95). Flash appeared as a more specific solution for web media, and its motion capabilities, particularly for text-based messaging, seemed uniquely appropriate for the web (MacDonald, 2003, p. 93). Flash graphics offered more than just motion; interactive function reached a new level of responsiveness to users. These functions were unique to Flash, and seen as advantageous (Cloninger, 2002, p. 115). Flash also embedded fonts for text display, although this text was not interactive as selected, copied, or searched elements, and the content was invisible to search engines (MacDonald, 2003, p. 92). Even the basic browser function of bookmarking a specific page for future access remained out of reach in Flash web sites (Cloninger, 2002, p. 40).

Even simpler issues, such as on-screen legibility, challenged web designers. The low resolution of screen displays influenced font design. The fonts Georgia and Verdana offered display advantages over common fonts such as Times and Arial, which made them easier to read on screen (Bowman and Willis, 2002, p. 137). Yet this led to compromises elsewhere. Many users preferred to download web pages and print them for easier reading. Yet new fonts that performed better on-screen reproduced poorly in print, primarily because the design of the letters and the manner in which the fonts approached letter and word spacing made for poor reading in print (MacDonald, 2003, p. 93).

The reliance on graphics to implement typographic variation collided with another critical issue—the needs of the web visitors to access not only information but also function. Function-driven sites—which emphasized performance—suffered from the time lag needed to download multiple graphics. Other sites, however, called for a much more visual approach to presenting content. Balancing the functional needs of the user with the

business imperative for effective communication created unique challenges in the design of Web sites (Bowman and Willis, 2002, pp. 44–45).

The very existence of such a pervasive set of limitations caused frustration across the professional practice of web-based design. In typography, the highly restrictive limits on available system fonts made it difficult to create unique visual design for a specific client (White, 1999, p. 167). Web design suffered from a certain degree of sameness as well, particularly because clients overvalued certain web design decisions in early, successful sites, and incorrectly attributed too much of those sites traffic to design (Cloninger, 2002, pp. 4–6). The adaptation of print design strategies—old media—to the web resulted in a less innovative approach to design as well (Cloninger, 2002, p. 8).

Typography offered both visual and verbal communication in print, and on the web (Horton and Lynch, 2008, p. 205). Web technology limited the availability of fonts and restricted design options. This conflicted with another design imperative: the need to establish a unique "personality" through the use of visual design (Bowman and Willis, 2002, p. 38). This had wide-ranging implications in brand communication on the web.

Chapter V

THE EMERGENCE OF CUSTOMER-CENTERED BRAND COMMUNICATION

The Relationship of Brand and Communication Design

Brand development—the process of applying sound brand principles—entered a

phase of vast and rapid expansion in the late 20th century. Once the near-exclusive

domain of off-the-shelf goods, branding became an identifiable practice area applicable

to an endless spectrum of corporations, organizations, industries, products, and even

individuals. (Blackett, 2009, p. 20). Communication design offered key capabilities to

visually define the brand and communicate not only its substance, but also its essence

(Payne, 2009, p. 16). Brand definitions refer to "a person's gut feeling about a product,

service, or company" (Neumeier, 2006, p. 2), and "the intersection between core

company…strengths and what customers value" (LePla and Parker, 2002, p. 2). These

emotional and psychological factors required designers to more fully consider the desires

and potential responses of the audience (Holland, 2001, p. 13).

Communication design owed much of its professional status to its relationship

with corporate identity and the rise of corporate identity systems as a business

communications tool. The visualization of this relationship germinated in the mid-1950s,

with IBM President Thomas Watson, Jr.'s declaration "good design is good business"

(Holland, 2001, p. vii). At about the same time, the *Harvard Business Review* observed

that stand-alone communications were no longer adequate to address a company's

broader constituencies, and argued for a coordinated approach to the design of corporate communications materials (Wild, Nov./Dec. 1989, p. 101).

Designers in the United States established leadership in the emerging discipline of corporate identity. IBM's Watson partnered with Paul Rand to create an identity that remained distinctive to the present day (Allen and Simmons, 2009, pp. 115–116). Rand and his contemporaries—such as Lester Beall and Raymond Loewy—adapted modernist design ideals and rejected decorative and representational identity strategies. The result was a more abstract style that exuded simplicity and graphic impact. These designers then established the means to apply the new corporate identity in the maximum number of instances. This systematic approach to identity created new benchmarks for corporate design (Lupton, 2001, p. 43). Corporate identity remained a term that described the application of logos and trademarks, and other design elements, on the full range of corporate materials, from printed communication to vehicles (Neumeier, 2006, p. 1).

Corporate identity evolved during the 1960s, exploring the limits of systems and abstraction in its graphic forms. In Switzerland, the Ulm Institute of Design applied the modernist principles of the International Typographic Style to redefine corporate identity systems. The prototype was the identity system for the German national airline, Lufthansa (see Figure 12). The Lufthansa system provided a template of standardization across a large breadth of applications, from aircraft to letterhead. This imparted an impression of corporate efficiency and prestige for the airline (Meggs and Purvis, 2006, p. 411). In America, the design firm Unimark continued the expansion of broad identity programs for companies such as JCPenney, Panasonic, and Xerox. Unimark emphasized

modernist design and typography in its work, resulting in organized yet rigid solutions

(Meggs and Purvis, 2006, pp. 411–412).
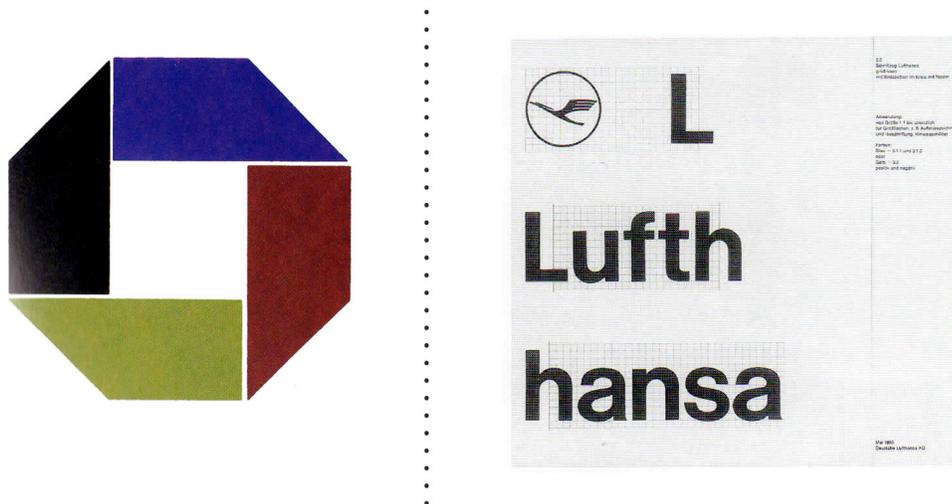
Figure 12. Early 1960s corporate identity graphics. Corporate identity graphics for Chase Manhattan Bank (left) by Chermayeff & Geismar Associates, 1960, and Lufthansa by Ulm Institute of Design, 1962. From *Meggs' History of Graphic Design* (pp. 406, 410), by P. B. Meggs and A. W. Purvis, 2006, Hoboken, NJ: John Wiley & Sons, Inc. Copyright 2006 by John Wiley & Sons, Inc.

New levels of abstraction materialized as corporate identity evolved, such as the

design of the 1960 Chase Manhattan Bank logo (see Figure 12) by New York firm

Chermayeff & Geismar. The simple octagon—formed from four equal geometric units—

acquired meaning only through its visual deployment alongside the name of the bank.

More significantly, the form proved that a logo could become a unique symbol in the

viewer's consciousness (Meggs and Purvis, 2006, pp 406–409). This form of "visual

literacy" allowed company identities to deeply penetrate the viewer's subconscious, and

made visual recognition almost second nature (Lupton, 2001, p. 45). Color, in addition to

shape, proved a powerful recognition tool in corporate identity, and references such as

Kodak yellow, Coca-Cola red, and IBM blue soon permeated everyday language (Allen

and Simmons, 2009, p. 115).

The movement towards corporate identity systems resulted in a much-improved perception of graphic design as a professional consultancy (Lupton, 2001, p. 43). However, the process associated with creating and deploying corporate identity programs revealed a number of inadequacies when evaluated against brand development needs. Brand and branding were activities with two prime concerns: the need to differentiate and the need to build trust. Effective branding required that a company align its messages with its operations (LePla and Parker, 2002, pp. 24–25). The emotional appeal of successful brands defined their identities, which was why a trademark, identity system, and even a product did not comprise a fully formulated brand (Neumeier, 2006, pp. 1–2). Furthermore, imitation of successful identities—especially those based on abstract forms—soon became widespread (Allen and Simmons, pp. 118–119). The success of Nike and its trademark swoosh illustrated the potential for imitation (see Figure 13), as dozens of companies employed a variation on the theme (Neumeier, 2006, pp 128–129).

Figure 13. Nike corporate identity and its imitations. Nike's success as a brand (left) spawned a host of imitators of its trademark. From *The Brand Gap* (p. 129), by M. Neumeier, 2006, Berkeley, CA: New Riders. Copyright 2006 by New Riders.

The emotional quality of brand required an expressive means of communication. Consumers identified with brands on a personal level, oftentimes seeing a brand as an extension of their personal identity (Holland, 2001, p. 4). In recent years, identification of corporate values spawned a backlash, and new brands such as Yahoo and Google delighted audiences with their unique personalities (Allen and Simmons, 2009, p. 121). Communication design offered the responsiveness and expressiveness necessary for modern brands to communicate in relevant and sustainable ways (Payne, 2009, p. 17).

Brand and Branding in the 21st Century

Brands offered companies more than a means of organizing messages and selling products. Brand leaders possessed substantial—and measurable— advantages as businesses, and the means of valuing brand quantified these advantages in tangible terms. Brand also evolved into an expression of lifestyle via designed experiences. Finally, the impact of the modern, networked economy created a new set of branding urgencies.

Interbrand, an international branding consultancy, conducted a broad-based review of brand valuation and published the results for the first time in 2000. Coca-Cola led the survey of the top 100 brands every year from 2000–2009, with a 2009 brand valuation in excess of $68 billion. 2009's list of the top 20 brands resulted in a value exceeding $627 billion (Interbrand, 2009, pp. 21–30). These high financial stakes encouraged brands to seek new opportunities via franchises, co-brands, and licensed relationships (Blackett, 2009, p. 24), further feeding the expansion of brand communications. Additional analysis revealed that successful brands offered better return to investors as well; The Interbrand 100 outperformed the returns of the S&P 500 index consistently since 2002 (Lindemann, 2009, pp. 28–29).

Brand valuation revealed that a substantial advantage existed between the leaders (in terms of market share) and the followers. An imperative emerged for any brand to occupy a top two position in any market category—where customers rewarded a brand by paying a premium for its products—or become a commodity brand, with downward price pressure derived from undistinguishable competitors (LePla and Parker, 2002, pp. 8–9). The distinction "Charismatic Brand" defined the pinnacle of achievement for a branded concern; companies such as Apple, Harley-Davidson, and BMW demanded significant premiums for their branded offerings for one simple reason: customers found no acceptable alternatives (Neumeier, 2006, pp. 18–19). Brand became a real competitive advantage—one that companies were eager to acquire (Lindemann, 2009, p. 42).

By the early 21st century, brands based on experience emerged as dominant players in their categories. Lifestyle became a key proposition during the 1990s, and experiences replaced transactions at an accelerating pace (Klingmann, 2007, pp. 35–36). The experience model revealed numerous points where the brand built, or undermined, the customer's positive feelings about the brand (Wheeler, 2006, pp. 40–41). Starbucks illustrated the full value of experience-based branding, with a current brand valuation in excess of $3 billion (Interbrand 2009, p. 47). Starbucks looked beyond coffee as a simple commodity, and created store environments that beckoned customers with its sights and sounds, smells and tastes. Customers rewarded the brand by paying 4–6 times the cost of a cup of coffee at the local convenience store (Klingmann, 2006, pp. 36–37). Starbucks also elevated the transaction itself, with human interaction between customer and server adding to the carefully staged environment (LePla and Parker, 2002, p. 27).

The world wide web and 3G mobile communication further raised the profile of brands in customers' daily experiences. Brands generated loyal followings—more akin to a "tribe" than a market—and the tribe did not respond well to traditional advertising messages (Neumeier, 2007, p. 20). The web, mobile phones, and social media created new communities for people to interact and communicate. Many of these communities organized around shared brand affinities. By 2009, Coca-Cola boasted over 3.5 million Facebook fans, and online shoe retailer Zappos accessed direct input from over one million followers of its Twitter feed (Bateman and Geiss, 2009, p. 6). YouTube and Google reflected this community, and traditional print and broadcast media integrated these new strategies, tactics, and visual influences (Allen and Simmons, 2009, p. 121).

The web presented brands with an opportunity for personal connection to its audiences, and those audiences relished the opportunity to form communities around a brand (Drew, 2002, p. 7). Well-executed web sites created a living portal that respected the customer's needs and priorities (Wheeler, 2006, p. 136). This reflected the destruction of barriers that brands relied upon to control image (Hobsbawm, 2009, p. 218). Consumers demanded—and created—more active roles within the structure of branded web sites. Sites such as tripadvisor.com—which relied totally on user-generated travel reviews for its content—boasted rapid growth over the past three years (Hobsbawm, 2009, p. 220). Some brands embraced content generation, such as BMW with filmmaking and Burger King with game development. Established brands like Procter and Gamble harnessed customers with proprietary research and development efforts (Hobsbawm, 2009, pp. 222–223). This level of personal participation seemed to amplify the tendency of customers to identify socially with their preferred brands (Klingmann, 2007, p. 56).

The outcome of this networked society shifted more influence in brand choices to those groups an individual participated in. The information, based on common interest and social networking, now possessed a stamp of approval from a trusted source—and trust was a key element of successful brand building (Hobsbawm, 2009, p. 231). Online brand communication required responses with an immediacy previously unheard of, and demanded adaptation to opportunities and challenges with equal dexterity (Hobsbawm, 2009, p. 226). This new flexibility pointed to a new model of brand communication: the customer-centered brand.

The Rise of the Customer-centered Brand

Customer-centered brand development presented an entirely new set of challenges to brand entities and communication designers. Measures of social media engagement by sophisticated online brands showed substantial financial returns (Bateman and Geiss, 2009, p. 7). Meanwhile, new sources of data collection and analysis—especially online—provided a stream of new insights into customers' needs.

For communicators, the most important distinction of the customer-centered brand focused on the fundamental nature of traditional messaging, and its inadequacies for the networked world. The traditional marketing communication is a one-way communication consisting of "sender, message, and receiver" (Neumeier, 2006, p. 101). In this model, first popularized in the 1960s, the sender governed the process in a world of narrowly controlled media channels (Bhalla, Moorman, and Rust, Jan./Feb.2010, p. 96). In the modern, networked world, the audience transformed from passive receiver to active participant, and brands capitalized on customer feedback to better focus their messages and offerings (Neumeier, 2006, p. 103). This human element transformed the

very nature of brand communication as online channels expanded in the first decade of the 21st century (Hobsbawm, 2009, p. 224).

The transition from corporate identity processes to brand communication processes already transformed the communication design industry before the arrival of designed communication on the web. Brand dictated an emphasis on customer viewpoints and needs, whereas designers operated as independent visual experts and sought to control the creation of messages through the tools and language of design (Holland, 2001, p. 13). This process illustrated the one-way model of traditional marketing. Modern branding involved much more complex and nuanced relationship between brand and customer. Brands required a sense of authenticity to build trust, and appeals became more strongly rooted in emotional terms, lifestyle identification, and a "personal dialogue" with customers to create a fulfilling experience (Klingmann, 2007, p. 61). Complicating this situation was the fact that a customer's affinity for any given brand rested on feelings that were as likely to be intangible as tangible (Holland, 2001, p. 15). This was an explanation of the "tribal" affinity that emerged in the late 20th and early 21st century; people identified with shared sets of values, and communication among peers built mutual trust between the tribe and its endorsed brand (Neumeier, 2007, p. 20).

The growth of experience as a key component of brands reflected this customer-centered way of thinking. Design played a key role in what customers saw, felt and remembered, and the measure of fulfillment defined the value of the experience (Klingmann, 2007, p. 19). Brand "personality" became an important aspect of these experiences, and customers developed attachments to brands based on feeling rather than reason (Klingmann, p. 19). Companies that focused on the needs and desires of their

customers witnessed some remarkable successes. One such company was Target, the

iconic discount retailer. Faced with increased competition from Walmart, Target

rededicated its effort to providing customers with a more pleasant, and ultimately

memorable experience. Target wisely connected the experience of shopping with a

modern and energetic brand image (see Figure 14). Most importantly, both the retail

experience and brand image reflected the profile of Target's desired customer (Martin,

2009, pp. 144–147). This focus on responding to customer needs and desires—as

opposed to traditional selling strategies—defined the customer-centered brand model

(Bhalla, et al., Jan/Feb 2010, p. 96).

Figure 14. Target seasonal brand example. Branded seasonal graphics for Target, by
Office, illustrated the experiential nature of the shopping environment that is a Target
brand trademark. From *LogoLounge 4* (p. 21), by B. Gardner, 2008, Beverly, MA:
Rockport Publishers. Copyright 2008 by Rockport Publishers.

The customer-centered brand presented an important value consideration as well.

Customers continued to view brands as expressions and extensions of their personal

identity (Hobsbawm, 2009, p. 232). Consumer product brand houses Johnson & Johnson

and Procter & Gamble placed customer focus at the top of their priorities, and realized

high returns in terms of shareholder value in their respective stocks (Martin, Jan./Feb. 2010, pp. 62–64). Companies that capitalized on two-way communications offered by the web and other datapoint collection found innovative and responsive ways to connect with customers. American Express targeted transaction types from individuals to identify upgrade candidates, or to customize special offers based on individual needs, such as new homebuyers (Bhalla, et al. Jan./Feb, 2001, p. 97). Online retailer Amazon.com pioneered customized recommendations for users, based on purchases and other customer behaviors (Amazon, 2010, p.1). However, data alone was insufficient for a customer-centered branding effort.

The role of communication design remained central to brand building in this new context. Visual elements established means of communications that "…show rather than tell, delight rather than instruct" (Klingmann, 2007, p. 42). Coca-Cola's brand standards incorporated the non-objective priority to be "familiar yet surprising" (Tischler, Oct. 2009, p. 97). A 2007 study in the UK concluded that emotion-based messages were more effective than those based on fact or reason (Feldwick, 2009, p. 130). Designers relied on their observational skills to develop insights and visualize solutions, and follow through with prototypes, exploring many options along the way (Martin, 2009, pp. 160–163). Despite efforts to rationalize the brand process, design remained a crucial element of brand development. The creative process added the required spark necessary for brand to connect on emotional levels (Neumeier, 2006, p. 73). One explanation is that while statistical approaches informed reliable outcomes, brand building required valid outcomes—those that are best able to meet the desired end. The search for validity

required informed yet inspired thinking outside the boundaries of statistical predictable

processes (Martin, 2009, pp. 37–38).

Communication designers focused on customer-centered communications needed

a means to connect based on the customer's unique perspective, not dictated by the limits

of communications channels and technology. Typography represented an essential

element of brand communication; the lack of typographic flexibility currently embedded

in web-based communications constituted the exact type of restriction that obstructed

valid design outcomes. Designers forced to utilize the same small number of fonts in

web-based brand communication were simply unable to escape the one-way mode of

communication that characterized the past state of marketing and branding.

This limited type palette dictated the tone of communication, resulting in an epidemic of

sameness in web design. To make meaningful connections specific to a customer's—and

a brand's—specific needs, designers required vastly expanded capabilities to visually

shape the tone of visual and verbal communications. This demanded the momentous and

overdue introduction of web font technology.

Chapter VI

WEB FONT TECHNOLOGY

The @fontface Command

Web pages depended upon the browser software to create all copy elements from font resources accessible on the local computer platform. The thousands of available fonts for use on computers created a limitless set of possibilities. Designers specified fonts for web pages from the very limited set of universal, or near-universal, fonts that were reliably installed across the breadth of the World Wide Web.

Early on, HTML established font specification tags that allowed a font to be referenced by name. The drawback to this approach was that the browsers looked for the fonts on the local PC, and designers relied on defaults rather than risk their designs on the presence of a specific font (DiNucci, et al., 1997, p. 82). This was an unacceptable variable in an environment where readers altered the intended look of a page by enlarging the display size of type on a page—another in-browser command (Lynch and Horton, 2008, p. 189). The issue was so pervasive that the Type Directors Club—an organization dedicated to "excellence in typography, both in print and on screen" (tdc.org, 2010, para. 1)—limited its web site to the default Helvetica, Arial, san serif categories.

The W3 Consortium recently introduced a new tag: @font-face (see Figure 15), which allowed remote links to fonts that were downloadable, in the same way as images (w3c.org, 2010, sec. 4.1). Fonts downloaded from remote servers via referenced universal

resource locators (URLs) seamlessly rendered onto the page (w3c.org, 2010, sec. 4.1).

This preserved the compatibility of text elements with search engines, and increased

efficiency by reducing the need for embedded graphics or Flash elements (King, 2010,

para. 4). More recently, Flash became a target of strong criticism from Apple, Inc. CEO

Steve Jobs. Lack of support for Flash—despite the appreciation of designers for it as a

platform—on Apple's popular iPhone™ and iPad™ devices has put its future viability in

some doubt (Abell, Jan. 2010, paras. 3,6). If Flash declined as a universal web standard,

the urgency for other design friendly technologies for web and mobile application would

intensify. Web font technology seemed a likely candidate, especially with recent progress

towards solving the licensing issues that accompany font usage and distribution.

```
Example VII

To use a downloadable font called Gentium:

    @font-face {
      font-family: Gentium;
      src: url(http://site/fonts/Gentium.ttf);
    }

    p { font-family: Gentium, serif; }

The user agent will download Gentium and use it when rendering text within paragraph
elements. If for some reason the site serving the font is unavailable, the default serif font will
be used.
```
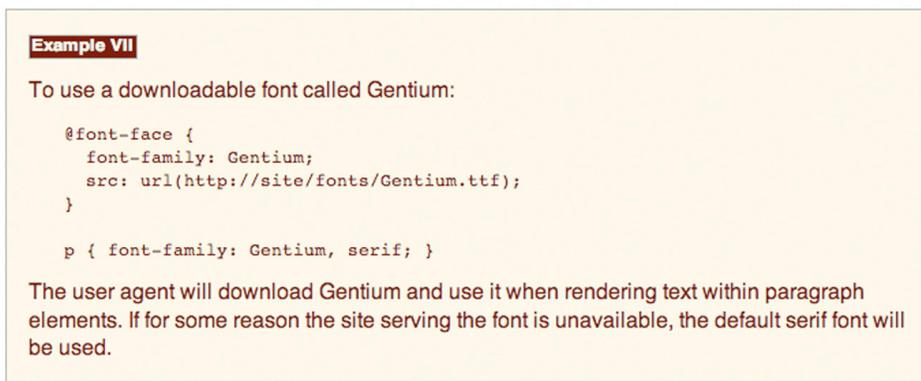
Figure 15. CSS code for @font-face usage. Detail of CSS programming code for the @font-face command, also showing the URL lookup reference for font downloading. From *CSS Fonts Module Level 3* (sec. 4.1), by w3c.org, 2010. Copyright 2010 by W3C and its host institutions MIT, ERCIM, and Keio

Solving Licensing Dilemmas

Font licensing remained a particularly important hurdle preventing the widespread

distribution necessary for font usage over the web. Fonts were always tightly controlled

intellectual property, and the prospect of widespread distribution via unauthorized sources over the web was clearly an issue in need of resolution (tdc.org, 2010, para. 6).

The San Francisco based technology firm Typekit offered an innovative solution: licensing fonts from the server side, so that publishers, not readers, bore responsibility for licensing. This represented the first practical solution for widespread distribution of this type of intellectual property over the web, and promised to resolve the difficulties of customized Digital Rights Management (typekit.com/about, 2010, paras. 2–3). Typekit.com also created a font library, and partnered with many well-known font publishers and distributors (typekit.com/about, par. 1), creating a one-stop shop model for web fonts. The Typekit.com solution satisfied the licensing test necessary for practical deployment of web fonts.

<div align="center">Web Fonts and Content Management</div>

Web font technology capitalized on the ubiquitous CSS standard that dominates HTML-generated web pages. CSS offered key advantages for the design of web pages. CSS tags allowed separation of design from content, whereas line-by-line HTML programming demanded both be addressed in the same program lines. This created a nightmare when it came to updating content. The CSS tags created a governing set of commands that allowed streamlined updates of either design style, or page content. Furthermore, there were no practical limits to the scalability of CSS, and changes to a master set of style tags could quickly revise thousands of web pages governed by those styles (Lynch and Horton, 2008, pp. 207–210). Use of the @font-face tag in CSS allowed seamless application of font styles over the web in current generation browsers, thus solving the most important usability test.

Chapter VII

THE IMPACT OF WEB FONTS

Design Issues

The introduction of web font technology promised substantial, and potentially redefining, impact on brand communication design via web and mobile devices. The technology also opened new possibilities for customer-centered brand communication. The vast quantities of information on the web remained primarily text-based as opposed to graphical (Macdonald, 2003, p. 76).

The amount of text-based information required more diversity in available font designs for the web to realize its full potential as a designed experience. Despite the frequency of icon usage in interface design, text still offered many advantages amplified by the web's capabilities. Compatibility within search environments, and adaptability across different platforms were overriding priorities where text benefitted the reader's needs (Lupton, 2006, p. 24). Fonts enhanced the communication of verbal information with visual cues, personalities, and dynamics (Lynch and Horton, 2008, p. 217). Typography continued to be a critical tool in terms of non-verbal communication, via the use of particular fonts (Wheeler, 2006, p. 114). Yet the desire for universal font compatibility on the web—using the same limited set of a dozen or so fonts—preempted this distinct communication advantage (Lynch and Horton, p. 217). Web fonts expanded this palette dramatically (typekit.com). Typographic differentiation arrived with the

advent of properly licensed, browser-compatible font options delivered via the web, as did new abilities for hierarchical information display.

These new communications abilities presented additional advantages in the context of brand communication. Modern web design practitioners validated the need for uniform visual standards—particularly as they related web content to print and environmental communications—and a uniform approach to typography (Horton and Lynch, 2008, p. 202). It was also apparent that typography influenced the user's experience on something of a sub-conscious level, even as it provided valuable connections to the broader message, and unity between messages (Horton and Lynch, p. 203). Brands needed the ability to connect with customers on a personal level (Klingmann, 2007, p. 36), which presented a strong argument against the generic state of typography that remained pervasive. The typekit.com font library (see Figure 16) offered in excess of 400 fonts as of April 2010 (typekit.com/libraries/full, April 2010, p. 1), a substantial increase over the widely recognized set of universal browser-safe fonts (MacDonald, 2003, p. 93). For designers who have exhausted the possibilities of using this limited type palette, web fonts offered the prospect of design that connected with the personality of the brand—and its consumers—as opposed to finding the best of an undesirable selection of standard fonts.
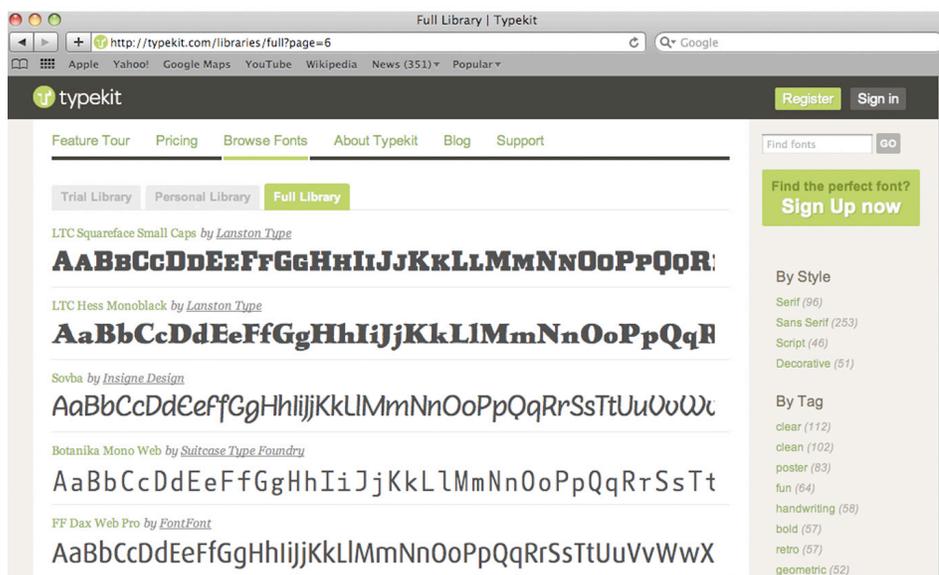
Figure 16. Detail of Typekit.com's library of web fonts. From Typekit.com/libraries, by Typekit.com, 2010, San Francisco: Typekit.com. Copyright 2010 by Typekit.com.

By the spring of 2010, consensus around web font formats and technologies appeared more solid than at any time since the advent of communication design on the web. This was a significant development; as late as fall 2008, major stakeholders such as Apple, Microsoft, and Mozilla expressed contradicting endorsements of competing web font formats and delivery mechanisms (Tan, Oct. 2008, paras. 7–12). Font foundries—those companies with the greatest financial stake concerning intellectual property—also remained skeptical of potential licensing solutions (King, 2009, para. 6). By 2009, however, new developments brought a fully enabled type environment for web applications closer to realization. Typekit.com launched its third-party hosting solution that allowed for designers to implement the @font-face command with proper licensing, and the Web Open Font Format (WOFF) permitted direct downloads of fonts within proprietary web domains (Coles, Nov. 2009, para. 3). WOFF fonts permitted display of

web pages with specific fonts, but designed for incompatibility with other design and word processing software, which dramatically increased protection against digital piracy of the fonts (Fontshop, Nov. 2009, para. 3).

With both viable licensing and secure distribution systems in place, support for web fonts coalesced among designers and type foundries. Forecasts called for new revenue streams along the lines of the Google Maps model, while new and sustainable applications would drive market demand for more web font availability (Allsop, Nov. 2008, paras. 21–24). This created conditions diluting the ability of individual companies to withhold their font libraries from broader use on the web (Zeldman, April 2009, para. 23). By the fall of 2009, the majority of font foundries and font suppliers endorsed these new means of licensing and distributing fonts on the web, at least in principle (blog.typegirl.com, April 2010, para. 2).

<div align="center">Web Fonts and Customer-centered Brands</div>

Customer-centered brands recognized the need for specifically targeted messages, and responsiveness to customer feedback; the one-size-fits-all notion of traditional marketing was no longer satisfactory (Bhalla, et al., Jan/Feb. 2010, p. 96). The generic selection of universally compatible fonts for the web was inadequate to serve the needs of individual customers. The web was an integral part of customer experience; strong experiences created distinctive impressions in the minds of customers, and often, a sense of delight that defied analytic explanations (Klingmann, 2007, p. 19).

The visual elements of a brand, including typography, played an important role in differentiation, and proved an important means of creating value for brands (Neumeier, 2006, p. 35). Even as products and technologies advanced, brands became the long-term

stabilizers of meaning to their audiences (Klingmann, 2007, p. 57). Brands that sacrificed

typographic style in favor of technological expediency did so at the expense of visual

continuity. Continuity was a principal means of generating confidence and esteem in a

brand, which were two crucial goals of any branded enterprise (Smith, 2009, p. 98). The

evolution of brands to lifestyle expressions, and the consumer endorsement as a symbol

of community, created a higher priority for brands to retain their individual distinctions

(Klingmann, 2007, p. 43). Continuity also produced focused, clear brand messages,

which also amplified the quality perceptions of a brand (Clifton, 2009, p. 256). Web fonts

offered a means of integrating web design without these sacrifices of differentiation and

continuity. Typography offered the means of intuitive connections to the customer, an

important means of elevating brand value over the long term (Clifton, 2009, p. 250).

   With web fonts, designers finally possessed the ability to select fonts for web

design based solely on the considerations for expression, such as "character, spirit, and

personality" (Bringhurst, 1997, p. 99). Typographic distinction remained an imperative

element in brand identity systems design, with a dual need for charm and functionality in

its application (Wheeler, 2006, p. 114). This condition recognized that there are

advantages to type becoming an inherent part of the message, rather than a neutral

medium for reading (Lupton, 2007, p. 25). Successful brands leveraged the qualities of

character, narrative, and feeling through visual communication. These elements provided

a sense of connection between brands and their audiences, and these intangible

connections expanded appeal, and thus value, for any brand that effectively leveraged

these means of creative communication (Payne, 2009, p. 17). Brands that aligned their

core values and objectives with creative expression made a necessary departure from

statistical analysis. Evidence demonstrated that brands required a "leap into the realm of intuition and artistry" to fully realize their brand promise (Feldwick, 2009, p. 144). It was precisely within this realm where web fonts demonstrated unlimited potential to upgrade the quality of brand communications in web-based application, and build stronger connections with customers on an individual level previously not available. This made web fonts a seamless solution that solved the communications test.

<div align="center">A Breakthrough Application of Web Fonts</div>

Technology offered the prospect of moving the integration of font style, message tone and web page construction further than previously possible. The communication advantages inherent in effective typographic design intersected the structural programming of CSS, via the @font-face command. CSS potentially connected content categories with a specified font that amplified the tone of the communication. Most intriguingly, the means of defining these categories rested with users as much as with the owners of brands. Connections that formed among online communities could be observed, classified using keywords or hash-tags, and assigned particular fonts that reflected the group, content, or context. Design coordinated visual style, emotional appeal, and content all at once.

Font design style was an inarguable component of successful brand design. Contemporary research confirmed the link between association of non-verbal communications and influenced behavior (Feldwick, 2009, p. 137). This validated the need for the font designs associated with a brand to be deployed consistently in all media.

Web fonts enabled an even more important advantage for those who adopt the technology. Web fonts allowed for the replacement of a large amount of art—defined as graphic elements necessary for the usage of fonts that were not supported universally in web browser—with type generated by CSS style sheets. When combined with audience-driven input such as Twitter feeds, a tremendous savings of production time in the creation of web pages resulted (see Figure 17). Updating web sites became both a timelier and more relevant endeavor. This was significant, because brand design defied most attempts at automation, and relied on the focused efforts of experts to achieve results (Martin, 2010, pp. 96–97). Automating web site production, while achieving more relevant results, provided a potential competitive advantage, both in terms of more effective communications and in terms of brand communication on the web.
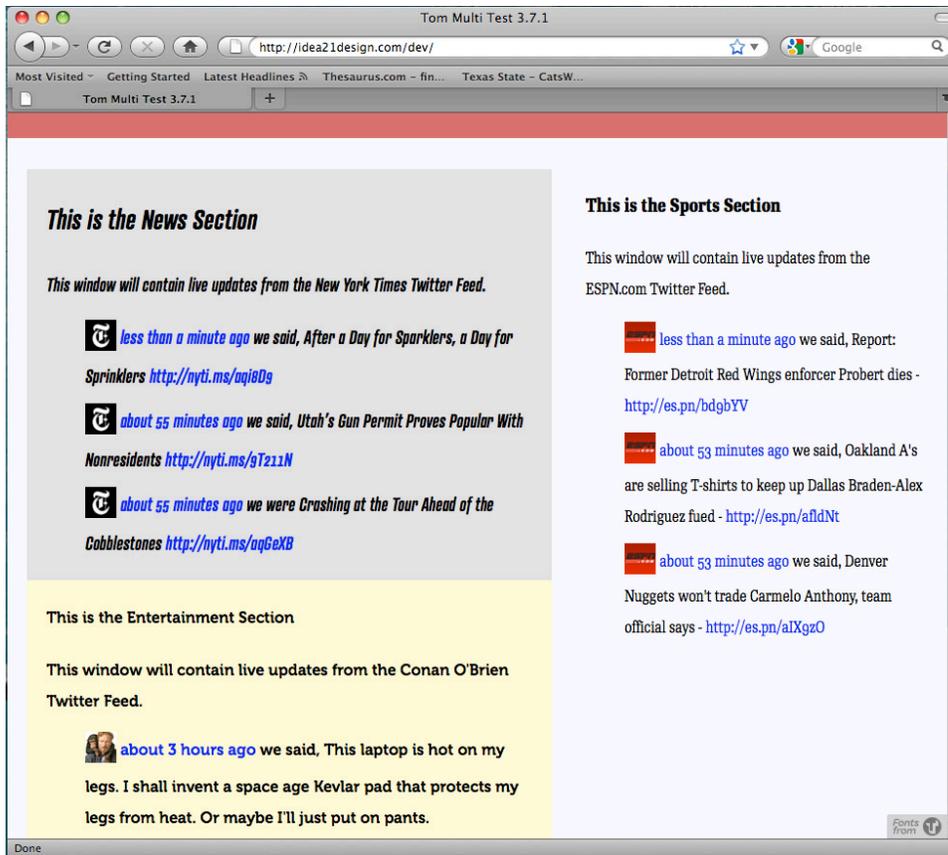
Figure 17. A demonstration of web fonts and customer-centered communication. Twitter feeds styled with Typekit.com web fonts show the technology in place. Typographic design clearly delineates content; news feeds impart a sense of urgency, sports feeds take a strong, confident tone, while entertainment shows an informal, relaxed sensibility. Updates in the Twitter posts are identified via CSS tags, which assign the desired font style in real time. From http://www.idea21design.com/dev, by Tom Berno, 2010, Austin, TX: idea21design.com. Copyright 2010 by Tom Berno.

Chapter VIII

CONCLUSION

This thesis, *Web fonts, breaking limitations to form customer-focused brand communication*, examined the historical background and development of typography, and established its critical relationship with the practice of communication design. It also revealed the means by which typography enhanced the messages it composed to create additional layers of meaning and relevance.

Further exposition of the development of web-based communication design, including its usage of typography, revealed dramatic limitations to visual communications in this critical medium. These obstacles formed unique challenges in the creation of brand communications.

Contemporary brand communication, facilitated by unprecedented means of customer communication, placed a high value on defining messages with the customer's perception and needs in mind.

All of the above factors pointed to an urgency for a web typography solution for 21st century needs. Web fonts, via new approaches and technologies, removed multiple barriers that placed extreme limitations on designers, and opened new opportunities.

Innovative Implementation of Web Fonts

Web fonts promised a powerful new means of production for web-based brand communication. For the first time, a palette of fonts for web communication expanded to a breadth of possibilities that promised real differentiation in both aesthetics and tone. This thesis extended this promise a step further, and suggested means by which content and typographic style may be coordinated according to pre-selected conditions or prompts. This in effect generated design in real-time. Typographical elements rendered on web pages used specific font styles that reinforced meaning via emotional and stylistic understanding. Designers' accumulated knowledge of typographic style informed these choices. Labor intensive processes for web design achieved a level of automation not previously conceived. Real competitive advantage awaited those brands and organizations that embraced these new possibilities.

Future Research Paths

The nature of web-based communication, as well as mobile technologies enabled by 3G wireless networks, offers broad opportunity to validate the impact of web fonts. The web's unprecedented data collection capability provides something never before possible in design: objective data that proved the effectiveness (or lack thereof) of font choices deployed for specific results via a broad sample pool. Visitors' patterns of page views, click-through rates, and other data create a means of evaluating different approaches. Over time, a better understanding of font characteristics and their accompanying communications utility potentially enables more informed choices of fonts to reach specific audiences, or evoke specific responses.

The true value of web fonts ultimately rests on their potential to bring web design new means of connecting audiences and messages. Deployment of the technology elevates the medium to a new level of sophistication. Communication designers stand to benefit from this new technology, as they possess the ability to make meaningful connections between font style and message. This re-emphasizes the role of both design and designer as key contributors to brand building in web and mobile communications.

REFERENCES

A library of fonts at your fingertips. (2010). Retrieved April 27, 2010, from
http://typekit.com/tour/library

Abell, J. C. (2010, January 30). Google's 'don't be evil' mantra is 'bullshit,' Adobe is
lazy: Apple's Steve Jobs (Update 2). *Wired Epicenter*. Retrieved April 27, 2010,
from http://www.wired.com/epicenter/2010/01/googles-dont-be-evil-mantra-is-
bullshit-adobe-is-lazy-apples-steve-jobs/

About Typekit. (2010). Retrieved April 27, 2010, from http://typekit.com/about

Adobe, Inc. (n. d.). *Adobe software license agreement*. Retrieved from
http://www.adobe.com/type/browser/legal/pdfs/EULA5seat_USEnglish02.03.04
.html

Allen, T., & Simmons, J. (2009). Visual and verbal identity. In Clifton, R., Ahmad, S.,
Allen, T., Anholt, S., Barwise, P., Blackett, T., Bowker, D., et al., *Brands and
branding* (2nd ed.) (pp. 112–126). New York: Bloomberg Press.

Allsop, J. (2008, October 19). Ubiquitous web font embedding just got a step closer. *Web
directions*. Retrieved April 19, 2010, from
http://www.webdirections.org/blog/ubiquitous-web-font-embedding-just-got-a-
step-closer/

Amazon.com (n.d.) *How recommendations work*. Retrieved April 27, 2010, from
http://www.amazon.com/gp/help/customer/display.html?ie=UTF8&nodeId=1331
6081

Andes, S. M., Atkinson, R. D., Bennett, R., Castro, D. D., & Ezell, S. J. (2010). *The
internet economy 25 years after .com*. Washington, DC: The Information
Technology & Innovation Foundation. Retrieved from http://
www.innovationpolicy.org/publications/internet-economy-25-years-after-com

Austen, J., & Perfect, C. (1998). *The complete typographer*. Upper Saddle River, NJ:
Prentice-Hall, Inc.

Bateman, A., & Geiss, N. (2009). Are you building brands for a seamless world?
Interbrand Best Global Brands 2009, 6–7. Retrieved April 3, 2010, from
http://interbrand.com/best_global_brands_intro.aspx?langid=1000

Bhalla, G., Moorman, C., and Rust, R.T. (2010, January/February). Rethinking marketing. *Harvard Business Review, 88,* 94–101.

Black, R., & Elder, S. (1997). *Web sites that work*. San Jose, CA: Adobe Press.

Black, R. (2009 May). Web fonts now. In *Space*. Symposium conducted at Typo Berlin 2009 conference meeting, Berlin, Germany.

Blackett, T. (2009). What is a brand? In Clifton, R., Ahmad, S., Allen, T., Anholt, S., Barwise, P., Blackett, T., Bowker, D., et al., *Brands and branding* (2nd ed.) (pp. 13–25). New York: Bloomberg Press.

Bowman, S., & Willis, C. (2002). *Design whys: Designing web sites that sell*. Gloucester, MA: Rockport Publishers.

Bringhurst, R. (1997). *The elements of typographic style*. (2nd ed.). Vancouver, BC: Hartley & Marks.

Clifton, R. (2009). The future of brands. In Clifton, R., Ahmad, S., Allen, T., Anholt, S., Barwise, P., Blackett, T., Bowker, D., et al., *Brands and branding* (2nd ed.) (pp. 246–260). New York: Bloomberg Press.

Cloninger, C. (2002). *Fresh styles for web designers: Eye candy from the underground*. Indianapolis, IN: New Riders

Coles, S. (2009, November 18). Fontfonts on the web, starting today. *The Fontfeed*. Retrieved April 19, 2010, from http://fontfeed.com/archives/fontfonts-on-the-web-starting-today

DiNucci, D., Guidice, M., & Stiles, L. (1997). Elements of web design. Berkeley, CA: Peachpit Press.

Drew, K. (2002). *Branding online*. New York, NY: Universe Publishing.

Droste, M. (2006). *Bauhaus 1919–1933*. Cologne, GE: Taschen Gmbh.

Feldwick, P. (2009). Brand Communications. In Clifton, R., Ahmad, S., Allen, T., Anholt, S., Barwise, P., Blackett, T., Bowker, D., et al., *Brands and branding* (2nd ed.) (pp. 127–145). New York: Bloomberg Press.

Fenton, K. (1997). The new typographer muttering in your ear. In Beirut, M., Drenttel, W., Heller, S. and Holland, D. K. (Eds.). *Looking closer 2* (pp. 31–33). New York: Allworth Press.

Find the plan that's right for you. (2010). Retrieved from https://typekit.com/plans

Flanders, V., & Willis, M. (1998). *Web pages that suck: Learn good design by looking at bad design*. San Francisco: Sybex.

FontShop, USA. (2010, February 2). *About web fontfonts*. Retrieved April 3, 2010 from http://www.fontshop.com/blog/?p=1661&utm_source=NewsletterFeb2410&utm_medium=web&utm_content=LearnMore&utm_term=em&utm_campaign=FF52 Web

Frampton, J. (2009). Past, present, future. *Interbrand Best Global Brands 2009*, 2–3. Retrieved April 3, 2010, from http://interbrand.com/best_global_brands_intro.aspx?langid=1000

Full library. (2010). Retrieved April 27, 2010, from http://typekit.com/libraries/full

Garcia, M. R. (1997). *Redesigning print for the web*. Indianapolis, IN: Hayden Books.

Hall, S. (2007) This means this, this means that: A user's guide to semiotics. London, UK: Laurence King Publishing Ltd.

Heller, S., and Pettit, E. (2000). *Graphic design timeline*. New York: Allworth Press. The authors collect and summarize significant milestones in the evolution of graphic design from 1900–2000. The release of the Mosaic web browser in 1993 marked the entry point for graphic design into the world wide web. (p. 221)

Heller, S. (1989). The 1960s: mainstream and counterculture: 50 years of graphic design—the shape of the decades [Special issue]. *Print, 43(6)*. 90–111.

Heller, S. (2004). Bauhaus and the New Typography. In *Design Literacy* (2nd ed.) (pp. 154–156). New York: Allworth Press.

Heller, S. (2004). American Typography of the 1960s. In *Design Literacy* (2nd ed.) (pp. 167–168). New York: Allworth Press.

Heller, S. (2004). Mrs. Eaves. In *Design Literacy* (2nd ed.) (pp. 167–168). New York: Allworth Press.

Hobsbawm, A. (2009). Brands 2.0: Brands in a digital world. In Clifton, R., Ahmad, S., Allen, T., Anholt, S., Barwise, P., Blackett, T., Bowker, D., et al., *Brands and branding* (2nd ed.) (pp. 217–233). New York: Bloomberg Press.

Holland, D. K. (2001). Keeping promises: The impact of brands on society/part one. In Holland, D. K. (ed.). *Design Issues* (pp. 3–11). New York: Allworth Press.

Holland, D. K. (2001). Keeping promises: The impact of brands on society/part two. In Holland, D. K. (ed.). *Design Issues* (pp. 13–26). New York: Allworth Press.

Holland, D. K. (ed.). (2001) *Design Issues*. New York: Allworth Press.

Horton, S., and Lynch, P. J. (2008). *Web style guide* (3rd ed.). New Haven: Yale University Press.

Interbrand (2009). *Interbrand Best Global Brands* 2009. Retrieved April 3, 2010, from http://interbrand.com/best_global_brands_intro.aspx?langid=1000

Jacobs, K. (2004). Three letters: e. v. o. In Yelavich, S. (ed.). *Profile: Pentagram design* (pp. 72–81). New York, NY: Phaidon Press Inc.

Keedy, J. (1997). The rules of typography according to ~~crackpots~~ experts. In Beirut, M., Drenttel, W., Heller, S. and Holland, D. K. (Eds.). *Looking closer 2* (pp. 27–31). New York: Allworth Press.

Keeley, L. (2001). Design for a time of weird, wild change. In Holland, D. K. (ed.). *Design Issues* (pp. 209–214). New York: Allworth Press.

King, S. (n. d.). *A giant step for typography on the web*. Retrieved April 3, 2010, from http://tdc.org/tdc/archives/1321

Klingmann, A. (2007). *Brandscapes: Architecture in the experience economy*. Cambridge, MA: The MIT Press.

LePla, F. J., & Parker, L. M. (2002). *Integrated branding: Becoming brand-driven through company-wide action*. London: Kogan Page Ltd.

Level, J., Newman, B., & Newman, B. (1996) *The Precision Type font reference guide: Version 5.0*, Pt. Roberts, WA: Hartley & Marks Publishers Inc.

Lindemann, J. (2009). The financial value of brands. In Clifton, R., Ahmad, S., Allen, T., Anholt, S., Barwise, P., Blackett, T., Bowker, D., et al., *Brands and branding* (2nd ed.) (pp. 26–44). New York: Bloomberg Press.

Lupton, E. (2001). Thoughts on identity at the century's end. In Holland, D. K. (ed.). *Design Issues* (pp. 43–47). New York: Allworth Press.

Lupton, E. (2006). The birth of the user. In Beirut, M., Drenttel, W. & Heller, S.. (eds.). *Looking closer five: Critical writings on graphic design* (pp. 23–25). New York: Allworth Press.

MacDonald, N. (2003). *What is Web Design?* Mies, Switzerland: RotoVision SA.

Margolin, V. (1997). *The Struggle for Utopia: Rodchenko, Lissitzky, Moholy-Nagy 1917–1946*. Chicago, IL: University of Chicago Press.

Martin, R. (2009). *The design of business: Why design thinking is the next competitive advantage*. Boston: Harvard Business Press.

Martin, R. (2010, January/February). The age of customer capitalism. *Harvard Business Review, 88,* 58–65.

McMurtrie, D. C. (1999). The philosophy of modernism in typography. In Beirut, M., Helfand, J., Heller, S., & Poynor, R. (eds.). *Looking closer 3: Classic writings on graphic design* (pp. 40–44). New York: Allworth Press.

Meggs, P. B. (1989). The 1940s: Rise of the modernists: 50 years of graphic design—the shape of the decades [Special issue]. *Print, 43(6)*. 90–111.

Meggs, P. B., & Purvis, A. W. (2006). *Meggs' history of graphic design*. Hoboken, NJ: John Wiley & Sons, Inc.

Miller, J. A. (1989). The 1980s: postmodern, postmerger, postscript: 50 years of graphic design—the shape of the decades [Special issue]. *Print, 43(6)*. 162–185, 202–208.

Morris, W. (1999). The ideal book. In Beirut, M., Helfand, J., Heller, S., & Poynor, R. (eds.). *Looking closer 3: Classic writings on graphic design* (pp. 1–5). New York: Allworth Press.

Neumeier, M. (2006). *The brand gap*. Berkeley, CA: New Riders.

Neumeier, M. (2007). *Zag: The #1 strategy of high-performance brands*. Berkeley, CA: New Riders.

Not always about type. (n. d.). Retrieved April 19, 2010, from http://blog.typegirl.com/post/142912558/most-of-the-important-foundries-are-supporting-webfont

Payne, A. (2009). Driving demand through creativity. *Interbrand Best Global Brands 2009*, 16–17. Retrieved April 3, 2010, from http://interbrand.com/best_global_brands_intro.aspx?langid=1000

Potlatch Corporation. (1999). *Vintage: Typography* [Brochure]. Cloquet, MN: Author.

Pricing. (2010). Retrieved April 27, 2010, from https://typekit.com/plans

Smith, S. (2009). Brand Experience. In Clifton, R., Ahmad, S., Allen, T., Anholt, S., Barwise, P., Blackett, T., Bowker, D., et al., *Brands and branding* (2nd ed.) (pp. 96–111). New York: Bloomberg Press.

Tan, J. (2008, October 31). @font-face in IE: Making web fonts work. *Pith & pulp*. Retrieved April 19, 2010, from http://jontangerine.com/log/2008/10/font-face-in-ie-making-web-fonts-work

tdc.org. (n.d.). About the TDC. Retrieved April 19, 2010, from http://tdc.org/tdc/about

Tischler, L. (2009, October). Pop artist: David Butler: Masters of Design [Special issue]. *Fast Company, 139*, 90–97.

Tschichold, J. (1999). New life in print. In Beirut, M., Helfand, J., Heller, S., & Poynor, R. (eds.). *Looking closer 3: Classic writings on graphic design* (pp. 45–49). New York: Allworth Press.

Wheeler, A. (2006). *Designing brand identity*. Hoboken, NJ: John Wiley & Sons, Inc.

White, A. W. (1999). *Type in use: Effective typography for electronic publishing* (2nd ed.). New York: W.W. Norton & Company.

Wild, L. (1989). The 1950s: design in gray flannel: 50 years of graphic design—the shape of the decades [Special issue]. *Print, 43(6)*. 90–111.

World Wide Web Consortium (2009, June 18). The @fontface rule. In *CSS fonts module level 3* (chap. 4.1). Retrieved March 3, 2010, from http://www.w3.org/TR/2009/WD-css3-fonts-20090618/

W3C. (2009, June 18). CSS fonts module level 3 (section 4). Retrieved April 3, 2010 from http://www.w3.org/TR/css3-fonts/#the-font-face-rule.

Young, D. (2003). *The art of the letter*. Hamilton, OH: Smart Papers LLC.

Zeldman, J. (2009, April 21). Real fonts on the web: An interview with The Font Bureau's David Berlow. A List Apart, 282. Retrieved April 19, 2010, from http://www.alistapart.com/articles/realfontsontheweb

VITA

Thomas C. Berno was born in Stamford, Connecticut, on December 28, 1966, the son of Helen S. and Joseph A. Berno. He graduated from San Marcos High School (San Marcos, Texas) in 1984, and enrolled in Southwest Texas State University (since re-named Texas State University-San Marcos) that same year. He graduated cum laude from Texas State in May 1989. He worked for a series of prominent Texas design and advertising firms in San Antonio, Houston, and Austin prior to joining the faculty at Texas State in the fall of 2001. He enrolled in the Graduate College of Texas State University-San Marcos in August, 2007, as part of the inaugural class of the Communication Design MFA program.

His design work has been extensively lauded for excellence throughout his career as a designer and professor at Texas State. He has been recognized in the *Print Regional Design Annual*, *LogoLounge*, and the American Advertising Federation Addy Awards.

Permanent Address:

1510 Romeria Drive

Austin, Texas 78757

This thesis was typed by Thomas C. Berno.