Typomorphic
Ma diploma project-3D anamorphic calligraphic typeface

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Abstract: Typomorphic is an experimental calligraphic typeface which is coded with the optical illusion of perspectivic anamorphosis. The characters appear to our eyes as actual fonts only from a certain point of view, whereas from other views they are just dynamically rotating equal width tapes. This typeface works theoretically and virtually exactly the same as in practice. Beside that some of the characters are well readable calligraphic fonts, as spatial constructions they involve the practice of their drawing through adding depth of space. Hereby the sight-shaping rules of the perspective are involved in the process of font design.

Key words: *experimental typography*, *font design*, *3D modelling*, *calligraphy*, *anamorphosis*

1. Introduction

People rarely view letters as an art product, like sculptures, graphics, or paintings, however they are also works of art, namely applied art. Think of the art of writing or calligraphy, for example, which is a deep-seated cultural element from Europe through the Near-East, to as far as the Far-East.

Latin letterforms, however their current appearance changed, were originally evolved from visual signs and drawings, being altered and simplified over time as they became more abstract versions of their initial forms. In the course of time, people systematised and shaped them to each other, to fit their needs, therefore each character can be equally understood as a piece of fine art.

As mentioned above, I would place my diploma project in the middle of three fields: calligraphy, graphic design (typography), and sculpture, as well as on the border of applied and fine arts.

2. Antecedents

2.1 Typo Zoo

A cageless virtual zoo, where animals are made of Hermann Zapf's Zapfino character set elements. My concept was to create an artwork from abstract signs and calligraphs based on the initial artistic-analystic drawing, and to highlight the main gestures and masses. directing lines and

characters. The actual drawing lines were substituted by elements of a single character set modified through rotating, mirroring and deformation. I deprived the characters from their original meaning and placed them in a new context, highlighting graphic perfection and aesthetic beauty.
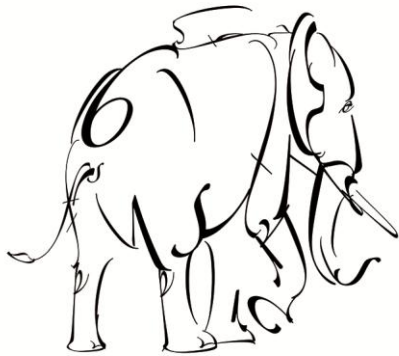
2.1 Figure.

Figure. African elephant from Typozoo

2.2 Studies in Belgium

The base of my diploma project was developed during my Erasmus studies in Antwerp. The idea came from my Typo Zoo project, it can also be seen as a continuation of this former project. The origin of the concept of making a spatial calligraphy came from plain brush and pen lines, drawings. Viewing the lines growing bigger and attenuating on paper made led me to the idea of combining calligraphy with a special spatial view. This is how I came to Morph-o-type, where I created my new typo-animal, a gorilla with the help of Maya, a 3D-animation programme. This is how I expanded my experimental typography pursuits into the dimension of space.

2.2 Figure.

Figure. The 3D gorilla made of morph-o-type font elemets.

3. Research
3.1 The anamorphosis
A Greek word, a combination of 'ana' (-backwards) and 'morphosis' (-change, conformation). This term was first used by Gaspar Schott in 1650 in his book 'Magia Universalis'. = "it is a shape drawn or painted from a fake perspective, which appears as distorted from a usual perspective, whereas from a certain other perspective it is complete and perfect." The most common type is the optic or perspectivic anamorphosis. In these visual puzzles one has to find the perfect perspective. Another type is the catoptric anamorphosis, where the actual image can be decoded with the help of a mirror cylinder or cone. A yet another type is the dioptric anamorphosis, where the actual image can be decoded with the help of a special lens or an object with a reflecting surface.

3.2 The human eye and the camera objective

The 3D-planning from the creation of the letters to the sculpture is based on the idea that the image should work equally well as its virtual representation. In order to accomplish this, I had to work with a camera setting throughout the whole planning and implementation that is the closest in result to what the human eye would see. This focal length value is not an exact number because it varies from one person to another (usually between 20 to 50 mm). For this reason I choose to use the 35 mm average focal length value.

3.2 Figure

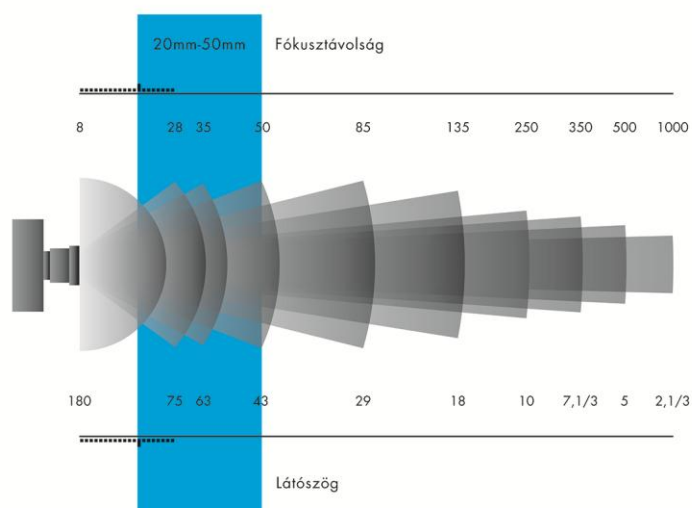
Figure. Focal lengths

4. Designing the font
4.1 Pencil sketches
The design process started with pencil sketches. At first I made the shape and the proportion of the letters, and the tilt angle, what I had to fix in order to gain the font grid system. By the vertical deformation of the typeface I assigned a 70 degree inclination angle to the grid. Its medium height

(5 cm) equals the height of the ascender and descender, dividing the typeface to three equal parts.

4.2 Paper trials

Initially I tried to experiment with paper stripes. I tried to move them around so that they form a rather exotic and exciting 3D construction as well as an actual letter from a certain perspective. As a result of these trials I created a cube with the letter „A" in it.

4.2 Figure

Figure. Paper "a"

4.3 Wax trials
Paper appeared too steady for a precise scale-model. I was looking for a material that allows fine modifications of the parallel stripes. I chose wax in the end, from which stripes with equal width, thickness and length can be created with the help of a mould. It was completely appropriate for my experimentations, because it cis fairly tensile and easily shapeable allowing a wide variety of modifications.
4.3 Figure

Figure. Bronze "a"

4.4 Virtual modelling

Before implementing the Morph-o-type in Belgium, I spent a lot of time searching for similar experiments. On the one hand, I wanted to know how genuine my idea was, and on the other hand, I needed references for my project. Fortunately, I could not find any other similar fonts. I was convinced about the genuineness of my idea, however, it meant an untrodden path for me at the same time.

The characters were made with the Autodesk Maya software. The software was not designed for font design, so it lacks a number of tools and settings inevitable for an easy quick and precise work. One of the advantages of the software is that the material of the character can be altered from the steady paper to the flexible rubber. This allows fast modelling, flexible correction and flawless surfaces, which can never be created by human hands. One of the most important aspect for me besides professionalism was that the character should work in reality as well as on a poster or on the screen. This is an inevitable feature go the character when using it for practical purposes or as an exhibit.
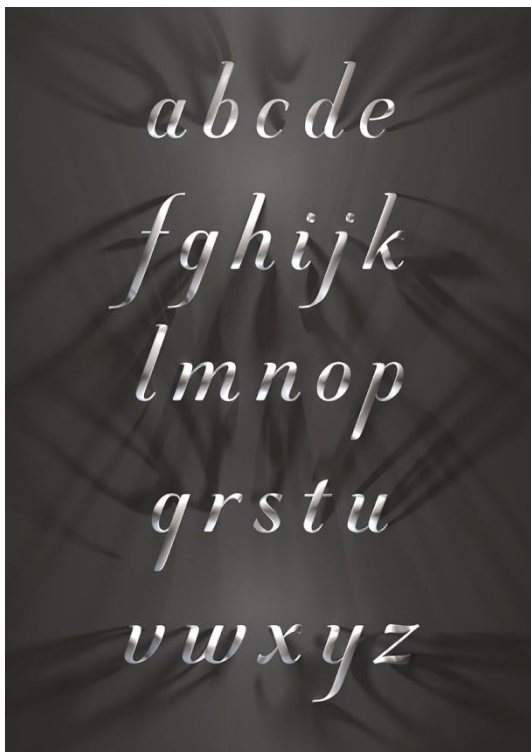
4.4.1 Figure

Figure. Typomorphic set- ortographic view

As for the feasibility of the project, I found it necessary to gather information about the technical details of 3D-printing, especially about the minimum thickness that can be printed. This way I could incorporate this knowledge into the implementation process of my project. I visited a local business, where the technical support manager suggested me a minimum thickness of 2 mm, considering the structure and size of my objects.

I did not want virtual and real model to be steady due to the appropriate thickness, so I rounded off the edges of the spatial stripes. Because of this the thickness of the character is less perceptible and I could keep its calligraphic airiness at the same time.

This method opens up a new dimension opposed to traditional font design - spatial depth, which again leads to new problematics besides new perspectives in typography. By solving these problems, the virtual objects work in ortographic as well as perspectivic views. The render camera of the perspectives views set 50 centimetres from the characters, this is the desired distance in reality as well.

4.4.2 Figure

Figure. Typomorphic set- perspectivic view

One may ask, why do I not continue morph-o-type. One of the reasons is, that my font design had to be adjusted to the requirements of my studies in Antwerp - and I do not agree with my compromises anymore. Another reason is, that as a result of my research in this field, I discover new information, and I continually import these in my project.

4.4.3 Figure

Figure. Typomorphic spatial constellation

4.5 Concept

My goal was to create a 3D calligraphic font (based on the principle of anamorphosis) that appears to our eyes as an actual font only from a certain point of view, whereas from other views it is just a dynamically rotating tape. The base of my idea comes from how the calligraphic stripes in plain extend in space. I did nothing but transformed these stripes of the plain into stripes in space.

When the writing tool is pressed harder it creates a thicker line, this means it appears closer to us in space, when it turns and twists and when we create the line with a smaller pressure it is thinner so it appears to us as farther away in space.

In the design process form and function were equally important for me. This is why each of the letters can be understood as an abstract standalone sculpture, and the text picture as an abstract composition. Although it is an experimental type, it works the same from its main perspective as any other 2 dimensional letter. I am planning to design the whole character set in 3D and 2D, the latter with a typeface design programme so that it can be used for traditional purposes.

4.4 Figure

Figure. 3D print "a"

4.6 Typomorphic- the origin of the name

An appropriate name choice is decisive for any brand or work of art. It has to be exciting, awareness-raising and unique at the same time. it has to incorporate the essence of the whole work of art.

The name of my character set is a composition of two English words - the first part 'typo' refers to typography suggesting also the creative and playful use f the characters, whereas the second part 'morpho' comes from a combination of two phrases, metamorphosis and anamorphosis, integrating two types of deformation. 'Typomorphic' as an English dictionary entry is used in mineralogy and means a geometric formation or texture.

5. Those who inspired me

Rostislav Vanek, 2. Jaume Plensa, 3.Isván Orosz, 4. Freedom of creation (Kasheeda font)

5. Figure

Figure.Those who inspired me

6. Conclusion

The process of perception and understanding is longer. due to the many layers. The dynamics of traditional calligraphy in plain can actually be seen as a mapping of space.

The spatial construction from the characters of Typomorphic include all the features of their 2D predecessors, but also include an interactive perception based on anamorphosis. Single characters as well as the general image can be seen only from a certain perspective. Sets of spatial calligraphic gestures in 2D transform into 3D sculptures in space.

"As long as we only see the lines and shapes in an image, we see only half of the picture. Just as a European image is only the external half of the whole picture. As long as we do not understand that the white emptiness from outside to inside is nothing else than the forming power from inside to outside, we will have no idea of scenic reality."

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