Mutatio – A Natural Alphabet

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The alphabet(s) and, consequently, typefaces, written messages and texts are still mostly used and visualised on a two-dimensional plane, communicating in a static way and without volume. We consider it pertinent to explore new ways of increasing the capacity for non-verbal communication, facilitating reader-user empathy, using three-dimensionality and the movement of the elements that make it up. This article corresponds to a first moment in the dissemination of a master's degree project in Design. The digital artefact Mutatio explores and intersects Design, Nature and Art, using Augmented Reality and Artificial Intelligence to communicate dynamic messages through natural and organic elements.

INTRODUTION

> *"DNA: Design, Nature, Art – These are the three things that condition my world."*
> *(Lovegrove, 2005)*

This article aims to present the possibility of an intersection between Design, Nature and Art, through the opportunity for innovation in the visualisation of written messages - the purpose behind the Research and Development / Master's Project in Design "Mutatio: a Natural Alphabet".

According to Maeda and Ruder, type sits somewhere between the two planes of abstraction and representation, as a kind of conduit between the unreal and real" (Maeda, 2004, p.81) and, according to Ruder, traditionally, "typography is restricted to two-dimensional space" (Ruder, 2001, p.108). "Most letterforms are designed to be static, frontal, and upright. Motion allows type to grow, shift, transform, shrink, and stretch across time and space" (Lupton, 2014, p.165). "Technology compels us to think afresh and calls for new forms as a living expression of the age in which we live" (Ruder, 2001, p.10).

Taking these reflections as a starting point, we can conclude on the opportunity and need for new approaches in the way we visualise a message (word, phrase or text). Current practice is for the typeface to be two-dimensional, visualised on flat supports, without movement and/or volumetry. "The evolution of written characters was concluded; all the rest is variation and confusion" (Ruder, 2001, p.10).

We therefore propose to explore and present some principles that could shape a new theory of typographic design.

FRAMEWORK

In order to build a consistent and logical investigation, topics such as visual communication, typographic design, the observation of nature and its impact on the development of society and culture, visual perception, proportion and harmony, the codes of nature in structures and visual systems or numbers and their reproduction through technology and in a digital context are addressed.

Design and Visual Communication are the disciplinary support for establishing a bridge between Art and Nature in order to develop a relevant and well-founded article. Nature assumes a support that is both scientific and inspiring, and Art a cultural, philosophical and aesthetic support – "Art in its natural and cultural contexts" (Davis, 2022, p.3) - considering that the relationship between Art and Nature lies in harmony, proportion and beauty:

"Beauty means reaching beyond what just works or what is simply pretty. Beauty is the dose of humanity that makes our lives better. Beautiful works are not only more joyful, they also function much, much better" (Sagmeister & Walsh, 2018, p.9).

Computational and digital technologies will provide theoretical support in the development of an approach to human and computational language, seeking to establish relationships between the organic and the digital.

DEVELOPMENT

"Letterforms change constantly yet differ very little, because they are alive." (Bringhurst, 2004, p.10)

Figure 1. - Nephrolepis Exaltata. Photoshoot for ideation

Mutatio, a natural alphabet, intersects themes from three different universes - Nature, Design and Art - with the aim of developing a digital artefact that expresses the organicity and metamorphosis of plants, relating their biological characteristics to the graphic elements of a typeface or to verbal and non-verbal communication processes. Plants adapt to their surroundings and reflect the climate and biological conditions in which they live. They communicate through their foliage, colours, texture and shape and contain essential information for understanding the world around us. "(…) studying the structures of nature, observing the evolution of forms, can give everyone a better understanding of the world we live in." (Munari, 2008, p.158)

INVESTIGATION AND METHODOLOGY

The Master's Project in Design, "Mutatio: a Natural Alphabet", is divided into two stages. The first stems from the discovery and investigation of the themes and concepts inherent in the final artefact. Through scientific, critical and conceptual study, it is possible to analyse and interpret the selected works in order to obtain the critical and aesthetic sense that is fundamental to the design of the alphabet. The methodology is of a mixed, non-interventionist, qualitative nature. The case studies are the point of transition and connection between the research and the digital alphabet. The second, with the necessary conditions to build the alphabet, corresponds to the development of the concept and the prototype. The methodology is divided into two stages: non-interventionist, qualitative (literature review, critical analysis of examples), and interventionist (project).

As a starting point, a set of bibliographical references and examples were gathered to guide and substantiate the concept of Mutatio. Authors such as Bruno Munari, Stefan Sagmeister (figure 2), Neri Oxman, Philip Meggs, Steven Heller, Emil Ruder, Ellen Lupton and John Maeda were essential in underpinning the research process.
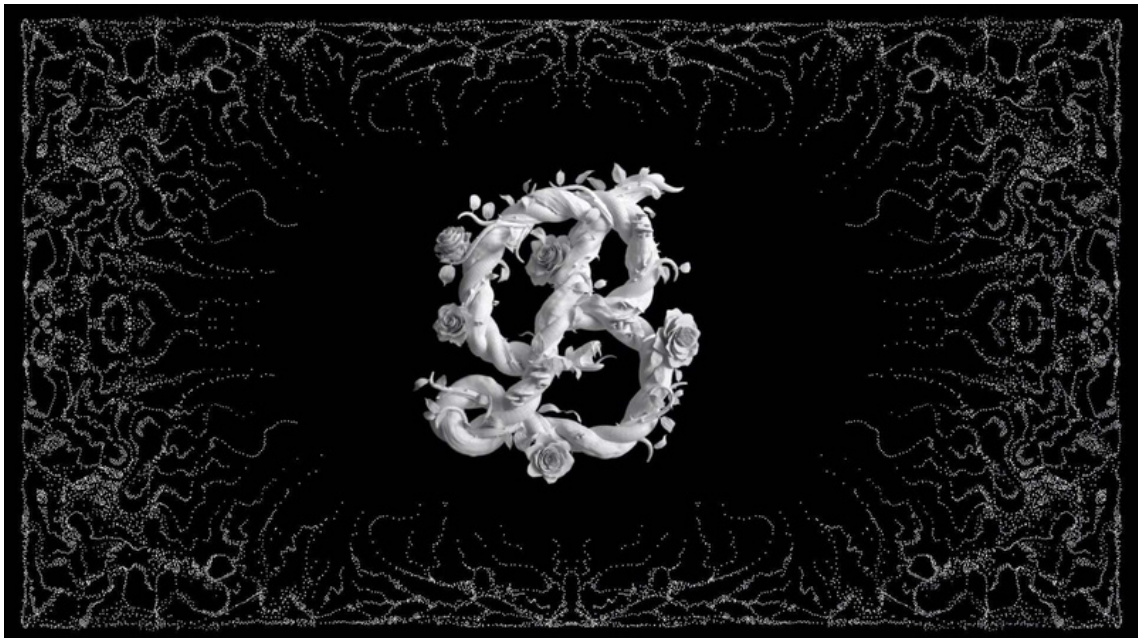

Figure 2. - Beauty Book – Sagmeister & Walsh. (2019). Obtained September 13th 2024, from https://sagmeisterwalsh.com/work/all/beauty-book/

Since the final artefact is a typographic font, the purpose of glyphs, writing and the means of communication must be understood: initially drawn on stone, wood and bone with simple, geometric and organic shapes, glyphs adapted to the evolution of language and, as a result, methods of drawing and writing support were developed to make messages perceptible. "The history of typography reflects a continual tension between the hand and the machine, the organic and the geometric, the human body and the abstract system" (Lupton, 2014, p.13). With the invention of the

press and the media, the exchange of information and messages is carried out through printed or digital media, and sensory stimuli are lost in this exchange (McLuhan & Fiore, 1969, p.57-59).

It is important to understand communication processes in order to create effective media that are faithful to human sensations and emotions, in an attempt to preserve the diversity and complexity of human speech at a time when the world is becoming increasingly virtual and online.

IDEATION AND IMPLEMENTATION

"Letterforms have tone, timbre, character, just as words and sentences do."
(Bringhurst, 2004, p.22)

The first stage of Mutatio's ideation process involved taking photographs of green plants: Monstera, Zamioculca, Nephrolepis, Alocasia, Epipremnum and Ficus, from different angles and perspectives. The visual characteristics of each plant photographed have different rhythms, textures, weight and dimensions. These elements give personality to each glyph, word or text. That's why it's important that each letter of the Roman alphabet has more than one glyph, making the typography expressive, dynamic and adaptable to the semantic context. This resulted in around 100 photographs. Black and white photographs were used to make the selection easier.
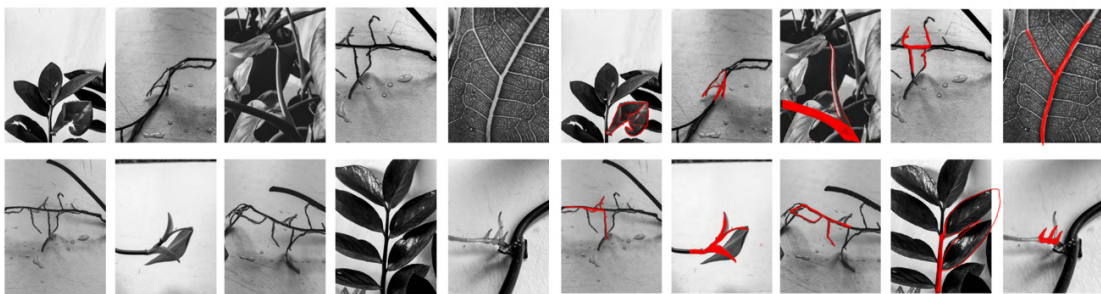

Figure 3. - Photoshoot: 10 photos were used for the letterforms development. Forms observation and selection.

After selection, the images were cropped in Adobe Photoshop and saved in PNG. Because they are individual images, it is not possible to create a file (in otf or ttf) that would allow the Mutatio font to be used in word processing software. So, as a first step, each letter was vectorised and anatomically adjusted in order to develop and export it in TrueType format in Font.Lab.
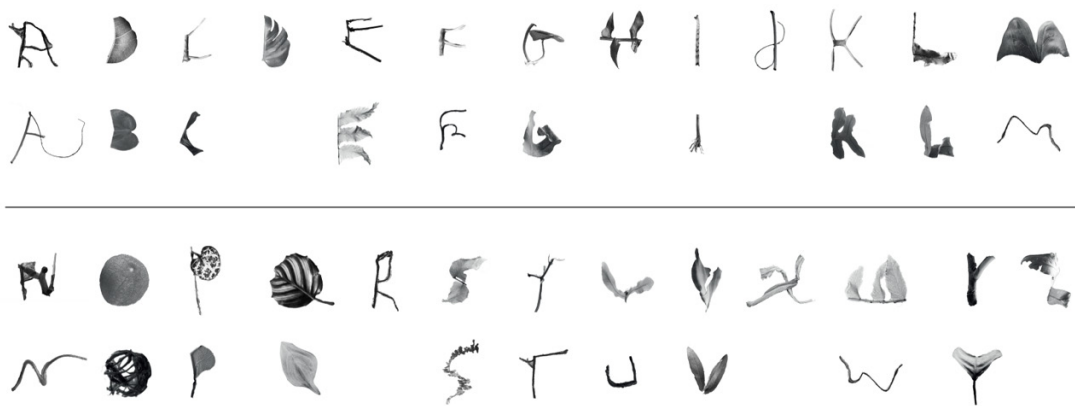
Figure 4. - Chosen glyphs

Figure 5. - "Mutatio"

In a second phase, the aim is to develop each glyph in 3D modelling, with animation, in order to develop the final prototype in Adobe Aero Virtual Reality software. Through animation, sound and haptic feedback, the voice of the message is transmitted through colours, sounds, vibration, speed and rhythm, reducing the loss of information and sensations between man and machine. Language is what keeps us connected, and thanks to the technology available today, it's possible to find alternative ways to strengthen that connection. "Language connects us. Language connects one human being to another. Through space and time. Language transports meaning between minds, sense between bodies, it can make us understand each other and ourselves. It can make us feel what others feel. Language is a bridge" (AI and the End of Writing, 2023).

Figure 6. - "Mutatio", 3D glyphs, developed with Artificial Intelligence, in Adobe Firefly, with the image in Figure 5 as a reference.

Mutatio is currently being researched in parallel with 3D modelling, so the images developed through Artificial Intelligence help to understand the concept. They are very close to the result and serve as a reference for building three-dimensional models.

CONCLUSION

The "Mutatio – A Natural Alphabet" contributes to a paradigm shift in the communication and comprehension of verbal and non-verbal messages on digital media, increasing the transfer of sensory information into messages. The research process used cross-references from different scientific areas, using direct observation, literature review and critical analysis of examples.

By developing organic and dynamic glyphs with a high capacity for adaptation, virtual communication is closer to the real and natural world, creating a sensory and immersive environment for users. The experience of interacting with Mutatio aims to emphasise the beauty and harmony of nature, as well as its complexity and extraordinary adaptability. As technology progresses, it is hoped that the human-machine relationship will develop a healthy and enriching symbiosis, and design will play a key role in creating more impactful and meaningful interfaces. By exploring the boundaries between the natural and the artificial, design has the ability to shape the future of our society.

According to Peter Cho, in John Maeda's book *Creative Code*, a way of dynamic writing may soon emerge: "a form that may bridge the gap between the spoken and written word, much as real-time messaging has begun to do" (Peter Cho apud Maeda, 2004, p.108). Peter, proposes that typography should be alive and intelligent, adapting to the discourse between the sender and the receiver and to their emotion and tone. "The characters of this font can have a higher level of knowledge

about their forms and can change or exaggerate their characteristics - keeping the integrity of the form intact - to convey the emotional context of a message." (Peter Cho apud Maeda, 2004, p.108). Cho suggests that manipulating the structure of written text could develop a new dimension to traditional storytelling, through hypertext or interactions with the reader. "(...) dynamic typography will be able to bring text to life in an elegant and inventive way." (Peter Cho apud Maeda, 2004, p.108).

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