

No hidden message

by Miriam Magdalena Rockel

A thesis submitted to the faculty of Design,
University of Applied Sciences Augsburg,
Germany, February 2009

in partial fulfillment of the requirements for the
degree in Information Science and Media Design
(German Diploma)

Thesis website:

Nohiddenmessage.com

Contents

Introduction

Abstract
Concept
Motivation
Intention

Terminology

Medium
Tool
Language
Typography

Theory

The Phonetic Letter
The Written Word
The Medium 'Message'
The Software 'Font'
The Coded Tool

Methodology

Categorization
Prototyping
Communication
Production

Praxis

Visual Language
Type Design
Two Dimensions
Three Dimensions
Four Dimensions
Imagery Insertion
Creative Log

Appendix

Sample Code Excerpt
Basic Typography Dictionary
Bibliography and Links
Project Meta Information

Introduction

Abstract

The medium is the mission,
fonts are software,
words are images
and the moment is now.

In the following I will describe the conceptual and theoretical background and documentation of an exhibition-like graphic design installation that introduces different explorative approaches throughout the sphere of action described by the statements above. On view there will be a series of large format posters that show a variation of digital font principles in combination with programmed code. Environmental type will be featured on walls via light projection or plastic film. According to the media these are static, analog texts or kinetic type and tool visualizations. The texts are either generated or collected from online resources and set the means and characteristics of writing in different contexts to reveal the nature of communication today. Finally there will be a calculus-designed, sculptural element representing the altered physical shape of type.

The exhibition is entitled like the project 'No hidden message' thus expressing two controversial meanings: It says the work either carries no more message than the work itself or it means the message is as direct as a text can be.

Within the first chapter I introduce my principal concept of the work as well as my motivation and intention. You will then be given a short distinction of definitions for decisive but ambiguous terms used throughout this thesis document. Parts three, four and five can be seen as the documentation of the three logical process-stages: research, development and outcomes. At the very end you find sources and further information on this project.

Concept

The message is the
medium is the message
is the medium is the
message is ...

I started this project from that extension of Marshall McLuhan's slogan 'The Medium is the Message'. More precisely: Text as a medium in graphic design. Beyond the hype of Helvetica I want to profile type and text in the very early era of computational font. So I picked the impact of the transition of the alphabet and script from physical objects to software as the central theme - to explore how typography and writing gets affected by digitalization.

The focus is on contemporary trends in design, communication, tools and media.

The type experiments are primarily realized through writing in programming language. They are based on the shapes of a font designed and realized especially for the project and produce two-, three- and four-dimensional vector graphics and tools. For instance they produce parametric type faces, the cutting pattern for the modules of a typographic sculpture or environmental text generators based on online resources. Therefore the works show an either aesthetic or semantic self-reference.

Digital and analog have to be seen as inseparable and with the materialization of the coded type designs I close the circle of dematerialization and application - after the virtual transformation font becomes real and physical again by the usage of hardware and material.

The outcome of this work is a Lab-like documentation and visualization in form of realized prototypes and installations.

Motivation

type, text, tool, today

The phonetic alphabet was mankind's maybe most distinguished invention and it is - theoretically - at least as indispensable as electricity. It represents the strongest visual concept ever achieved by man. In daily life we take text as granted but the innumerable actions in graphic design around typographic messages show how type as a medium has become a growing influence in society. And in times where text is the most common, most compact and most simple form of communication online people reshape their usage of the alphabet, their thinking and communication. This empowers text for creative disciplines whereas digital type is still adolescent though - seen on the timeline of script it is youngish and unseizable. But that also means that there is space for interpretation on how to use fonts in graphic design.

For hundreds of years, the technology and fundamental means of making typefaces remained unchanged. In the 1950s photo typesetting opened new opportunities. But this didn't happen much earlier before the digital Font entered the sphere of type design and typesetting. Like in other disciplines desktop publishing democratized typography and therefore this revolution has one thing in common with the introduction of the Gutenberg printing system that once democratized literacy. But digital type design depends on digital tools that haven't been democratized to the same extent as digital text. Now that theoretically everybody could write his own program in languages like ActionScript or Processing, type design can be achieved by treating font as what it is - software. Even though there have been various attempts for years already, this approach has remained relatively rare and mostly unsatisfactory concerning contemporary aesthetic demands.

In 'Becoming a Digital Designer', Steven Heller and David Womack sum up that "not every digital designer will be a type designer - this still requires a great deal of skill and talent - but typography is an essential art for anyone who answers to the title 'designer'." (Steven Heller, David Womack, 'Becoming a Digital Designer', page 290) The vast quantity, steady supply, enormous versatility and unsurpassed ubiquity of font faces today require an altered understanding of what typography means. Not only is type a sign of time and trends, it also gains growing importance with the rapidly increasing amount of text-based design such as web-layout, screen interfaces, media facades, etc. The realization of thoughts and emotions through script comes much closer to reality due to the immediacy and the presence of the internet. Maybe because of this pace, capture and proximity images not created by text become inferior. This might be the reason for script being rather celebrated in graphic design than threatened with extinction.

Another aspect is that the self-reference of media is very often made the issue in areas like television - the description of script with the means of script seems at least as interesting and valuable to me as text has multiple layers of communication and the semantical layer is just one of them. People shape language but language also shapes people - the same dependency occurs with technology. I see type as the medium that is deeply involved with all of these three factors.

Intention

"I have nothing to say,
I am saying it,
and that is poetry."

"The highest purpose is to have no purpose at all. This puts one in accord with nature, in her manner of operation."

The quotation above recite John Cage who is well known for his creativity and genius. This might have been a more intuitive statement for John Cage acting mainly in the field of sound and music. Never did people think of asking what a melody was about, nor what a house or a dress was about - how McLuhan put it once. They did ask though what a painting is about, because before the 'electric speed' it was less obvious that the message was not the 'content' but the medium itself. (Eric McLuhan, Essential McLuhan, page 155)

Even though the work can be put in the range of graphic design, I started from a comparable artistic attitude. The works should be done for the sake of themselves. Not to transport a single ultimate brainwashing message but to transport the medium 'message' and the message 'medium'.

I intend to make digital script an issue - how aesthetics and transformations that are based on script (code) affect or reflect on script.

Very often computational type experiments are about the simulation of handcrafts or transformations on screen - I want to picture the potentiality of code for aesthetic and conceptual means rather than deny the tool and the characteristics of the medium.

Moreover I have in mind to create versatile font-faces that can be applied to text or maybe exported for font-creation or used for animation. So the work is no determined project but a step towards future designs. Besides formal and aesthetic intentions I target transporting the characteristics of typography, text and writing semantically and secondarily to support an awareness of the meaning of text today. Instead of being limited by working within a specific medium I try to work interdisciplinary and use creative methods such as play and sketching within code to produce output suitable for a range of media. This should prove the ability of 'thinking in the computer' (or to transfer thoughts directly) and to exploit the means of digital design.

Terminology

Medium

What do I mean when I speak of a medium? A medium basically is a transmitter of information. All of the following: language, typography, tools are media. The content of a medium is another medium, and the medium again is content of another medium. These media are differentiated by interfaces. Differentiation means that media have different relationships and therefore are defined in different ways. Text - in a simple example - is a medium that holds written language - but it can be markup-language or song - just because it was either defined as markup-language or a song or whatever. The interoperation of media depend on their characteristics.

Tool

A tool usually serves as a means to an end. In general tools are interface devices to help accomplish tasks or to facilitate more effective action upon what is interfaced. Traditional physical tools interface the operator's hand and the material he is working on. Tools in the field of media and communication technology interface between people and networks. Digital tools range from programming or software development tools to communication tools and simulated physical tools within a program.

"It is in the domain of media and communications technology that a counterintuitive aspect of our relationships with our tools first began to gain popular recognition. Marshall McLuhan famously said 'We shape our tools. And then our tools shape us.' McLuhan was referring to the fact that our social practices co-evolve with our use of new tools and the refinements we make to existing tools." (Wikipedia)

Language

In common use 'language' normally means expressions of reason which can be understood by other people, most clearly by speaking. In a more general sense language is a system of arbitrary signals, such as voice sounds, gestures, or - what is focused on - written symbols or character sequences to communicate thoughts, feelings, or instructions. It includes rules for combining its components, such as syntactical and semantical rules for the building and combination of words.

In Computer Science language is a system of symbols and rules used for communication with or between computers. In contrast to natural languages, programming language is an extreme formal, artificial language designed to write code that is to be translated into machine language (i.e. compiled or interpreted) and then executed by a computer. Programming languages are hierarchically divided into assembly languages, high-level languages and fourth-generation languages (e.g. scripting and macro languages). These so called 4GLs represent computer languages closest to human language and therefore farthest away from machine language, which consists of numbers only. (sources: thefreedictionary.com; wikipedia.com; webopedia.com)

Typography

Typography originally was a synonym for the art of book-printing but in contemporary use it tends to be seen in a more sophisticated way. Generally typography fixes language and makes it visible. There are three main areas: Type design (all aspects of designing and technically realizing characters), micro-typography (all aspects from the choice of glyph-shapes to their combination and organization) and macro-typography (all aspects from layout to the choice of materials and production). (cf. Die Gestalten, The Little Know-It-All, p.56)

In his Encyclopedia of Western European Typography Wolfgang Beinert explains that there has been no universally valid and clear definition of the term typography since the rapid change of technology and society and especially since the end of the physical typeface. The original meaning got lost entirely and outside the classroom typography doesn't mean book-printing any more but rather the reproduced face itself, analog (physical) and digital (mathematical).

The disciplines of typography today are theoretical as well as practical, cultural and aesthetic. (cf. typolexikon.de)

The scope covers all aspects of glyph design and application. Examples are graffiti, poster design, logos, types, apparel, screen design, web pages, architectural lettering, inscription, industrial design-type, maps, packaging, on-product typography, motion graphics and kinetic typography.

The ubiquity of type has led typographers to coin the phrase 'Type is everywhere'. (cf. Wikipedia, typography)

Vilém Flusser uses the term neither for techniques to print nor for methods to distribute alphanumeric information but rather as a new way of writing and thinking. The Greek word 'graphein' in the first place means 'grave'. Combined with 'typos' (i.e. 'trace') typographies basically are engraved traces or writings. Because it can also be translated as something like 'digging holes' he entirely questions the term 'typography' but sees an important aspect in the typing of text. Until Gutenberg the writer was not aware of the handling of 'types' but rather the usage of 'characters'. (cf. Vilém Flusser, Die Schrift. Hat Schreiben Zukunft?, p. 48-49) So transitions of type happened before and have to be seen as an important part of typography. Transitions come with new technologies and within this context digital typography means the latest transition of type.

The Phonetic Letter

"By the meaningless sign linked to the meaningless sound we have built the shape and meaning of Western man" McLuhan once wrote on the alphabet - The alphabet is a code separating sound, touch, sight and semantics. This makes originally meaningless letters unique and powerful. The visual sense is stressed though, since the word as image transports neither sound nor semantics.

The phonetic alphabet translated man from a magical, oral world to a neutral visual world because "only the phonetic alphabet makes a break between eye and ear, between semantic meaning and visual code, and thus only phonetic writing has the power to translate man from the tribal to the civilized sphere, to give him an eye for an ear."

With the usage of the alphabet any culture can take over a non-alphabetic culture by translating it. This cannot be applied the other way round though. (Eric McLuhan, *Essential McLuhan*, pages 145, 122, 144)

David Diringer writes in the maybe most definite work on phonetic letters 'The Alphabet': "At any rate, it must be said that the great achievement of the invention was not the creation of the signs, it lies in the adoption of a purely alphabetic system, which, moreover, denoted each sound by one sign only. For this achievement, simple as it now seems to us, the inventor, or the inventors are to be ranked among the greatest benefactors of mankind. No other people in the world has been able to develop a true alphabetic writing." (David Diringer, *The Alphabet*, p. 217)

Diringer sees in alphabetic writing the most convenient and adaptable system. Compared to Chinese symbols or such it is much more simple and effective to use about 22-26 letters representing single sound than ideas or syllables. Thus it also can be passed from one language to another. Alphabetic writing has survived for over three millennia without major changes. By now reading and writing has become very common and can be practiced by everybody. (cf. David Diringer, *The Alphabet*, p. 37)

There have always been alternative codes for the visualization of thoughts though: Painting or Math. That is why Vilém Flusser puts speech as a variation of thinking which has been known as such ever since. The alphabet is a product of the attempt to find the common denominator of variations and it has been the dominating code among all others for millennia. Nevertheless he does not deny that it (the alphabet, not speech) might be replaced one day by another way to think than in language. This is because our way we think is due to the phonetic alphabet and vice versa. Out of this understanding of thinking the digital codes evolved but the linear structure of the alphabet is a contradiction to the digital world. The information technologic revolution, the way it requires, to create and distribute signs violates the traditional way of thinking since book-printing. The signs appearing on computer- or television screens have nothing to do with engravings any more and are therefore not 'typographic'. The thinking it provokes is non-typographic and does not distinguish types any more. This is what frightens the Western man because it implies a loss of heritage and requires another thinking than that we are able to by now. (cf. Vilém Flusser, *Die Schrift. Hat Schreiben Zukunft?*, pages 63, 139, 54)

The Written Word

In a publication in 'Psychiatry', November 1959 J.C. Carothers explained his observations by the example of the non-literate rural African population living in a world of sound in contrast to the literate man of Western culture living in a world of vision.

He pictures that the education of the African child depends much more on speech and is therefore much more emotional and dramatic compared to the education of the Western child. Western education constrains the thinking in terms of 'spatiotemporal relations and mechanical causation'. (Eric McLuhan, Essential McLuhan, page 308)

Carothers further explains that "sounds are in a sense dynamic things, or at least are always indicators of dynamic things- of movement, events, activities. [...] Sounds lose much of this significance in western Europe, where man often develops, and must develop, a remarkable ability to disregard them. Whereas for Europeans, in general, 'seeing is believing' for rural Africans reality seems to reside far more in what is heard and what is said. [...] the ear being the main receiving organ." [...] "When words are written, they become, of course, a part of the visual world. Like most of the elements of the visual world, they become static things and lose, as such, the dynamism which is so characteristic of the auditory world in general, and of the spoken word in particular. They lose much of the personal element, in the sense that the heard word is most commonly directed at oneself, whereas the seen word most commonly is not, and can be read or not as whim dictates." (Eric McLuhan, Essential McLuhan, page 309)

The spoken word has direct personal significance for the listener whereas the written word belongs to a visual world more indifferent to the recipient. And people grown up in a so called oral world have a totally different mind to those grown up in a visual world. Even though the example of the African compared to the European probably cannot be taken as such nowadays (not only for the reason that with radio and TV the Western world seems to once more shaping a magical, repetitive world today)- it suits a further understanding that one can not take his awareness as granted. Text in a written form stresses the eye as main organ in our culture and therefore influences our thoughts and beliefs. Whether one grows up in an oral or visual world affects the understanding of his role and individuality.

Not only states McLuhan that the translation from auditory to visual means a separation of man from the external world and partly even from his own senses but also that "print created the mental habit of communing with another mind. The illusion that you are in close and sympathetic contact with another mind is a natural illusion resulting from quickly following the images on the printed page. It is pure illusion. Nobody had such an illusion before printing, at least, nothing resembling it." (Eric McLuhan, Essential McLuhan, page 286) With the Gutenberg print came fast silent reading which changed the nature of verse and which changed music - through silently read poetry and through printed music structures. Therefore the content obtains meaning through each individual active relationship by a reader. But here the written word cannot be seen independently but has to be observed under the influence of the holder of the written word (the containing media). Via online chat for example the written word is almost instant and seems simultaneous with one's thought or directed speech. That may not contradict the illusion of reading one's mind but lets the written word appear in a totally different context. However, according to McLuhan, writing "in large measure, is the spatialization of thought" (Eric McLuhan, Essential McLuhan, page 285)

Effects of the media as a form of art can be studied the best by translating one medium into another. It seems obvious that the alphabet "was one thing when applied to clay or stone, and quite another when set down on light papyrus." (McLuhan, 1964)

The Medium 'Message'

"The great and abiding mass medium is not literature but speech. Language is at once the most vulgar of all media and the greatest work of art that ever can be devised by man. Language does for intelligence what the wheel does for the feet and the body. It enables them to move from thing to thing with greater ease and speed and ever less involvement" (McLuhan, 1964)

According to McLuhan's definition a language remains a mechanical code of transmission of information until it has become subliminal, like mother tongue. And one's mother tongue influences our sensual perception entirely since we are so much involved in it. Hearing, smell and touch depend on which language somebody speaks. Let's leave aside the question as to whether written language automatically has the same effect since it is a representation of the speech. But one has to consider that language does not store but translate experiences into another mode, it is not near and private but corporate and public.

One of McLuhan's best known statements is that media are extensions of man. Language is to be seen as the only technology that extends all of the human senses at once. Written language though limits speech to an extension of the visual organ.

"You are the content of any extension of yourself [of any media], whether it be pin or pen, pencil or sword, be it palace or page, song or dance or speech... The meaning of all these is the experience of using these extensions of yourself. Meaning is not 'content' but an active relationship." (McLuhan, 1971)

In the world of aesthetics the poetic process has become the subject, plot and action of works of art. No more divisions of form and content, meaning and experience.

The Software 'Font'

In the late 1980s PostScript gradually emerged as the standard for digital typesetting. This was due to its inclusion in the Apple Laserwriter printer and in Apple personal computers with a 'wysiwyg'-display combined with PageMaker as the first desktop publishing program.

By now there have come a variety of font formats such as Type One, Multiple Master, TrueType, TrueType GX and OpenType. Digital typefaces are generally scalable outline typefaces that are based on the same mathematical description. The outline of a glyph is constructed with straight line segments and either quadratic or cubic Bezier curves. One can imagine a computer font as a list of coordinates and specifications for Bezier points that is fixed by binary code.

Just van Rossum and Erik van Blokland (LettError) created the typeface 'Beowulf' which became one of the first examples of what digital type could be. With the early PostScript-font-format Type Three they had the possibility to change the appearance of each letter when printed. What they did is defining functions that randomize the outlines of each letter. The two designers see computer fonts rather as dynamic programs than static forms and the 'RandomFont'-project was a "proof that fonts were no longer physical objects but instructions." (Casey Reas, Ben Fry: Processing. A Programming Handbook for Visual Designers and Artists, Interviews 1: Print, RandomFont Beowulf, p.170) In an interview with the title 'The Language of Types' London based curator and critic Emily King explains that "the fundamental difference between digital type and previous forms is that its design is not linked to the manufacture of the typesetting system. When type becomes software, it can be transferred freely from one machine to another, from one context to another." (Stefen Heller, David Womack, 'Becoming a Digital Designer', page 306)

The Coded Tool

Jonathan Puckey is a designer with a background in Web development and is known for his typographic works using tools like Scriptographer, a programming extension for Adobe's ILLUstrator. His position is that scripting is like speaking a language: "As long as I can describe in words what I want to accomplish, I can also put those ideas into code." The codes he creates can be seen as scripted answers to questions he asks himself in advance. It seems as if Puckey looks for a balance between precision and versatility on the one hand and between automatization and intuition on the other hand. That means it is an opportunity to be now able to create one's own tools that don't have to be as minimal as those the programmers of Adobe developed and which we were dependent on before. It could be very specific and concrete. This is interesting about programming but Jonathan Puckey also points out that "it's important to emphasize the handcrafted quality of the design and not the outcome of a machine." That is why the tool must be kept open at some extent so that the designer could finalize the creative process. To actually create something with the tool then needs to learn how to use it. Usually when Puckey finished programming he feels "overwhelmed by its possibilities" and he has to spend quite a lot of time learning how to work with it. A good tool doesn't automatically create interesting work." (Stefen Heller, David Womack, 'Becoming a Digital Designer'. Coding the World. An interview with Jonathan Puckey, Amsterdam, page 297)

At a certain point I had to make decisions on how far automatization goes in my applications. In some sketches I used the mouse as a kind of composition- or drawing-tool. Of course I tried out to replace mouse coordinates by variables or let's say to simulate the mouse and set up rules on how the movement should look like. But I very quickly realized that timing and composition are not included in the spectrum of tasks that a computer can do well. Photography might be an example that shows that fact very clearly and could be some proof to that statement. A computer would be able to take a picture exactly on a given interval without pause over a very long time. But to wait for the right moment to take a haunting picture is another thing.

What a computer can do well are aspects concerning repetition, perfection or accuracy, interpolation, simulation and animation.

Puckey thinks tools should be more like fonts where you have the ability to choose one or create one yourself. He has a sceptic view of the momentary situation and the usage of 'authoring programs'. Everybody uses the same software and everybody has to adapt to the options the company provides us within the program and everybody has to adapt on how to work with the program. "All the options are there in a very split-up fashion, and we have to string them up after each other, and (I, at least) end up questioning every step." On the other hand he can't see the point of software companies adding their own specific tools to their applications: "Were we really looking for a tool that creates twirls? Make it optional, and all at once it doesn't matter anymore how specific you get. Make it possible for anyone to create their own tools, and it becomes very powerful. [...] For me, programming tools are a way to bring back limitations that I can work with(in). By having more control over the software, I can give away control over my work on my own terms."

The producers of LettError (cf. above) used their own software tools because the few tools available for font design didn't allow what they had in mind. Type design is a too specific field so that there are relatively few developers that are interested in programming font-tools. Asked why LettError chose the programmed tool to work with they add: "In any creative discipline, the tools influence the process and, indirectly, the results. We try to be aware of this influence, and if it is something we don't like we try to change it. Every application makes certain things easy and others more difficult. This directs the average design project towards the things that are easy, even though other ideas might be more relevant. Writing your own tools makes the ideas direct the development of software, rather than the other way round. Writing code is also an attractive process itself. Analyzing problems, breaking them down into ideas that can be coded, and discovering alternative new ways to solve known problems is more universal than just the original design task." (Casey Reas, Ben Fry; Processing. A Programming Handbook for Visual Designers and Artists, Interviews 1: Print, RandomFont Beowolf, p.170)

Categorization

The subject is contemporary typography and text. This falls into three categories that were to approach in experiments: Letter, word and message.

The Layer 'Letter' is about the pure typographic form and aesthetics of the alphabet, with the 'word' it is already about a thought or image and speech. The Level 'message' means description or semantics.

These three aspects represent a theoretical approach, practically they are of course not separable. Quite contrary all parts are nested in each other. Because in the end typography needs to be regarded in the interplay with the medium. And the nature of a medium is to contain another medium and to be contained by one. Eventually the environment and the recipient become media.

So in the first place I set up a matrix with the two axes 'medium' and 'layer' to find out which media fit best and which combination I realize. Over the time I narrowed the matrix down or left out media when there was no sufficient argumentation for its usage. Once I made my decisions I could forget about the matrix as artificial construction.

Prototyping

In the Creative Log you will find an entry on Tim Brown's comments on the link between creativity and play. He stresses that playfulness is important to ease the creative process and to think creatively. Profession and playfulness do not contradict each other and prototyping can be closely connected to methods of play and thus improve efficiency. Yet centuries earlier Cyril Stanley Smith, who was professor at the MIT and later published several works linking art with science, once wrote on the playful search for beauty. He must have said that it was mankind's first activity and that all useful qualities and all material qualities were developed from the playful search for beauty. Therefore playfulness is important for the quality of designers. But what does it mean to play in a design context? I think it is more than just trying out, i.e. experiment. It is the sustainment of freedom, simplicity and curiosity. I kept that in mind when setting up my work space and when choosing the programming language and materials. The materials I used for production are all suitable for prototyping. My criteria here also were functionality, availability and affordability.

What Processing is intended to be is broken down to a few lines on the web-domain as follows. "Processing is an open source programming language and environment for people who want to program images, animation, and interactions. It is used by students, artists, designers, researchers, and hobbyists for learning, prototyping, and production. It is created to teach fundamentals of computer programming within a visual context and to serve as a software sketchbook and professional production tool. Processing is an alternative to proprietary software tools in the same domain." (processing.org) This sums up the most important aspects. I used Processing in some of the ways described. I programmed images, animation and interaction in a prototyping manner. In the first place I tried out functions, examples and libraries in Processing to easily and quickly run sketches of code that I can bring in my classes in Eclipse later. The Processing interface and text editing functions are very limited so that I decided to use the Processing language in Eclipse, which is a development tool with various professional features. Because Processing is

based on Java one could import the Processing library and program classes extending PApplet, which is the actual Processing application or sketch.

I worked on both Mac and PC, but this was just because software I used was for Windows only. Java applications run on both systems though.

Communication

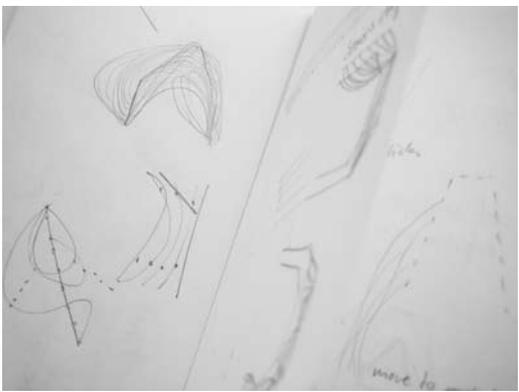
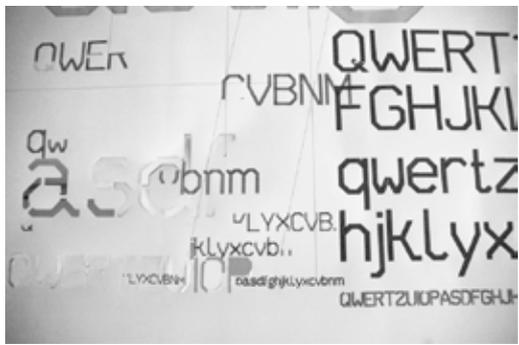
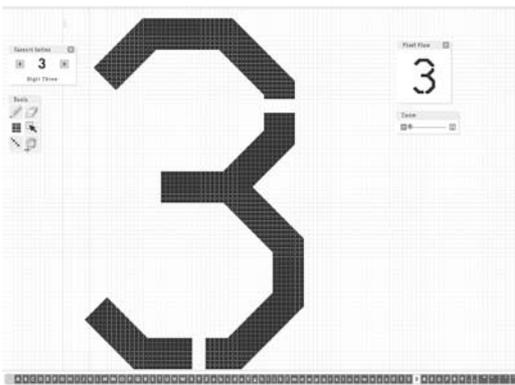
I chose English as language throughout the project to involve as many people as possible and to have a simple language requiring a minimal set of characters. English can also almost be written just with lower-case letters and has the advantage that every directed speech can be addressed to 'you'. I mainly use the first person if a person at all. Concept Artist Jenny Holzer once explained "Often, I'll use the first person in my work. I will assume that voice. Or I will represent many people in the first person." I also see the first person as the most expressive way of text as it seems closest to the writer's mind.

"Putting a phrase of Goethe on a wall doesn't make an artist" - This is a quote of Lawrence Weiner that gives the artist's attitude towards the usage of quotes in creative work. I did not want to use quotes for the semantical level of the project. I did not want to repeat ingenious words of popular people. I rather feature the thoughts and phrases of random people at random moments set in an undefined or altered context to draw scenes that we can either identify with or distinguish ourselves. To use some of the immense output of our daily life and technologies to create a profiling installation of contemporary writing and communication was my approach in the first place. I see the wall lettering as a spatial intervention with textual scenes and thoughts.

They also should act like accompanying thoughts that involve the passers by and influence them in their thinking or reaction. Similar to how street art works this should interact with the environment and the reader. Text is the perfect medium for that intention as it could be read and understood by passing by and it could be reread and understood differently or associated differently each time.

On the level of words and messages the digital transformation also appears in form of codes, abbreviations and pictographic character-combinations. This aspect is considered but not focused on to avoid a formation of pictures with text instead of creating imaginary pictures through phonetic language fixed with text. It might also frustrate or confuse the visitor because of the lack of clearness of such text. For example there are online converting tools or dictionary-like lists of abbreviations that built up a kind of phonetic or acoustic language with the help of numbers and single letters but you probably would have to use them frequently to know them well because otherwise they are as hard to understand as pictographic combinations made with a typeface that does not offer suitable shapes.

Lawrence Weiner says that translation plays a significant role in his work and that therefore one obstacle is that everything has a double meaning and that sometimes it seems even harder to translate text than an image. But these double meanings I find interesting. They of course are a reason for mistakes in translations and understanding but these mistakes tell much about how far one can deconstruct a sentence and still get an image. It also shows what language means on closer inspection.



ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

!@#\$%^&*~_{}|'"/012

3456789:;<=>?@

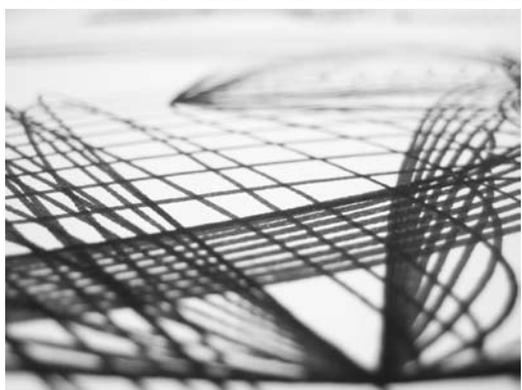
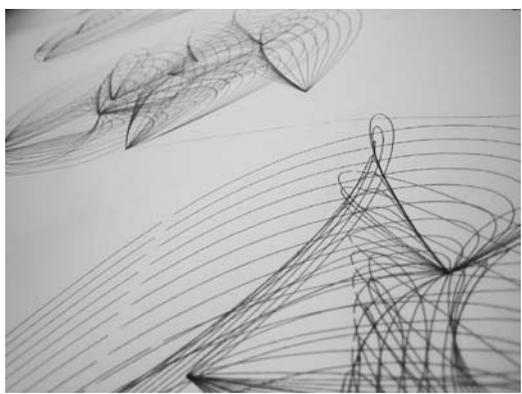
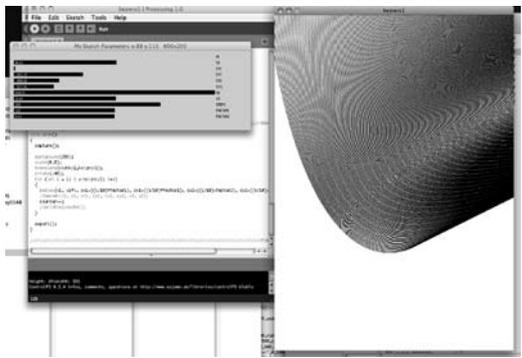
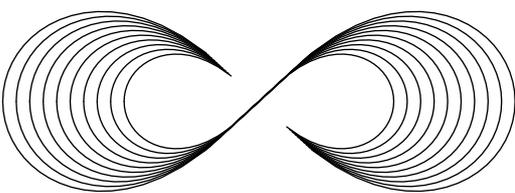
ABCDEFGHIJKLM

LMNOPQRSTU

VWXYZ[]^_`ab

cdefghijklmno

pqrstuvwxyz{|}~



It seems obvious that a machine can not speak the same language like humans. Casey Reas and Ben Fry give an example on language and automated translation. According to the example the two simple English sentences 'Translation requires nuance. Can it be performed by a machine?' were translated by an translation service into an Italian sentence that translated back into English gave the text 'The translation demands the shading. Can be carried out from one machine?' They also see that software designed to convert spoken language into written text has similar limitations but both technologies - automated translation and speech-to-text conversions - "can be used in controlled circumstances as unique ways of working with text and software." (Casey Reas, Ben Fry; Processing. A Programming Handbook for Visual Designers and Artists; Data 2: Text; page 102)

Production

One of my earlier projects this year, a commissioned work but very open for me to design, was a diary-like book of 150 pages. For the illustrations I was looking for inspiration among info-graphics such as maps, statistics or symbols and found out that their aesthetics are highly potential in their way to combine clarity with complexity. This combination, I find, is what people are looking for and what they like about design. Nature is very clear but highly complex and John Maeda, who wrote a book on Simplicity took the example of the sky as considered more beautiful when its coloration and formation is complex than showing just a plain gray.

What I did besides the layout for the mentioned book were illustrations created by type, patterns and lines. It should be both at once - simple and complex as well as chaotic and ordered - somehow commenting the inner action of the story. At the same time I was working with script to generate graphical networks and particles for motion graphics. Those consisted of lines and nodes, too. I used tools that eased my production and that let me work creative within its functionality. But I thought I'd like to go beyond the boundaries I am faced with when working in programs like Adobe's Illustrator or AfterEffects. Because I was living and working in New York at that time, I had the opportunity to visit various exhibitions like 'Design Of The Elastic Mind' at MoMA, and those of artists like Golan Levin or Tomas Saraceno in Chelsea's Galleries. So these thoughts, researches and activities influenced me in a way that I chose to explore script in digital graphic design in a manner somehow closer to the medium.

My research, references and resources are documented in the creative log, which you can also find in the chapter 'Praxis'. This log is a transcription of what I posted online during the time of the semester. The list of posts contains prior research that I broke down to brief entries and links to be added from time to time. For that and for the final project documentation I set up a homepage on the domain 'nohiddenmessage.com'. (Other than that my demands on the website were functionality, a minimalist layout and that it is extendable and versatile in showcasing image data.) After online research I read theories of authors like Marshall McLuhan and Vilém Flusser and went through 'Processing. A Programming Handbook for Visual Designers and Artists' by Casey Reas and Ben Fry, which also contains distilled information about several digital disciplines.

This was about when I had started to prototype the font I wanted to use for the project. It took me almost one month to design a font that suited my needs and to gain the required data from it. A closer look at the font development shows that I started with more obviously varying shapes that formed a much more diversified face. In a small continuous text or viewed from distance the first versions of the character set looked too reserved and female though so that I went on with more uniform and rather blunt letters. Other than that I mainly changed proportions.

To realize the TrueType technically I integrated the online application on fontstruct.com into the prototyping process. Here you basically build up each character in a pixel-like grid with modules you can choose for this. Eventually it offers the possibility to apply 'filters' to the whole character set before generating a TrueType. After that I retouched the glyph representations in FontForge to optimize them mathematically and finally I defined metrics information such as kerning-pairs with FontLab. This last step allowed to export a metrics file for the TrueType-font which later could be used for bringing in micro-typographic adjustments into the application code.

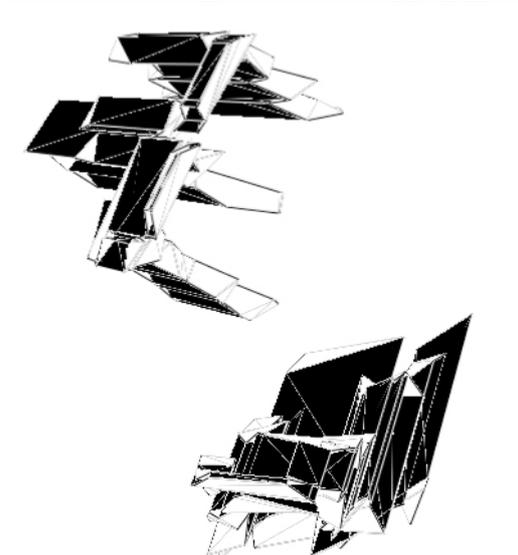
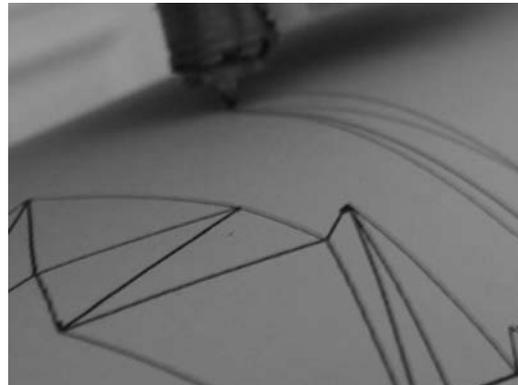
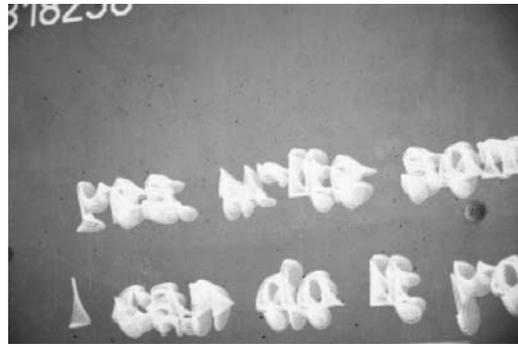
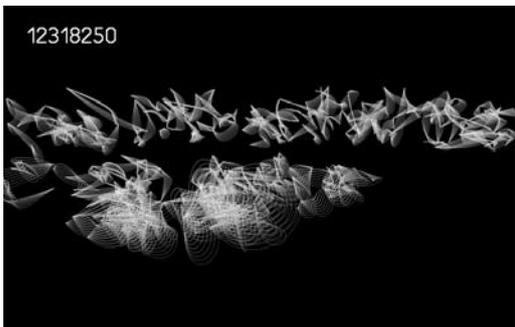
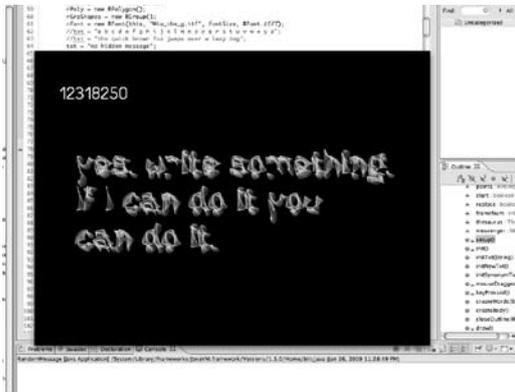
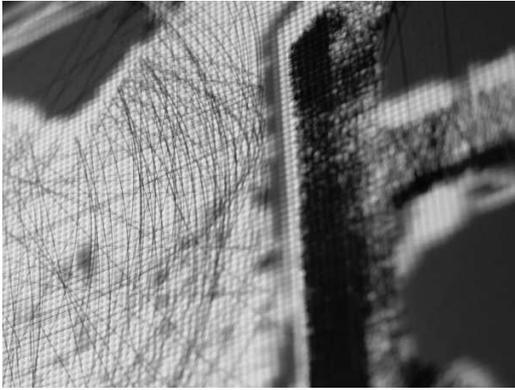
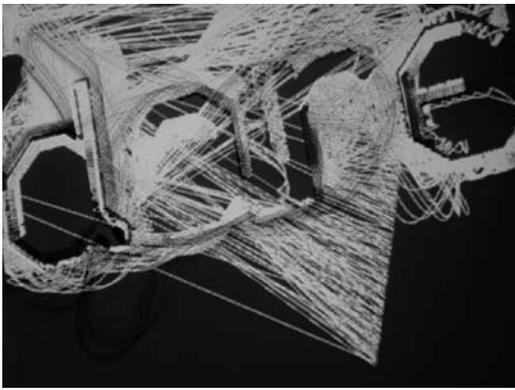
I designed three different faces - one original, one stencil-version for cutting and one that simulated a kind of hatching that I wanted to use for filled text when line-plotting. Hatching though made oblique strokes look broader than even ones due to the pen's duct. To solve this problem I then drew multiple containing outlines instead of gaining a clean letter shape.

By the end of the first month I also had provided myself with hardware, software and materials that I wanted to use primarily. I set up a cutting machine and installed the required software. The common program for cutting machines is ArtCut which requires Windows. Also the EPS-files from different systems vary so the EPS has to be exported on Windows to be sent to the plotter via ArtCut.

I tried out the materials and adjusted pens so that they could be fixed instead of the cutter and used to plot line-drawings. Pressure and speed had to be found out depending on the medium. Also the life of a felt-pen turned out to be too short to draw one large-scale plot with certain pressure.

So for month two I had everything I needed to program my font-tools in Processing. As described above I developed them in Eclipse and I also used Java for certain things that were not transcribed into Processing yet. The library 'geomerative' by Ricard Marxer provided me with type-specific functionality with which I could realize most of my work. The first basic program was able to load my font-file and hand the vector interpretation of it to each instance of a word within a given text. The word also stored its textual semantic, created its vector shape, implemented its own 'draw'-method and applied metric adjustments via a referenced Kerning-class. Once created and adjusted the words were arranged to a left aligned body of text. These setups would seem banal in authoring programs like Illustrator, but are not given at all within Java or Processing. Other basic functions were those to record, export and save output and to have a graphic interface for controlling parametric values. These I also accomplished through the usage of libraries.

Starting from these basic classes I extended or altered functionality or added new classes to get the targeted result. From here I also had to learn how to use the tools that I implement so that I can add the



desired expression to them. Depending on variables and usage, functions affect the output very much. For each design I always had to have the final media in mind. That is for instance that I used outlines only and no fill, one stroke weight and no color, no pixels but vertices - so that I created data executable by the plotter.

For a final academic project it is recommended to do a work within a well known discipline and technique. I am aware that it makes sense to use approaches and skills one has already gained during studies. Nevertheless I decided to get to know and work with a tool that I had little knowledge of. One of the reasons for that is that I think a major value of my studies was that I learned to keep getting involved in new techniques and technologies in media design. Digital design is changing fast what makes it important to catch up steadily. This might be uncomfortable but once you understood the basic principles and understand the differences of available tools you can evaluate your working environment and can choose economic ways for your production to leave more space for creativity. I had a good knowledge of Java and ActionScript which made it easy for me to use Processing. During the work I rather spent much time with working out program concepts for the actual coding. To answer the question what and how I design was one of the greater issues of the process. Once I found a clear answer it was more about how to finally write it down so that the machine understood it.

So I spent much time with my paper sketchbook, but wrote many notes and sketched modules or rules rather than created explanatory drawings. With the digital sketchbook of Processing I could more express computational creative thoughts and try out math or combine sketches.

After I had versions and variations of static, two-dimensional typography I started to introduce animation and realtime functionality. Parallel to the font-sketching I was looking for methods to gain text for a pseudo-semantic-layer of my work. I collected short messages broadcasted on platforms like twitter and implemented a thesaurus class that would return a list of synonyms for any given word. Another direction I researched was Speech-To-Text. This would have meant user interactivity and would have involved the user without barriers. I worked out a 'VoiceConverter'-class that would understand something of each microphone input and give back a three letter sentence with a voice being converted each time. I used 'Sphinx-4', a speech recognizer written entirely in the Java programming language and used examples developed by the Carnegie Mellon University. It is well known that most speech-recognizing applications are not satisfactory in its functionality. In my case the recognized words were hardly ever those I spoke into the microphone. That didn't matter too much to me because my focus was the idea of the steady hearing and processing of language and its translation into written word whether one can understand the spoken ones or not. The reason why I finally decided to go my alternative direction towards the dealing with double-meanings and messages was the lack of feedback by the Voice-Converter. The communication between the visualizing class and the data producing class did not work out in a way that the communication between the program and the user would work out accordingly. So - if at all - the words understood would appear delayed and would then seem like random output. These technical delays would not allow to explore the function of the work though and therefore the installation wouldn't work that way.

A straight way to generate text is translation or retelling. To generate text via the Thesaurus class works as follows. Each word asks for a list of synonyms and the Thesaurus supplies it with a variable array of alternative words. Out of this list a random function selects a synonym to replace the word. New text will then be set up containing a synonym phrase. This can be done multiple times and would mean that the text is growing each time due to synonyms out of two or three words that later may be replaced by two or more words again. Grammar and sense happen to fit or don't - some semantics remain and some words won't be replaced if there are no synonyms for them. On the following page you see two examples. The first one shows the output after I started three times with just the letter 'a' and made the application run multiple loops to construct transformed sentences over and over. Within the final installation I use this principle to retell each featured message once again after it has shown up as an original. The second example-text on page 27 shows the difference. The program looks up a random message in a stored text file and initializes each word as an instance of the Word-class. The text file could be replaced by any simultaneous online feed or input - for here I decided to do this step in advance and store messages to have more control and to get an independent stand alone installation. The animation first reveals the original text marked with a time-stamp to visualize a recent but random moment within this thought has happened. With the next step an automatically retold text of the message appears before the next one is loaded.

To fabricate a three-dimensional type design in a digital way I first tried out different materials. My focus was on paper or plastic. It turned out that paper can just be cut to a certain extent with the cutting machine, and silver plastic film cannot be welded together as I intended to do to create the plastic skin of an inflatable sculpture. The application as by now shows one way to construct a letter-shape-sculpture based on triangles. One can change the letter and rotate it for viewing. Using a control interface it would be possible to adjust the shape. After a save command the polygons of the selected letter were recalculated as two-dimensional faces and exported as PDF. I realized the unwrapping by a series of trigonometric functions. These use the actual lengths of edges to get the angle with which the next drawn line has to be rotated. Thus a two-dimensional triangle-strip can be constructed step by step. After the export I plotted the faces on paper to build a model of the letter. On a different scale the same can be done with plastic film to weld an inflatable sculpture.

The following are examples of program output as described above.

a
Letter a
earn ampere
garner current unit
storage stream organisation
machine operation current administration
automotive vehicle mathematical operation
electrical phenomenon tenure
moving physical object unquestionable mental
process physical phenomenon process term
aflare corporeal goal incontestible cognition
calculate sensual physical process figure point
on fire corporate score demonstrated knowledge
compute carnal forceful serve organic structure
compass point
happening flaming corporal hit incontestible psycho
logical feature reckon physical forceless dish out
essential coordinate circle tag
event ablaze bodily have bulletproof scientific
discipline motion picture expect bodily unforceful
sustenance prohibited crucial manage seating
area name
result lit natural object refuse incontestible knowl
edge base penalise apparent movement word
picture bear material forceful sustainment tabu
determinant make do elbow room region examine

a
current unit
flow thing
stream attribute
transude construct
pass idea
cash in one's chips melodic phrase
exchange IN one's chips sweet musical phrase
group action IN one's chips fresh musical comedy
articulate
classify fulfil IN one's chips pure musical comedy
clowning articulated
class carry through IN one's chips staring
unmelodious drama tomfoolery unarticulated
teaching broadcast finished IN one's chips utter
tuneful dramatic work frolic unjointed
education publicise through with IN one's chips let out
tuneless hammy move play unjointed

a
Letter of the alphabet
document of the fundamentals
substantiate of the basic principle
support of the primary precept
defend of the of import prescript
fight down of the of merchandise rule
disceptation pile of the of commodity formula
conflict great deal of the of good convention
dispute neat portion out of the of best treaty
argue great fortune taboo of the of shell pact
represent corking condition tabu of the of get the
better of treaty
mean bang-up ameliorate proscribed of the of non
plus the healthier of pact
associate nifty meliorate prohibited of the of be
fuddle the better of treaty
degree cracking modify taboo of the of fox the worse
of pact
point great change prohibited of the of cheater the
worsened of treaty
point in time capital switch forbidden of the of be
guiler the worse of pact

I never say die!
I ever enunciate die!

it's the amps not the volts that kill you
it's the amps not the volts that overtake you

None of you help me.
None of you boost me.

Sometimes you wish you hadn't encouraged someone...
Sometimes you druthers you hadn't pleased some-
one...

Can't write for shit nowadays. I can make retarded
youtube videos like nobody's business but can't write
a single paragraph of substance.
Can't compose for rat nowadays. I room tidy dim-
witted youtube videos care nobody's aim merely can't
create axerophthol ace split of substance.

Pardon the way that I stare. There's nothing else to
compare. The sight of you leaves me weak. There
are no words left to speak...
Pardon the course that I stare. There's relative
quantity else to compare. The display of you leaves
American state weak. There square measure nega-
tive run-in paw to speak...

I'll just keep coming back here. To the internet. For
my daily dose of ego.
I'll fair raise approaching stake here. To the internet.
For my day-after-day Cupid's disease of ego.

questioning why people don't truly read an email.
skeptical ground kinsfolk don't insincerely see As-
sociate in Nursing email.

chav is just a short way of saying "oh dont poor
people dress funny"
chav is exactly metric linear unit truncate way of life
of spoken communication "oh dont needy sept grace
funny"

so what do you think
and then what action you rivet

i can't think of anything clever to say.
chemical element can't think over of anything cagy
to say.

Welcome to the Internet, where men are women,
women are men and little girls are FBI agents.
Welcome to the Internet, where workforce square
measure women, women ar work force and elfin girls
ar FBI agents.

glad you liked it. I closed my eyes a lot.
sad you disliked it. I union my sentiment A lot.

should put those up on a wall, making sure that
more people read them :-)
should put away those down off type A wall, fashion-
ing convinced that statesman group promise them :-)

YAY! did you have a good day ?
YAY! did you wealthy person group A evilness period
of time ?

Visual Language

What can a computer do well and how could I use it to exploit its basic characteristics for design. The answer is repetition, complex structures, variation, accuracy and perfection within no time. It is definitely not 'the simulation of a watercolor brush stroke behavior'. - On the other hand, why should one simulate a watercolor brush stroke soaking in a paper-like screen when I can do it much better with watercolor, brush and paper? I do not necessarily see an enhancement of typography, either, when it is a simulation of handwriting or when it behaves like a dog barking when it says 'barking'.

Each medium has its characteristics and these characteristics influence each work. This I wanted to keep in mind. The analog and digital aesthetics are stressed and applied media are as raw as possible to show the process and material - from light and space to pen and paper. This also leaves some space for the visitor to imagine. When things look too finished and determined they might invite less to further thinking.

The used materials are plastics, paper, pens, light and air. They are - as mentioned above - all suitable for prototyping and fulfill economic as well as aesthetic demands in so far as they are materials of our everyday life but versatile enough to be set in a creative context easily. Partly these are media very closely connected to handwriting. What is important for me throughout most of my work is to combine the clear and cool digital design with an analogous or imperfect touch to maintain humanity and organism. As Multimedia Designer I also see myself in a position where one brings together multiple disciplines and techniques and I want to achieve outstanding work through the usage of cross-media methods to involve the skills and education I have gained with both my Informatics- and my Design-studies.

As all the digital output (here) is based on vector graphics, dimensions are scalable. I prefer large scale posters and projection to create an artwork environment in which the visitor can either focus on the whole impression of the graphic work or view parts of it from short distance to see the process and the media. The single works of the exhibition-like installation do not depend on each other but can stand alone, too.

Colors are just black and white. I considered to introduce one additional color but decided not to make usage of another layer of meaning and subjective association. Black on white is very typical for writings. It is also a visualization of a binary code in terms of 'on' and 'off' - all color or no color. With the usage of light in projection it means just brightness or darkness and thus - instead of color being another content (or medium) of the projection - I stress the focus on the graphic and the containing media such as light, environment and motion.

Graphics consist of lines only. This concept refers back to the evolution of type towards digitalization. A decisive turning point in font development was automated punch-cutting via a pantograph during the industrial revolution. Here the outline of a letter shape was translated as a guide for milling. For the first time the glyph was understood as defined by its contour rather than by its enclosed plane. This understanding led to the invention of Linotype and the Ikarus system. Within Ikarus type became digitalized - letters could be described by Bezier curves and cut into film via a cutting machine.

The line also is a metaphor for the linearity of thinking that replaced the circulating thinking by the introduction of writing. As you read and write in lines you must think logically and linear. According to Vilém Flusser actual writing means to transcode thoughts, to transcode from two-dimensional image-codes to one-dimensional line-codes, to transcode from compact and indistinct imagery codes to clear scripted codes. Writing is a translation of ideas into terms that are mostly 'drawn' with black on white to avoid the magical and compact and achieve clarity and contrast that expresses discursive and historical thinking. (cf. Vilém Flusser, *Die Schrift. Hat Schreiben Zukunft?*, p. 18,21)

The line is not only what a computer does well, what thinking or writing embody and what digital font is described with, it is also what a drawing might look like when sketched with a pencil. So there is a connection between the digital sketching and the pencil sketching. Line drawings are a straight way to express ideas or to explain things.

!'#\$%&'()*+,-./012

3456789:;<=>?@

ABCDEFGHIJK

LMNOPQRSTU

VWXYZ[\]^_`ab

cdefghijklmno

pqrstuvwxyz{|}-

Type Design

The font was to be simple, clear and neutral. It should consist of unambiguous characters to function in continuous text as well as single featured letters without a surrounding text as form reference - i.e. in the first place you should not just be able to decipher an 'y' because its position between 'x' and 'z'. This is the basis for further deconstruction. Moreover the typeface should work fine in small point-sizes as well as in huge format - on the screen, in print, sculpture, etc.

Because of different reasons a classic commercial font was not an option: Firstly, because of the installation's aspect of Zeitgeist - on one hand the installation should be timeless and matter-of-fact on the other hand it should suit a contemporary feeling for aesthetics. Secondly fonts like Helvetica or Avenir are overused, impersonal and loaded with associations. Thirdly a self-made font can be designed and adjusted to its actual and desired needs and does not involve any licensing or costs. An individual type is also very important because it is the element on which all other designs base on. I decided to design an edgy font to get some suspenseful variations through different font-sizes. It consists of straight lines only what makes its coordinates easy to be translated into different media.

Two Dimensions

The generated plots depict approaches in digital font design and have shown the altered aesthetic of the alphabet since its digitalization. Computational type and graphics were achieved through the usage of code to program tools and eventually export the output as vectors. These vectors were partly combined with analogous techniques like plotting with a felt-pen. There are five different aspects that were explored: Graphic, Bezier, Contour, Stroke and Force.

Graphic: Digital fonts are Software that can be used to shape any digitally created forms. Here the text is part of a line-graphic that can be drawn within the application. The font is integrated by distracting or extending the lines while drawing. That way the shape of the font becomes entirely resolved but is visible through its effect on other data.

Bezier: A font file contains information in form of Bezier-points, their position and characteristics. Thus they describe curves that shape each letter. These points have certain orders, start- and end-points as well as control-points. And usually each letter is described by the least number of points with clear relationships to each other and are connected by single curves. What I basically did to achieve the 'Bezier Alphabets' was to add points or ignore some, to change the order and kind of points and to draw multiple curves with varying controls to shape each letter.

Contour: As fonts are described by curves they are contours rather than planes. Even a straight line can be seen as a curve with its control and endpoints positioned one-dimensional. Following very simple rules, outlines can be repeated and scaled and broken up to look either very clear and planar or to hatch dynamic complex shapes within their outlines.

Stroke: The outlines of digital fonts can be interpreted by tools. There is one representative example given on how the stroke and its direction can be used for modular faces. The dynamics of a rotating line follow the stroke to achieve an amoeboid body of text.

Force: Programming code allows the simulation of physics so I used force as mouse control to shape and transform type consisting of particle-like line segments. The letter-shapes therefore depend on the dynamics and forces applied to them. Some look like smudged, some like extruded, some strong, some fragile - maybe akin to a digital ductus.

Three Dimensions

Virtual lines describe physical surfaces - calculus designed objects are to find in multiple disciplines such as architecture or individual product design and have already introduced fascinating possibilities. Digital constructions defined by a set of rules can be used to make very organic, very complex or unique versions of things.

In order to create a physical, materialized version from computational font designs I implemented an application for prototyping that allows to export its 'skin' as two-dimensional polygons. Along one axis the letters are fragmented and appear as abstract angles and edges. The two-dimensional impression remains when looking from the right angle.

Four Dimensions

The wall lettering features messages sent by random people at any moment online. Collected thoughts are separated from their context and accompany people in their environment as their own constant thinking does. Our thinking depends very much on our way to write and vice versa. That is also why you preferably think in your mother tongue rather than in a foreign language. The meaning of some words even seem impossible to be translated adequately - there might be a common synonym but the connotation connected to a word may differ still. Translation or retelling is a generation of text and speech where this phenomena happen very obviously. If you translate a sentence from English to German and translate the result back into English, then you'd get a very different sentence. This effect is even more obvious when automated translation services are used. These aspects depict how language works and what it implies. To explore this 'behavior' of language you can leave out the step of translation and simulate what basically happens: A word can have various meanings, it can be a metaphor for something totally different and its meaning can very much depend on the context - but it simply gets replaced by any random, available synonym. Each thought gets replaced by a synonym text before the next message appears - visually there is no distinction though.

The video poster on the other hand deals with the aspects medium and tool. As second layer of a plotted poster the projected realtime animation shows the process and generation of the graphic and reveals stages prior and after the actual plotted version. The installation shows in a very simple manner very different aesthetics and characteristics of one and the same work within different media. What makes print interesting in combination with computed design are the different qualities. The lines on the paper are detailed and crisp whereas the projected lines have very low resolution and appear more like areas of points of light.

Bibliography and Links

Die Schrift. Hat Schreiben Zukunft?
by Vilém Flusser (Author)
European Photography (March 31, 2002)
ISBN-13: 978-3923283590

Essential McLuhan
by Eric McLuhan (Author)
Routledge (June 5, 1997)
ISBN-13: 978-0415162456

The Medium is the Message: An Inventory of Effects
by Marshall McLuhan (Author), Quentin Fiore (Author)
Penguin (September 25, 2008)
ISBN-13: 978-0141035826

Becoming a Digital Designer: A Guide to Careers in
Web, Video, Broadcast, Game and Animation Design
by Steven Heller (Author), David Womack (Author)
Wiley (October 16, 2007)
ISBN-13: 978-0470048443

Design and the Elastic Mind
by Hugh Aldersey-Williams (Author), Peter Hall (Author),
Ted Sargent (Author), Paola Antonelli (Editor)
The Museum of Modern Art, New York (March 1, 2008)
ISBN-13: 978-0870707322

New Typographic Design
by Roger Fawcett-Tang (Author),
David Jury (Introduction)
Yale University Press (May 21, 2007)
ISBN-13: 978-0300117752

Type Addicted
(The New Trend of a to Z Typo-Graphics)
by Victionary (Author)
Victionary (December 7, 2007)
ISBN-13: 978-9889822941

Processing: A Programming Handbook for Visual
Designers and Artists
by Casey Reas (Author), Ben Fry (Author),
John Maeda (Foreword)
The MIT Press (September 30, 2007)
ISBN-13: 978-0262182621

The Little Know-It-All: Common Sense for Designers
by Robert Klanten (Editor), Mika Mischler (Editor),
Silja Bilz (Editor)
Gestalten Verlag (August 22, 2007)
ISBN-13: 978-3899551679

recommendation:
Texts on Type: Critical Writings on Typography
by Steven Heller (Editor), Philip B. Meggs (Editor)
Allworth Press (February 1, 2001)
ISBN-13: 978-1581150827

processing.org (Programming Language, development
environment and online community)
www.ted.com (Inspired talks by the world's leading
thinkers and doers)
www.typeradio.org
(The radio channel on type & design)
www.typolexikon.de
(Western European typography lexicon, German)
chaosradio.ccc.de/cre080.html
(The history of typography, German)
en.wikipedia.org/wiki/Category:Images_of_curves
(Curve-functions)

Project Meta Information

Tools
Fontdesign: Fontstruct, FontForge, FontLab
Programming: Processing, Eclipse
Libraries: controlP5, geomerative, physics
Plot: Illustrator, Artcut
Book: InDesign
Website: indexhibit, Wordpress

Credits
Advice and Examination:
Prof. Robert Rose, Jürgen Hefele
Solutions:
Christian Rieckhoff, Philipp Rockel,
Ricard Marxer Pinon, extrapixel

Copyright
2008-2009 Miriam Magdalena Rockel
ALL rights reserved