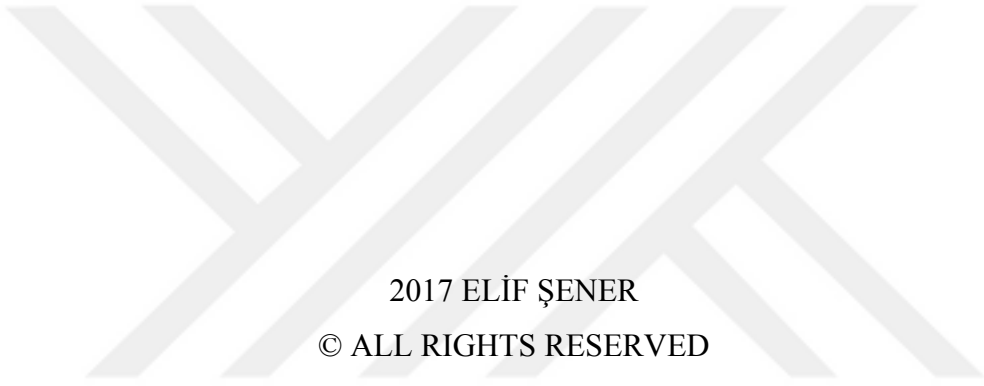


DECONSTRUCTION OF TYPING AS A PERFORMANCE TO EXTRACT AFFECT



by
ELIF ŞENER

Submitted to Institute of Social Sciences
in partial fulfillment of
the requirements for the degree of Master of Arts
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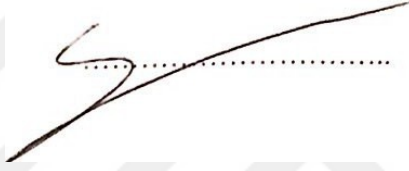
DECONSTRUCTION OF TYPING AS A PERFORMANCE TO EXTRACT AFFECT

APPROVED BY

Prof. Dr. Erdağ Aksel
(Thesis Supervisor)



Doç. Dr. Selim Balcısoy



Yrd. Doç. Dr. Gökhan Mura



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ABSTRACT

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ELİF ŞENER

M.A. Thesis, May 2017

Thesis Supervisor: Prof. Erdağ Aksel

Starting from nineteenth century, conveying the information fast and effectively was considered to be the central function of typography. The avant-garde and aesthetically pleasing solutions for the design problems were considered to be negligible because the ultimate purpose was to be succeed in effective communication. However, some early modernist objected these conventions long before digital media arrived. This thesis starts by analyzing the historical development of modern art movements that contradicted with the aforementioned function of typography and employed visually challenging and emotive typographic elements. Later it examines the emerging means of expressions through digital typography, and introduces the related project Moodface. Structure of Moodface is based on the assumption that writing (typing) is performance. Purpose of Moodface is to provide a responsive operational framework in which writing speed data could be collected. It processes time intervals between keystrokes, idle time and mistakes. Mistakes are controlled by 'backspace' strokes, time intervals are used to determine speed of individual keystrokes, rolling average speed and average speed of entire text and during the idle time it puts space between lines of text.

KEYWORDS: Affect, Deconstruction, Digital, Performance, Typography, Typing

ÖZET

BİR PERFORMANS OLARAK YAZI YAZMA EYLEMİNİN DUYGULANIM İÇİN YAPIBOZUMU

ELİF ŞENER

Yüksek Lisans Tezi, Mayıs 2017

Tez Danışmanı: Prof. Dr. Erdağ Aksel

Ondokuzuncu yüzyıldan itibaren bilginin hızlı ve etkili bir biçimde iletilmesi tipografinin başlıca fonksiyonu olarak görülmektedir. Asıl amaç etkili iletişim yollarının üretiminde başarılı olmak iken, tasarım sorunları karşısında önerilen yenilikçi ve estetik çözümler önemsiz addedilmekteydi. Ancak bazı öncü modernistler, bu geleneğe dijital araçların ortaya çıkmasından önce dahi karşı çıkmışlardı. Bu tez bahsi geçen tipografinin ana fonksiyonuna karşı gelen ve görsel olarak yenilikçi ve duygusal tipografi elementlerini kullanan sanat hareketlerinin analizi ile başlar. Sonrasında dijital tipografi aracılığıyla ortaya çıkan ifade araçlarını ve sadece kullanıcı ve klavye etkileşiminden faydalanarak duygusal metin üretmeyi amaçlayan bir dijital platform olan ilgili proje Moodface'i inceler. Moodface'in yapısı yazma eyleminin (klavye ile) bir performans olduğu varsayımına dayanır. Moodface tuşa vuruşlar arasındaki süre farkını, etkileşimsiz geçen süreyi ve hataları işler. Hatalar geri tuşu ile kontrol edilirken, bu süre farkı; tekil tuşa basımları, müteharrik ortalama ve tüm metnin ortalama hızını bulmak için kullanılır. Ayrıca etkileşimsiz süre satır aralarına boşluk ekler.

ANAHTAR SÖZCÜKLER: Dijital, Duygulanım, Performans, Tipografi, Yapıbozum, Yazma

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1. Introduction

“There are things within us that can be expressed only through the gesture of writing, because this is the way we have been programmed by our history, by our culture.”

V. Flusser

Communication between animals can occur through facial expression and posture as in humans, except written words and language. Words are unique to mankind to speak and write. Words and writing provided humans with an exclusive way to communicate even the most complicated messages. Writing played the most important role on the development and organization of civilized societies [1]. Until the Johannes Gutenberg’s invention of movable type, the critical power of writing and reading was a privilege for the leaders of society, while images only conveyed religious and political messages to the illiterate people.

After more than 500 years of the invention of movable type, written information became so attainable and embedded to our lives that coping up with the excessiveness of it, led to the replacement of text with images. What was considered a privilege before now is often seen as a burden. As Marshall McLuhan says “Information pours upon us, instantaneously and constantly” (McCluhan, 1964). This information overload, has led to a change in the way we use written language [2]. The urge and need for speed, replaced text with images because text takes time to read and understand, whereas we can perceive an image at a glance. Matthias Hillner explains differences in deriving meaning from images and written text by emphasizing two points; first, images are always a matter of the viewer’s interpretation, meaning, the more complicated an image is, the more potential misinterpretations are expected. And second, this interpretation can vary according to the context. [3] Written language on the other hand, forces the author or a typographer to follow the grammar rules and create a structure in order to convey the message precisely. Thus, people are still depending on the written information, when precision becomes a priority.

However, in a technology-mediated era, digital production of type reached to a new level where it challenges previously defined norms of reading and writing within new media environments by allowing the typographers to produce dynamic, interactive,

modular or automated text [4]. To understand the new ways of typographic representations, formerly discussed rules of conventional principles should be renovated. Accordingly, the question this thesis and the related project Moodface ask is to what extent virtualization of typography can alter perceptual user/audience to initiate or form new ways of communication. Similarly, the project I am going to present in this paper is motivated by the aim to explore the potential of digital typography as an interactive medium to visualize written information which comes from natural process of typing on a keyboard.

The development of the concept for this thesis and design of the project is based in the studies of history of writing. The arts movements starting from the 19th century until today were essential to develop an understanding on digital typography. Therefore, this thesis starts with the chronological development of modern¹ typography from printed to digital by looking at the pioneers who broke the rules of traditional typography, which are considered avant-garde even today. Following the art movements of the 20th century, early concepts and technical advances in computer age will be introduced. And finally, three examples, which also use digital media to manipulate the meaning of written text with the new visuals expressed through diversity in typographic treatment, will be discussed. Later, the changes in viewer's perception when the media is produced in an unusual manner will be discussed to understand whether Moodface is able to achieve its goal of extracting the emotional state of the user by producing media content in a different fashion. Finally, I will introduce the conceptual development and the results of the project Moodface.

¹ The term modern throughout this thesis will refer to the change in functionality of type, which was shaped by the industrialization and urbanization in Western world, rather than physical representation of type.

2. Transition to Modern Type

“The aim of the gesture [writing] is to give a specific form to thought, (namely the form of letters), and to give specific (namely literate) thought into a material form, (a surface).”

V. Flusser

2.1. Visual Poetry

Visual poetry can be characterized as a poem, which is designed to see rather than read. When mechanized printing was very common in the early 20th century, this movement emerged in Italy, before modern typography did. Visual Poetry broke the rules of traditional typography and the rules for writing.

One of the best-known artists of this movement was Guillaume Apollinaire who challenges the reader to escape from the limits of their perception. (Figure 1.) He manipulated the linear writing rules by using pencil and paper to create an image-like text. The idea of blending text and image into perceptually complex typographic compositions had influential effects on visual communication history. [5]

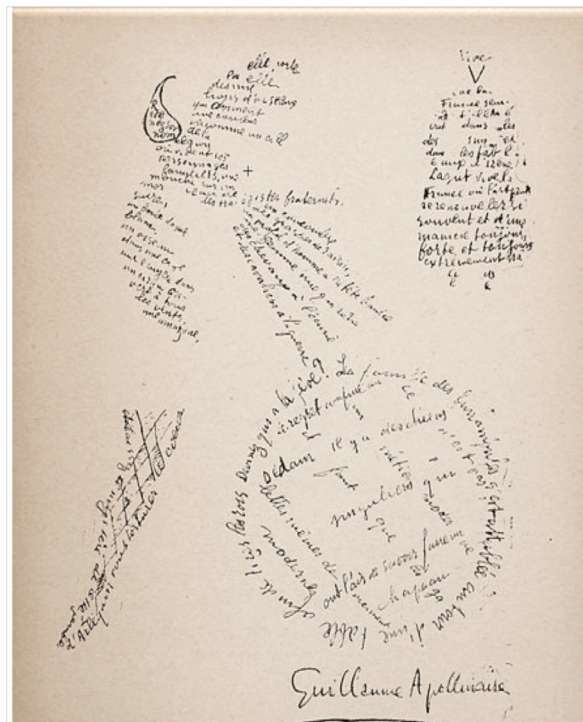


Figure 1. Calligram by Guillaume Apollinaire (1880–1918), published in 1920

2.2. Dadaism

Dada movement emerged from anarchist action in Zurich. During the I. World War Switzerland were politically neutral and this neutrality created resentment for the artists at the time. [6] What started as a reaction to the lack of attitude in politics towards the war rapidly affected the art and extended to all over the Europe.

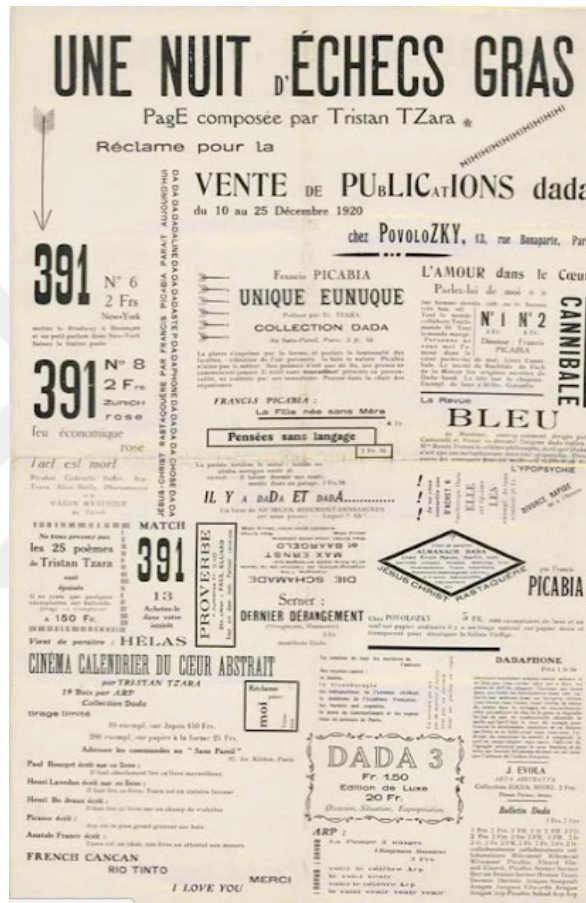


Figure 2. Une Nuit d'Écheecs Gras by Tristan Tzara, Paris 1920

Dada had one principle which is 'having no rules' which aimed to shock the viewer and eliminate function [7]. As the literal content was often reduced, typographical elements were utilized as a visual form of the content that mostly results in hiding the main function of text which is conveying meaningful information. The anarchy was used for encouraging the society to question and to promote skepticism towards political and cultural settings. Dadaist typography uses type in different size, weight which has no direction or hierarchy. Text is often written by hand and it follows the gaps in the page to create a dynamic layout. (Figure 2.)

2.3. Futurism

Industrialization had an important effect on futurists. They were inspired by the speed, which came with the machines. This rebellious movement did not only appeal to art lovers but it aimed to reach all members of society [8]. Under the leadership of Filippo Tommaso Marinetti, 'Futurist Manifesto' was published in 1909 and even though it was originated in Milan, Italy, it outspreaded to all Europe.

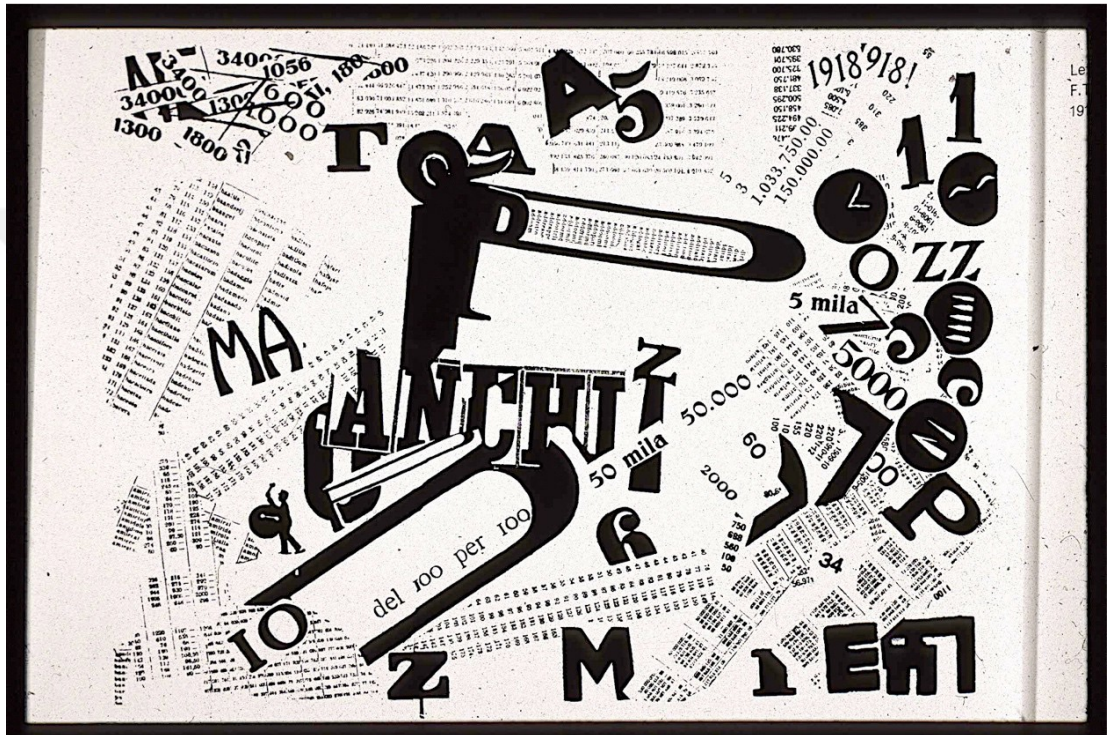


Figure 3. Numerical Sensibility published in 'Les Mots en Liberté Futuristes', 1919, Milan

Futurist often used typographical elements as images rather than visualizing the textual information. It led to a weak distinction between an image and a text in which viewers are forced to simply look at the piles of typographic pieces.

Fragmentation of typographical elements in futurism aimed to create dynamic and unusual angles for the text, likewise the type size varied in order to accomplish the sense of motion and tension. (Figure 3.)

“I am against what is known as the harmony of [type] setting. When necessary, we shall use three or four columns to a page and twenty different typefaces. We shall represent hasty perceptions in italic and express scream in bold type [...] a new, painterly, typographic representation will be born on the printed page.”

Filippo Tommaso

2.4. Constructivism

Futurism was an inspiration for the constructivists and they embraced modernism as futurists did. The movement emerged in 1921 in Russia after the revolution. One of the leaders of the movement Alexei Gan, for the first time claimed that ‘art was dead’ (Gan, 1922) in Europe. According to Gan, lack of practical construction based on reality was replaced by artist’s “*speculative activity*”. He promoted functional art and design objects instead of pure artistic ambitions for better serve to proletariat because constructivists aimed to be reachable for the public.

During 1920’s, compared to Europe there was a high level of illiteracy in Russia, constructivists believed that simplification of Cyrillic script and graphic design based on geometric principles would be more pragmatic for the proletariat to read the message. Antithetically, this approach for the reduction of artistic purposes was extreme for the general public, thus it became an artistic style on its own [9].



Figure 4. Advertisement Poster by Alexandr Rodchenko for the Lengiz Publishing House, 1924

Constructivism was not limited to only visual communication; it also influenced painters, architects and directors. Alexander Rodchenko made one of the most important contributions to the modern typography in terms of variety and reflected the diversity of constructivists [10]. (Figure 4.)

2.5. De Stijl and Bauhaus

De Stijl was an artistic movement which started in Holland, Amsterdam in 1917. The movement evolved around Theo Van Doesburg's De Stijl magazine and the artist Piet Mondrian was also involved in it. De Stijl embraced the modernity and mechanization like Futurism and Constructivism. However, De Stijl provided somewhat anti-emotional influence on constructivism (Hillner, 2009). Compared to former movements, it was calm, organized and clear in geometric forms. The dynamic relation between elements of the compositions was understood and applied wisely. De Stijl became an industrialized form of art (Ambrose & Harris, 2006). They advocated pure abstraction and universality by reducing all the unnecessary form and color from art

and design. They used vertical and horizontal visual elements with black white and primary colors. (Figure 5.)



Figure 5. An Exhibiton Poster by Theo Van Doesburg, 1920.

Not only Constructivists but also Bauhaus was influenced by De Stijl. László Moholy-Nagy and Walter Gropius gathered to establish Bauhaus art school in Germany, 1919. They craved to find a universal concept of aesthetic expression (Tschichold, 2006). [11]

2.6. Modernist Functionalism

The post-war generation of artists and designers accepted functionalism in a conventional and pragmatic sense. Aesthetic function of elements was sacrificed for the sake of functionality; therefore, typography became the medium only to deliver information (Hillner, 2009). Consequently, design solutions for each problem were limited, because they were considered to be artistic. This approach eliminates the affective expression and raises the question of: in which way typographical decisions affect the way the beneficiary of the information perceives the message. To give an answer to this question we need to look at Beatrice Warde's famous essay called "Printing Should Be Invisible" which advocates modernist functionalism. [12]

2.7. The Crystal Goblet, or Printing Should Be Invisible by Beatrice Warde

Warde's 'Crystal Goblet, was delivered in British Typographers' Guild in London, on October 1930. Warde discusses the role of typographer to design a functional and modest type, almost transparent, as she stated, through rich metaphors in her essay Crystal Goblet. She creates an analogy between typography and a crystal wine goblet as both being the medium to carry the true message of the content as it intended to. Warde says, "...the first thing he (designer) asked of his particular object was not 'How should it look?' but 'What must it do?' and to that extent all good type is modernist."

'The book typographer has the job of erecting a window between the reader inside the room and that landscape which is the author's words. He may put up a stained-glass window of marvelous beauty, but failure as a window; that is, he may use some rich superb type like text gothic that is something to be looked at, not through.'

B. Warde, 1930

Her description of modern typography is purely based on invisibility of textual form between the reader and the author. However, this description can be considered inefficient when we think of digital typography in technology age. [13]

Even with an attempt of being a skeuomorph, book-like interface, screen-based typography effects the messages that are created by the implications of the medium, despite the the effort of invisibility (McCluhan, 1964). Consider the book of Dostoyevsky; Crime and Punishment. Although the typographic elements designed according to their real world counterparts, a digital social network would be still an unusual media to read Raskolnikov's world in the suffocating atmosphere of Saint Petersburg, during 1800 from an excessive stream of posts. Thus, the production of new representations of the same content with different medium requires adaptation or abandonment of previous rules to be able to communicate effectively.

2.8. Postmodernism in Typography

Unlike modernists who prioritized legibility, postmodernists defied this idea. Beginning of the 1980's typography was influenced by digital technology. Interestingly, postmodern typography gained its popularity around the same time period (Hillner, 2009). During that period, legibility in an emerging digital environment was highly discussed to avoid decelerating the speed of information transmission. Although postmodernists were against this notion they mostly failed to construct a rationale for their visual representations (Hillner, 2009).

The intuition-derived notion of postmodernists ended up puzzling their design practices. By the time these discussions took place, typography especially in Europe already had a long tradition. Despite the efforts for creating modern rules, which are reviewed, questioned and examined, are often left pending. [14] This dialectic led to interesting developments about the relationship between image and text in their works. (Figure 6.)

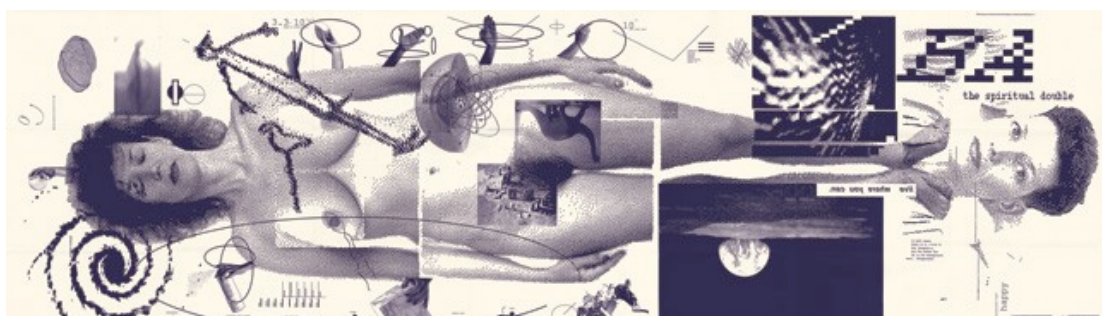


Figure 6 April Greiman. Does It Make Sense?, 1986

2.9. From Reading to Viewing Typography

The information which is designed through computer technologies to be displayed on a screen constitutes a different approach from postmodernists, meaning digital typography, instead of pushing the limits of legibility, puts the user in the position of viewer, before reading process starts.[15] Thus, it can be said that before recognizing information as typographic, reader is the viewer.

To explain this comparison better, three examples from the history will be discussed further in the next chapter; because, all three projects shares some common features with Moodface. First of all, they produce visuals which are not conceived as typographical but image-like in the first glance. Apart from that, they all create ambiguous information by using typographic parameters. Although the code, which creates the visual outcome, seems inexplicable, it is also self-explanatory for the viewer in the moment when typographic forms become legible. Second, they all produce static text that is printable while the results still reflect the typographical variations produced by a digital media. And finally, they are all pre-programmed and restricted to the method, which is created by the designer.

Although these three examples share some same features with Moodface, it will be argued that Moodface produces relatively different visual outcomes.

3. Digital Type

“If one aims at writing non-conventional lines with a typewriter, one must invent new methods of writing.”

V. Flusser

It can be considered that desktop computer era has emerged in 1983 with Apple, Lisa with a graphical user interface that empowered designers to cover large scale of tasks from type design to illustration. It was followed by the production of first Macintosh computers in 1984. Despite the difficulties at the beginning such as low memory and restricted size of monochrome screens, means of digital production improved rapidly. However, understanding the potential of those new technologies took time. [16] When Gutenberg invented the movable type; he was creating letters that imitates handwriting, which was the only visual reference for him. Because of the manual process, each letter was different and cut from a piece of wood. Nevertheless, it was fast and movable. When the metal type was introduced later, letters accorded with the new medium. With the change in material, it was possible to cut the thin serifs of Didot or Bodoni, accordingly the variety of typefaces for designers to choose was greater than before. Despite the restricted means of production, metal type did not hold designers back to create their own aesthetic. [17]

Gutenberg’s imitation of handwriting still has considered being one of our references for creating type with digital equipment. Today, instead of hot metal type, we have a pixel-based matrix for creating eternal amount of copies for each letter. Ironically, digital type almost became a media to revive what had been done with traditional typography. [18]

The process is only different in terms of speed. Computers still uses folders for each typeface, where they are stored by letters or weights same as metal type. The process for production of digital type is faster, more precise and more consistent with digital technology.

However, this paper and project Moodface argues that these functional limitations may cause not just lack of diversity and individuality but also suppresses creating new representations through digital typography. Next chapter looks at three works, which uses the potential of digital tools and code-driven typography to produce unique compositions.

3.1.Code Driven Typography

Typographic production is increasingly evolving towards digital, screen-based form thanks to the commercial software packages, which simulate the interaction between pen and paper. However, it can be argued that this approach may limit the variety of visual production and individual creativity of the designer, as stated previously. Instead of using commercial graphic software, use of programming languages has become essential to discover various new visual outcomes. Working with coded typography can provide significantly easier methods to interact or convey enormous amount of information that previously took an excessive amount of time. [19] *Beowolf*, *Morisawa* and *Text Invader* are three projects, which utilize advantages of code-driven typography.

3.1.1.Beowolf, 1989

Dutch designers Erik van Blokland and Just Van Rossum are the creators of the project *Beowolf* (figure 7.) It is a typeface that calculates random points along the outlines of the letters by manipulating the features of the PostScript's². Each time those points move along the outline depending on the parameter those designers set letters also varies in shape when they are printed.

Beowolf used the digital fonts as data and code that allows the designer to create instructions that can be customized. It deliberately does not follow traditional typesetting methods in order to create a new aesthetic. The project was a critique for the ways of producing typefaces in digital environments, where technical process remains the same as traditional typesetting methods. As a result, they presented an important glimpse of the future of digital typography. [20]

“Through our experience with traditional typesetting methods, we have come

² PostScript is a page description language (PDL), which considers images, or fonts as geometrical elements instead of bitmaps. PostScript fonts are called as ‘outline fonts’ since the letters are characterized by outlines which allow designers to change the font’s sizes and printing in high resolution.

to expect that the individual letterforms of a particular typeface should always look the same. This notion is the result of a technical process, not the other way round. However, there is no technical reason for making a digital letter the same every time it is printed.”

(Emigre Magazine, 1990)

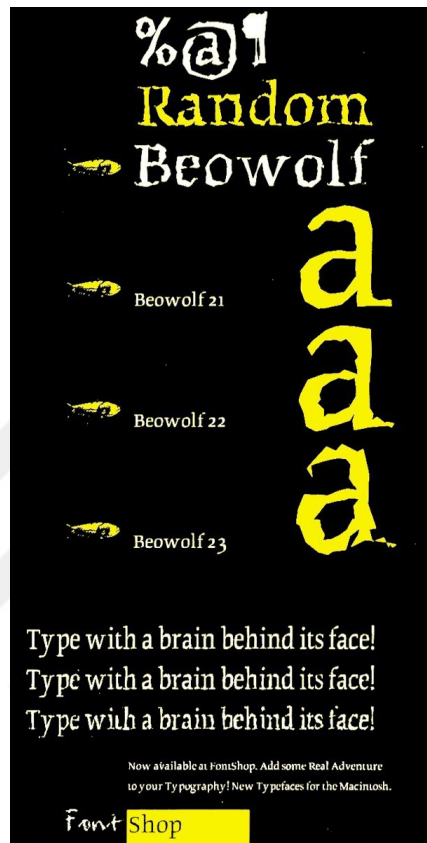


Figure 7. Postcard promotion FF Beowolf by FontShop, 1990

1.1.1. Morisawa 10, 1996

In mid-90's John Maeda, a graduate of MIT in '89 from Electrical Engineering and Computer Science created a project that suggests typographic solutions through hard coding⁵. As a Professor of Media Arts and Sciences at MIT, *Morisawa* ten was created for the Japanese type foundry as a tool that allows its users to compose unique posters by manipulating the hardcode of a computer program. Changing the restrictions in the source code results in endless typographic transformations that occur as static compositions. (Figure 8.) [21]

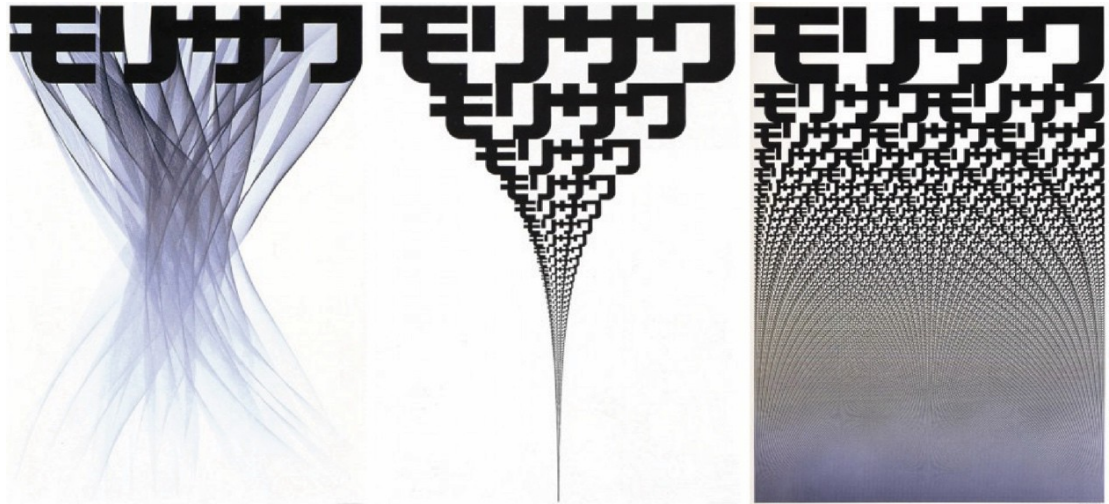


Figure 8. Three posters from Morisawa 10 series, by John Maeda, 1996
 (From left-to-right, Fluid/organic, rigid/mathematical, fractal/mathematical)

Morisawa 10 was groundbreaking for its time. While other designers were commonly relying on existing software applications that worked with predefined features, Maeda introduced them to develop their tools from scratch. This approach was important because, programming tools and methods were considered on the basis of what is technically possible rather than what is needed for better communication through typography within programmed environments (Hillner, 2009).

This project as a pioneer of creating typographic transformations and defining solutions via programming languages shares several common motivations with Moodface. They both attach importance to the perception of typographic information than being technically innovative.

1.1.2. Text Invader, 2011

Onur Yazıcıgil created the project *Text Invader*. It uses a method that allows designers to turn FontLab's OpenType³ format into a creative medium to produce altered behaviors for any given typeface. One of the main features of OpenType is to create ligatures.

³ OpenType was built on TrueType by keeping its main structure and adding several data structure to define new typographic behaviors. Simple management for the font files, allowing to work on both in Macintosh and Windows computers and cross-platforms are some of the advantages of OpenType.

Today, digital font programming categorizes three ligature groups, which are discretionary, standard and required ligatures. Discretionary ligatures are mostly used for decorative purposes whereas standard ligatures are used to display fonts without errors like crashes in letters when they set together.

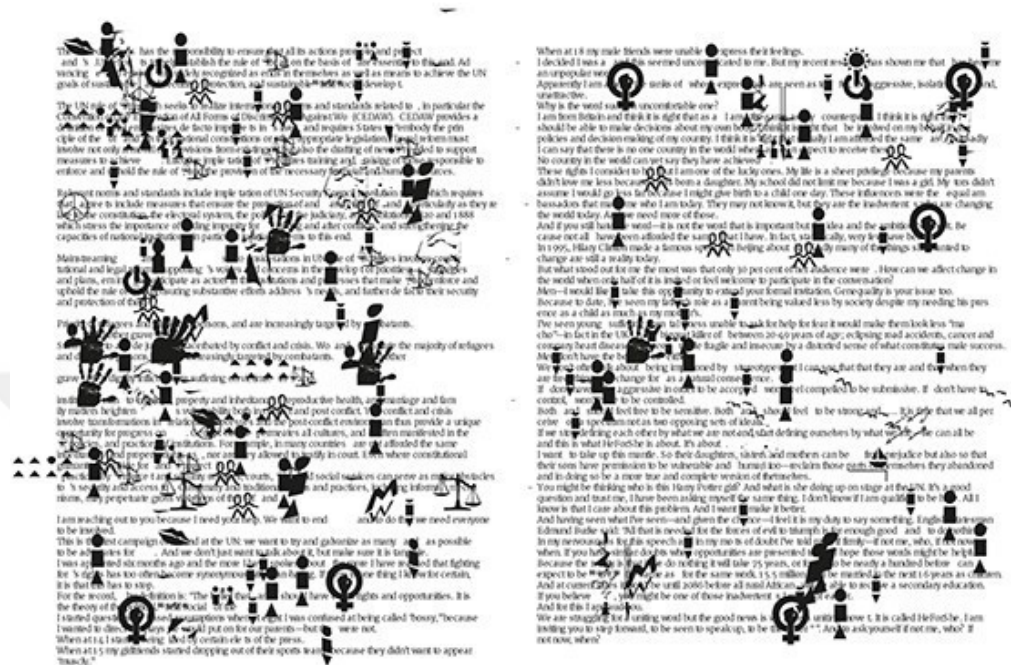


Figure 9. One of the posters designed by using Text Invader, Seray Samancı, Workshop at Eskişehir Anadolu University, 2014

Text Invader works with Required Ligatures directly and hacks that feature of OpenType to turn it into a means to customize initial typographic actions. In other words, it interferes in the workflow by using its own rules that was created to interfere semantic flow.

For example, whenever the word “bomb” is written and a space put after it, the word “bomb” becomes a bomb icon, which is hacked into the system by the designer. Thus, the original content of the text transforms into satiric and metaphoric data visualization and exposes another hidden context of the same text. (Figure 9.)

Text Invader fundamentally aims to experiment with the conventional perception of typography and create an unexpected convention for typesetting as the previous examples. [22]

4. Meaning of Ambiguity in Digital Typography

“...the thought as it appears on the paper surface is and is not as I intended it to be, and to write is an adventure full of surprises.”

V. Flusser

Previously examined examples of digital typography were constructed in an unprecedented visual aesthetic. However, aesthetics cannot be understood only by knowing the process of production. Understanding human perception becomes as important as process in evaluating creative value of digital typography. If the media content is created in an unusual construction and results in looking different, people’s perceptions will also be different. The causes for this change in perception should be examined thoroughly.

As Hillner indicates in his book *Basics Typography*, “...since typography mediates the written word, it may have to be considered as a medium in its own right.” (Hillner, 2009). Nevertheless, it does not have its own parameters for demonstrating the textual information that reflects people’s thoughts. It requires other media as well because, without the linguistic rules the message cannot be conveyed with letters and digits. In other words, the language we choose to express ourselves determines the codes which



Figure 10. The Letter S and O. Shigeo Fukuda

we need to follow to create and understand written information. Typography on its own consists of numbers or letters that are meaningless without any structure. Only by formulating the appropriate combinations, we transmit the meaning. [23]

The messages of typographic codes do not reveal themselves immediately when they create ambiguous information⁴. A text is first to be read, and looking at typography becomes secondary. The neurologist Semir Zeki claims, “*in the latter instance, we can only be conscious of one interpretation at any given moment.*” (Zeki, 2004), even if there are several interpretations to be made. The relationship between ambiguity and consciousness is crucial to examine how our brain obtains the typographical information because ambiguity results from the potential of our brain and understanding meaning is not a product of designers or artists to attribute it to their imagery. A viewer uses this potential to create different interpretations in some images. Ambiguity creates a visual impression that flips our conscious between two or more possible states. (Figure 10.)

Decoding the structure of a text is different from images. The way we read and write in the Western world, from left to right, will always be how we scan a text. Changing the basic characteristics of text will not affect our way of reading. Nevertheless, the challenge of creating new meaning from type by interrupting this flow is becoming increasingly common.

The creation of meaning becomes more difficult if the stimulus is abstract and not intuitive, meaning the information that is revealed by virtual typographic forms, may differ from our expectations or offer more than two meanings with a change in typographic representation. [24] Thus, this ambiguity and possible multiple interpretations of a text usually bring typography closer to being an artwork. As mentioned in the first chapter, drawing lines between art and design became a long-term debate between modernists and postmodernists after digital media became incorporated into graphic design. Modernists claimed to be excessively rational in their work, whereas postmodernists claimed to be emotional and individualistic.

⁴ Ambiguity in information is created by the message that is conveyed through typography by concealing the meaning in the first glimpse. The significance of the information and the meaning are not interchangeable since the ones who know the code or formula of the structure can only understand information.

However, the creation of new possible meanings out of typographic visual forms requires additional fundamental principles, and next chapter focuses on the project Moodface which is created to attempt on discovering on some of those principles. [24]

5. Introduction and Motivation of Related Project Moodface

“...Typewriter is a more challenging instrument than is the pencil.”

V. Flusser

Having entered graduate school to study typography brought rigid rules into my pre-existing notions about typography. It was sobering to think my previous attempts on typographical experiments from an emotional point of view were flawed compared to what is thought. However, as I exposed myself more to the ways of looking at type, these pre-existing notions transformed into something useful, which has contributed to my development as a graphic designer. Thus, I was motivated to look at typographic parameters as something that can challenge the viewer's perception. The theory this project intended to investigate is this: in digital environments by giving new arrangements to the typographic parameters such as point size, kerning and leading according to the speed of writing, can a graphic designer first claims to extract the affect of a typeface and second can he/she visualize the performance of typing to a keyboard.

The reason I find this subject worth examining is based on my role as a designer, which is to convey meaning visually. When textual information is enhanced to reflect emotions by using typography, meaning becomes powerful. In order to assemble data that proves my theory, I have created Moodface, which establishes a relation between speed of typing and typographical parameters and analyzes them accordingly.

Over the last ten years, designers have given an increasing interest to emotions that can be evoked through design practice. Typographers especially, as we can see through the examples in this thesis, have been experimenting “to connote meaning over and above the primary meaning which is linguistically conveyed by words.” (Lewis & Walker, 1989)



Figure 11. Erik Speikermann, *Stop Stealing Sheep & Find Out How Type Works*, 1993

Famous typographer and designer Erik Speikermann, in his book “*Stop Stealing Sheep & Find Out How Type Works*” asks this question: “So type can have its practical uses- it can walk, run, skip, jump, climb and dance. Can it express also emotions?” He continuously researched for the possible answers in the physical form of the typefaces. (Figure 11.)

The careful choice of the word ‘typefaces’ is important here. As Speikermann indicates as well, although a typeface in itself can reflect certain emotions, it is also truly affected by the surroundings such as document structure, layout, colors, font size and eventually readability both in printed and digital formats (Birren, 1984).

Moodface tries to manipulate the visual appearances of both typefaces and layout by creating its own parameters. It is possible that at a glimpse it looks strange and confusing to the reader. Thus, the extraction of the emotions from the text written in Moodface can only be possible if the reader first senses the underlying logic and re-orientates him/herself to understand the subtle information that is both given by the new shape and form of the letters and the layout. [26] (see: Methodology)

5.1.1. Theoretical Framework

Literature on the affect of typeface, though limited in methodology, is extensive. Literature studying the affect of typeface can be split primarily as “context dependent” and “non-context dependent” studies due to their success rate in supporting their hypotheses.

For example, a study in business discipline presented material as advertisement headlines (1) along with advertisement image and (2) separately. However, main effect could be traced to image and not differentials in typeface (Puškarević & Nedeljković, 2016). Moreover, another study investigating (1) performance implications and (2) persona of typeface presented its material as (1) restaurant menus and (2) names of the people along with a photo. This study also failed to find a significant main effect of different typefaces (Wang, 2012).

Non-context dependent studies, however, have indicated a significant relationship between affect and typeface. Research investigating effect of typeface on the conveyed emotion of neutral sentences, discovered that certain typefaces implicate certain emotions (Amare & Manning, 2012; Choi, Yamasaki, & Aizawa, 2016; Manning & Amare, 2009).

Typeface-emotion relationship was tracked down to some core characteristics of typeface such as weight, slope, serif and aspect ratio and, more super-structural characteristics such as contrast, pattern (low aspect ratio, low difference in individual character weights etc.), and variety (variety/similarity in stroke terminals and slopes) (Manning & Amare, 2009).

Moreover, this interaction is universal. A study with Japanese typefaces as stimuli and with a sample of Japanese-illiterate US citizen, suggested that characteristics of

typefaces could convey emotion even when subjects have no idea what symbols actually mean (Caldwell, 2013, 2014).

An important (but not well-investigated) implication is that validity of typeface-emotion relationship studies may be limited to print and print-like fonts. It was presented that when data is grouped by common-print, calligraphic and handwritten typefaces, typeface characteristic and emotion relationship varied. For calligraphic fonts, results were significant but small. For handwritten fonts, results were insignificant or significant relationships showed high variation by typeface characteristics so they were meaningless compared to other groups (Caldwell, 2013). Beyond the scope of typefaces and individual characteristics, issue of dynamism is crucial. Investigation of dynamism in type is fairly new because it is a result of easy to access communication technologies. Material is kinetic typography video clips. Clips are designed by three designers (separately) and one for each emotion in the experiment . Both mood and energy was identified significantly by participants across all emotions and there was no designer interaction (despite slight differences in identification trends grouped by designers) (Lee, Jun, Forlizzi, & Hudson, 2006). This research indicates that action, with same content and no-context, express emotion.

Furthermore, typeface has a cognitive effect, regardless of the emotion. An experiment showed that low-legibility written task definitions are perceived more difficult compared to high legibility task definitions (Song & Schwarz, 2008). That is, there is a metacognitive interaction where cognitive task of reading something effect how reader judges the content.

Relevant literature can be summed as such:

- typeface can create affect by its characteristics
- typeface-affect relationship is universal and not context dependent
- Dynamic text can convey emotion by its performance.
- Typeface has a metacognitive effect

It is common sense that writing structurally sound content, such as grammatically correct, is a cognitive action. It is also expected that writing, or at least writing unprofessionally, represents author's emotions. It is, then, reasonable to ask whether it is possible to develop a framework to investigate affect of author from text. This posits the problem of identifying affect in a given text and identifying a feature of writing.

Identification of emotional load of the content is either labor or technology intensive. That is, either someone has to read and decide affect of content or a machine learning technology must be applied to derive affect. In both cases, there is an issue of reliability. Researchers' reading causes an interrater problem, where individual characteristics may affect results, and it also reduces quantitative qualities of research. Machine learning, as it is still being developed, it is fairly unreliable. That is, unit of analysis could not be entire text because processing is not feasible. However, regarding the literature, unit of analysis can be reduced to words: various researches ask participants to identify emotions not by essays or sentences, but by single words.

Regarding the investigation of writing process, it is important to take back a step and use features of typeface-affect relationship as benchmark. First of all, it has no-context. That is, model should not try to extract information about the affect beyond limits of written text.

Considering base assumptions about unit of analysis (words) and limits operation of model (written text only), bringing in affective information from writing seems implausible. However, stripped from affect, writing is a cognitive task that is applied by an individual's body. That is, writing is a performance.

Positing writing as "performance" requires a functional approach to writing as an action. In this perspective, purpose is to reduce writing to (1) small action components, which (2) can be identified in a computer medium and (3) could carry affective information. It is suggested that affect controls or changes physical actions (Norman, 2004, p. 20). That is, considering that writing is already learned, it is a behavioral level action (action patterns that are not inherent but can be done without thinking about how to do it, i.e. chopping vegetables to cook, playing an instrument) (Norman, 2004, p. 21). So, affect could be extracted from action if correct metrics are developed. In this framework and through an inductive way, researcher choose to action components of writing to implicate cognitive changes that may be related to affective state. Those action components are:

- Speed
- Accuracy
- Flow / Rigidity

Speed is basic speed of keystrokes. It is expected to limit the cognitive process of 'thinking thoughts to write'. That is, it is expected that people could think faster than they write and vice-versa is not probable.

Accuracy is success ratio of correct keystrokes that would translate thought into writing. It also provides an intervention to the assumption that writing is behavioral. So, when an incorrect keystroke is represented on the screen, that is expected to cause author to put more cognitive effort into writing (and less to thinking) temporarily.

Flow / rigidness is temporal study of (1) resting time between words or sentences and (2) a word's speed and accuracy in comparison to speed and accuracy of other words and overall text. That is, when an entire body of text is normalized by how fast it was written and how accurately it was written, F/R aims to look at differentials in individual words.

Note that F/R cannot operate without speed and accuracy. Also, accuracy would be unfeasible to study if effects of speed are not offset such as whether low accuracy words are in different (high) speed or not.

That is, in order to solidify the model, primary purpose of this research is to investigate relationship of speed and affect. Model would include accuracy for two reasons. First, accuracy data could be used for exploratory purposes (see: Limitations to Research and Future Work). Second, regardless of quantitative basis of the research, experiment environment (see: Methodology) is a work of design and accuracy criterion would be used for visual representations. Finally, model would not include F/R.

5.2. Methodology

5.2.1. Sample

Sample size of analysis is 39. There are 13 participants. However, each log file would be considered an individual case and participant would not be used as grouping variables. Hence, there are 43 cases; 4 of the cases are excluded because they did not include words from SAM list.

Despite SAM scale has some variation across gender, demographic information such as gender and age are excluded. As Moodface access is distributed through e-mail and by researcher, sampling method is convenience sampling.

5.2.2. Data collection and processing

5.2.2.1. Data Collection Tools

Online data collection was preferred because Moodface has to be applied on a telecommunication device that can run java script. Moodface private access links are

e-mailed to willing participants. Participants are allowed to use links multiple times. There is no limit to how many words can be written and how long Moodface could be used per use. After user decides she is done, Moodface asks for rating their emotional state in SAM scale. Thought SAM scale is a matrix, component to identify emotional state uses double color-coding instead of two axes.

5.2.2.2. SAM Scale

Over the years several studies and theories have come out about emotions and how to approach them. In this section, tools and experimental methods that can measure emotions will be explained. These are categorized into Free Response Measurement and Forced Choice. In Free Response Measurement participants are asked to respond with their preferred short expressions that indicate their emotional state. The problems that researchers can face with this method may be due to the limited range of vocabulary of the participants or inappropriate labels for expressions that may inhibit their responses. One other problem is in analyzing the free responses by standardizing the expressions of the participants (Schrere, 2005).

Forced Choice Response Measurement can be categorized into the Discrete Emotion approach and Emotion Dimensions approach. In the Discrete Emotional approach participants use verbal expressions by using a 3 to 5 point scale that describes whether emotions they feel were weak or strong (likert scale). One other option to accomplish this is to use an analogue scale to indicate the intensity of participant emotions.

In the Emotional Dimensions approach, participants are asked to label their emotions on a scale from positive (pleasant) to negative (unpleasant) and from aroused (excited) to calm. A pictorial assessment test The Self-Assessment Manikin (SAM)⁸ is used as a quick and easy way fro the experimental process (Morris, 1995).

Moodface claims to extract emotions by providing an optimum experimental procedure for the user. To validate this theory, SAM test was appropriate to extract affect-speed of typing relationship. [25]

6. Moodface

Structure of Moodface is based on the assumption that writing is performance. Purpose of Moodface is to provide a responsive operational framework in which writing speed data could be collected.

On the backend, Moodface processes time intervals between keystrokes, idle time and mistakes. Mistakes are controlled by ‘backspace’ strokes, meaning that Moodface cannot differentiate between typos, grammatical errors and wrong word choice. Time intervals are used to determine speed of individual keystrokes, rolling average speed and average speed of entire text (hence, the final rolling average). And after 3 seconds of idle time it puts space between lines of text.

On the front end, Moodface provides a blank writable webpage for diary entries. Difference in speed of individual keystroke and rolling average (of that moment) is presented as change in font size. That is, faster a letter is written compared to average speed of text, larger it becomes. When incorrect types are corrected (n letters after n backspace strokes) are morphed and shifted resulting in irregular aspect ratio, weight and kerning. Purpose of this interaction design is to visualize participant’s cognitive process. Moreover, it is important to establish that speed can be modified while Moodface has a visual interaction because interaction/non-interaction is an important grouping parameter (see: see: Limitations to Research and Future Work).

6.1. Data processing

Cases are read by researcher to identify words which (1) are not in SAM scale but (2) could clearly fit one of the quadrants. This process is especially important for cases written in Turkish⁵.

Initially, all log files are converted to word lists with average point size of words to determine speed because Moodface increases font size as a function of typing speed. If words fit any affect group of SAM scale, they are assigned to their group. If a case has no affective words, it is excluded list-wise.

Two affective axes in SAM scale (Valence and Arousal) results in four different affects; Positive Valence – High Arousal (PH), Positive Valence – Low Arousal (PL), Negative Valence – High Arousal (NH) and Negative Valence – Low Arousal (NL). As main analysis, descriptive statistics of all groups would be processed compared.

⁵ see: Appendix B for entire list of words used

6.2. Results

Cases are imported to SPSS statistics. Descriptive statistics show that words with high arousal and positive valence are typed fastest. Overall, words with high arousal are typed faster compared to words with low arousal.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Val+, Arsl+	39	23,509	65,253	47,20519	9,574680
Val+, Arsl-	39	15,800	60,343	41,29720	9,536852
Val-, Arsl+	39	23,045	65,173	45,70679	8,610744
Val-, Arsl-	39	19,543	64,886	40,89845	9,569043
Valid N (listwise)	39				

Figure 12. Descriptive Statistics of Affective Groups

If compared by valence and arousal, point size (hence, speed) difference between positive and negative valence in same arousal level was smaller compared to difference between high and low arousal in same valence.

		Valence	
		+	-
Arousal	+	47,205	45,707
	-	41,297	40,898

Figure 13. Affect group means

7. Limitations & Future Work

Research succeeded in showing speed difference in typing of affective words by affect. However, there are still inherent limitations to this research. First of all, as there is no feasible method of extracting overall emotional state of author, it is not viable to use average writing speed of entire text as a reference point for typing of affective words. This is due to technological inadequacy. One method is to use a self

reported survey to discover emotional state of author. This option, however, leaves research in a duality where one choice is to subject author to a tedious survey after writing a log and other is using a simple scale but accepting low reliability. Other method is to use a language-processing algorithm on sentence level in order to extract the overall ‘feeling’ of the text but this technology is still developing.

Another major issue is the lexicon of SAM scale and item weighing. First of all, words are limited. Also, words are not weighted in quadrants. That is, for example, there is no benchmark for angry, such as living and, even if there was, no valence / arousal difference would emerge. In this sense, SAM scale requires optimization, to expand its lexicon and produce relationships between words in their particular quadrants. In such a framework, valence and arousal of word could be used to offset differences in typing speed to discover a more fundamental relationship

A planned future works should be the difference between responsive and non-responsive applications of Moodface. As this project required design input, Moodface was responsive. That is, people could observe differences in point sizes while writing or see morphing letters after typos. It is imperative to conduct a research where Moodface’s responsiveness is a categorical variable. So that, it would be possible to see the difference in typing speed of affective words when people have no clue about final effect of their typing.

Despite the fact that sample size is enough to test 4 parameters, it is important to eliminate outliers in further research. For this purposes, two design elements should be changed. First is that, stepped typing speed and point size relationship should be converted to continuous. In present design, certain typing speed ranges amount to certain font sizes. Converting those to continuous would enable more accurate measurement of individual data and discover the outliers on sample. Combined with a larger sample (in which eliminating cases list wise do not cost a lot of raw data) it would be possible to normalize sample by excluding deviations (extremely slow/fast writers, professional writers etc.)

8. Discussion

First of all, it is important to remember findings. Participants typed faster when writing high arousal words. Also, participants typed faster when writing positive valence words. However, considering the difference between valence across arousal levels and arousal across valences indicates that effect of arousal was larger than effect of valence. Also, effect of valence was significantly small such that it could be ignored compared to arousal.

Considering those results, it could be claimed that typing speed is a feasible way of understanding arousal. However, valence should be addressed in further, more accurate research.

These results should be regarded as the proof of concept for 'writing as performance' framework as findings support typing speed is a method of extracting emotion from text.

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APPENDICES

Appendix A- Participant Information Form

Institute: Sabancı University, Faculty of Arts and Social Sciences

Research Topic: Representation of Emotions Through Typographic Parameters

Researcher: Elif Şener

Participant ID:-

Participant Information Form

Dear Participant,

You have offered to participate in this research. This document contains the qualification criteria for research group. Besides, some information about your rights, responsibilities and procedure are declared. Please, read this document cautiously and if you agree with the content sign it at the bottom.

The Goal of the Project

The goal of this research is to evaluate the affective responses generated while you type in to a computer via keyboard. A platform called Moodface will be the medium for typing. The typographic parameters that are changing without the control of the user will produce its visual representation that can potentially show us the emotional state of the user. The researcher will provide more information as needed.

Procedure of the Research

You will receive a file that contains Moodface in the format of html. You are encouraged to keep a diary for at least two-days using this platform in your browser. After saving it as a pdf file, you will deliver it to the researcher.

Qualification Criteria for Participating in the Research

The aim of the research is to understand emotional state of the participant using visual data that is created by the computer mediated platform Moodface. Main criteria can be listed as follows:

- Everything that is explained in the text cannot be evaluated visually if the content is not genuine. Meaning, gibberish (language that is non-sense or

appears to be non-sense) will not be accepted even if the participant is able to declare an emotional state about the visual.

- The main input source is the interaction between typist and keyboard. Beside that it drags the cursor to the beginning of a new paragraph according to the speed of writing when the interaction is stopped. That is why interrupting the writing process is not recommended to provide continuation of thoughts and avoiding too many space between the lines.
- Diary doesn't have to be written two days in a row and the content can vary as the participant chooses the topic.

Recorded Data and Privacy

All the information written in diaries will not be displayed as a whole. Participants will only be referred as numbers and letters. This research is not interested in the content, but only the visuals since the true emotional evaluation of the content and its relevance to visual representation of the text can only be explained by your answers. Your words will only be used anonymously and as a statistic in the research reports besides academic publications and presentations.

Acknowledgements

By signing the document, you agree to the following:

“I hereby declare that the researcher has informed me about the points described above. I have read this document completely and understood its contents. I acknowledge that I have notified the researcher that I hold the qualification criteria. I am in agreement with each and every of the points raised in this form. I have also informed about my rights as a research participant and about the voluntary participation in this research.”

Location, Date, Signature of the Participant

Location, Date, Signature of the Researcher

Appendix B

Positive Valence – High Arousal (PH), mutluydum

Positive Valence – Low Arousal (PL), huzurluydum

Negative Valence – High Arousal (NH), sinirliydim

Negative Valence – Low Arousal (NL),mutsuzdum

