

COTDES

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**DESIGN SYSTEMS AND NARRATIVE VALUES
OF THE TENGWAR SCRIPT AS COMMON FEATURES
TO LATER DESIGNED *COTDES*.**



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typography, fantasy, fiction

READSEARCH

MASTER THESIS

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On a side note, I would also like to thank Tim van Roey and all my friends as they helped and supported me throughout this journey.

ABSTRACT

This typographic design research is about constructed scripts, specifically storytelling-based constructed scripts. Because the world of constructed scripts is a broad spectrum of type design that goes in many different directions, from political ideologies and communication enhancements, a term has been designed to solely refer to storytelling (narrative and entertainment) constructed scripts; cotdes. Cotdes are of great interest to enthusiasts of the stories they are used in, proving they are an important feature of fiction storytelling. However, they are rarely addressed from a design research perspective. Taking a design research approach to analyze cotdes can assist in pinpointing the typographic elements that carry the most impact and effectively enhance the story. Cotdes is a small but significant design choice made in the world of storytelling. By implementing a script into a story, the audience can connect to different creatures and makes the world more approachable. Scripts are a way to create familiarity in an otherwise unknown world.

In this research design choices have been found that are recurrent in cotdes design. Famous existing cotdes have been analyzed to understand what these recurrent features are. Out of these recurring features a system was created to manage the cotdes creation process. The parameters that were identified are of two types: parameters for conceptualization and parameters for creation. Within the parameters of creation, a gamification aspect will be introduced. This gamification aspect goes hand in hand with the storytelling aspect of cotdes starting point, inspired by the Dungeons and Dragons way of storytelling and use of restrictions. This will provide an element of arbitrary influence within the design

choice-making process.

The conceptualization and gamification of the cotdes creation will exist as a system that will help participants of the system in creating their own cotdes. The system will give the fantasy lover an opportunity to immerse themselves even more in a constructed world through typography.

A possible continuation of this research project is by building an archive utilizing the results collected from fantasy enthusiasts, who will also participate in the final testing phase. With this, possible reverse engineering can be done where the cotdes that are created can be analyzed and provide a reflection of how the audience looks at cotdes design and how they themselves use it when offered the idea of creating one themselves.

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INTRODUCTION

FAMILIARITY
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DECONSTRUCTION
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BIBLIOGRAPHY

As a participant in the international master program Reading Type and Typography at PXL-MAD School of Arts University, I had the chance to combine my interest in constructed worlds (science fiction and fantasy) with the typography that accompanies them. I started with Tolkien's trilogy 'Lord of the Rings'. More specifically, with the elvish codel Tengwar, (the one engraved on the ring of rings). The way this detail has been integrated into the visual characteristics of the story has always been appealing to me. Both the language and script seamlessly blend into the story, subtly guiding the audience's perception of the characters. This encloses their traits, daily lives, possessions, clothing, and surroundings, including time, place, and communication. These elements enrich the characters and their interactions, allowing you further entry into the storyline. This encloses their traits, daily lives, possessions, clothing, and surroundings, including time, place, and communication. These elements enrich the characters and their interactions, allowing you further entry into the storyline.

The focus of this research lies on constructed scripts within the entertainment industry where the use of alternate worlds is enhanced by using constructed scripts, which I termed codels: COnstructed, Type, DEsing, Script. This research focuses on the design choices and the connect-

ed emotional and aesthetical values the codels convey. These specific design parameters will be discussed later in the paper

This project was approached by means of deconstruction and construction of existing codels design parameters, analyzing them to find a common thread within them. These existing codels are based on the most well know codels around Western culture. These are Lord of the Rings' Tengwar as the root of the research and the codels Klingon (by Marc Okrand, Star Trek), Cirth (by J.R.R. Tolkien, Lord of the Rings and The Hobbit), Aurebesh (by Stephen Crane, Star Wars), and Utopian (by Thomas More, Utopia), Golic Vulcan (by Mark R. Gardner, Star Trek), Alienese (by creators of the show Futurama), and the movie Arrivals' Heptapods alien language (by Martine Bertrand) as branches of the tree.

The reason for this approach to the research is that the subject of codels is already heavily 'fan based' in terms of information. As a result, smaller codels are often less reliable when it comes to reliable information. For the well-known codels, there is more research on both professional and fan-related aspects.



The one ring to rule them all.
Tolkien, J. R. R. (2001). *The Lord of the Rings: The Fellowship of the Ring* [Video]. New Line Cinema, Saul Zaentz Film Co., WingNut Films.
<https://www.imdb.com/title/tt0120737/>

2.1 ONLY THE WORTHY CAN BE CALLED COTDES

Constructed (or artificial) scripts are created by individuals or groups of people, created for a specific purpose, and often to broaden a given narrative (Cambridge Dictionary, 2023). Esperanto is one of the most well know real-world constructed languages, yet not identifiable as a cotdes. Esperanto as constructed language is created to unite the world with one language (Meyer, 2016) outside of the world of entertainment. The design focus for this research has been based on constructed script within the storylines of alternate worlds, therefore Esperanto and other “real-world” constructed languages will not be included.

The cotdes Utopian and Alienese are included in the research yet will only represent a small part of it. This is because when the creator of the cotdes is just changing the shapes of the Latin alphabetical letter forms while using the (semi)same grammar while writing, is not considered a cotdes. A cotdes is a cotdes when inspiration gets taken from existing natural scripts; their environment of creation, the used materials, the meaning that they carry (religious, administrative, ...), and the culture and thus the contextualization around the users of the script. The Alienese script, even though it is an almost direct translation of the

Latin alphabet, is because of the perception towards outer space (science fiction). This cotdes is included to reflect on the chosen design choices. The way they decided to design the letters was to make them look otherworldly. Patrice Vermette himself said in an interview with Wired: “We wanted to create a language that is aesthetically interesting. But it needed to be alien to our civilization, alien to our technology, alien to everything our mind knows.” (Rhodes, 2016). The same can be said about the Heptapods script from the movie Arrival, which took a totally new approach to the same otherworldly experience.

Thomas More’s (1478-1535) Utopia (1518) will be used as a part of the research, together with other cotdes, as he had a big influence on the cotdes world. His approach was based on the genre ‘the traveler’s tale’ (Fimi & Higgings, 2017) where new worlds would be discovered. He was one of the first well-known people to create a “cotdes” for those newly created worlds. The word ‘Utopia’; means ‘u-topos’, standing for “non-place” in Etymological terms. (Yaguello, 2022: 5). Thomas More changed the existing letter shapes to new abstract shapes, meaning his cotdes is limited within their creation and therefore not comparable to the same standards as the Tengwar script. As Tengwar is a script on which Tolkien worked his whole life, therefore creating a solid foundation for

his cotdes (see Grandfather Tengwar).

By discussing Alienese and Utopia’s used methodologies and appearance within the entertainment sector, together with Golic Vulcan and the Heptapods script, they have a limited number of characters and a background foundation. This can be because of the limited purpose they were needed for -which limits the quantity of the cotdes, or the reason within the story (as a riddle to encipher or to make one creature different from the rest). Their use is strictly confined to offering contextual insight into the broader picture of cotdes design. Because of this, their features will be taken as the research reference, and the Tengwar script will serve as the foundation for comparative analysis across the diverse range of cotdes.

the Tengwar script is placed is one of the most well know and well-beloved franchises and therefore also more researched and well-documented cotdes. Tengwar is a cotdes based on phonetics inspired by natural Anglo-Saxon Germanic languages (Yaguello, 2022: 260), also using functional diacritics and exceptions within the Elvish languages (TED-Ed, 2013). And indeed, I’m refereeing to plural, languages, as it is a cotdes which has an extensive history and thus several languages and dialects it can be used for (in story) (Salo, 2004: 27-28). In fact, the two Elvish languages that Tolkien has created, Quenya and Sindarin are the most developed cotdes in literature (Coker, 2016). Tolkien, as a linguist himself, was always inspired by the concept of language. Tolkien worked on the Tengwar cotdes for years,

2.2 GRANDFATHER TENGWAR

Tengwar, as it is the main inspiration for this research, is also the leading example of a cotdes. The Tengwar script was created by J.R.R. Tolkien (1892-1973). It was his life’s work. Tengwar, when compared to the other cotdes, is the one with the most foundation on both linguistic and storytelling grounds. The world in which

Consonants									
ᵐ	ᵑ	ᶇ	ᶅ	ᵑ	ᵑ	ᶇ	ᶅ	ᶅ	ᶅ
t	p	ch(ew)	ck	d	b	j	g		
[t]	[p]	[tʃ]	[k]	[d]	[b]	[dʒ]	[g]		
ᶇ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ		
th(ree)	f	sh	(e)ch(o)	th(e)	v	(a)z(ure)	gh(ost)		
[θ]	[f]	[ʃ]	[k]	[ð]	[v]	[z]	[g]		
ᵑ	ᵑ	ᶇ	ᶅ	ᵑ	ᵑ	ᶇ	ᶅ		
n	m	n(ew)	(k)ng	(fo)r	w	y	qu		
[n]	[m]	[n]	[ŋ]	[r]	[w]	[j]	[k]		
ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ		
r	l	ll	s	s/c	z	z	h		
[r/ɹ]	[l]	[l]	[s]	[s]	[z]	[z]	[h]		
ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ		
wh	y	w	th(omas)	ph	ck/ch	the	of		
[w/ʍ]	[j]	[w]	[t]	[f]	[k]				
ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ		
(r)igh(t)	pp	tt	ll	mm	nt	mp	nc		
ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ				
qu(iet)	and	of the	a/an	on	in				
Vowels & diphthongs									
ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ		
a	e	i	o	u	aa	ee	ii		
ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ	ᶅ		
oo	uu	ai	ei	oi	ui	au	eu		
ᶅ	ᶅ	ᶅ	ᶅ	ᶅ					
iu	ou/ow	ea	ae	oe					

Tengwar alphabet for English (Omniglot, n.d.)

making it a fully functioning language, that has its own script, separate but inspired by natural scripts. The language had its own grammar, spelling and even ad exceptions to conjugations as natural languages have. He himself has said: "What I think is a primary 'fact' about my work, that it is all of a piece, and fundamentally linguistic in inspiration." (Tolkien et al., 1995)

For Tolkien creating the script was also a way of escapism. What he wrote about the Tengwar (Elvish) script in one of his letters, which were later collected in the book 'Letters of J.R.R. Tolkien': "... It is not a 'hobby', in the sense of something quite different from one's work, taken up as a relief outlet." (Tolkien et al., 1995).

Tengwar is created as a term that encompasses the entirety of the Elvish script. As Tolkien wrote the stories, the elves are one of the creatures who traveled a lot over a long span of time, creating new settlements whereby new manners of speaking and ways of writing emerged. Hereby using Tengwar to refer to the script in which other Elvish languages can be written. With this, a reference is made to the whole of the conceptualization around the elvish script (Salo, 2004). The first release of the codels came in the books of *The Hobbit* in 1937. Later the Tengwar script and its complex history were given its own full appendix in 1955 called Appendix E, which was a year after the release date of the first *Lord of the Rings* book in 1954 (Fandom, n.d.). Not only did he make a fully functional codels, but he also created it its own history. The stories of

Lord of the Rings and *The Hobbit* take place in a bigger world called Middle Earth. Tolkien made Middle Earth its own storyline where every creature has its own narrative.

Tolkien was one of the first writers that was able to convey a story that gave a whole new perspective to worldbuilding. He was able to frame a whole new world with beings with whom the audience had barely been in touch before in that way. And he placed this being as a guide, someone the audience can place themselves in, to which they can relate. The audience wants to know more and is drawn to another world. Tengwar can be seen as the grandfather of all the constructed scripts that followed.

Despite Tolkien not being the first person to create a codels, his work is incomparable to other codels. Since the release of his books, he has always been a source of inspiration for other creators (TED-Ed, 2013).

With this, presenting the core research question: What design systems and narrative values of the Tengwar script can be seen as common features to later designed codels?

FAMILIARITY
IN THE
UNKNOWN

3

There is no such thing as creating a thing out of nothing, as we are all influenced by our surroundings, consciously or not. For instance, when a designer initiates a strategy in forming a new alphabetic structure, they are basing it on the: shapes of letters, sounds, or grammatical structures, from what they already know or has been seen before (Marie Barry, 2001). With this understanding, the codes has not been designed, or invented out of thin air, but a conscious and systematic approach taken from already existing writing script and their designs. For people who use the same script, a design can be universally understandable. While reading a text, an subconscious connection is made in relation to the design, which makes the reader can focus on the context of the text (Ejlers, 2014) while the design is processed by the brain. This connection we recognize is cognitive, the part of your brain called the temporal lobe that assigns meaning to visual information (patterns). These patterns serve as the foundation for converting visual and auditory experiences, along with the recollections associated with them, into a language of depiction. The temporal lobe also assigns values to that given information with the existing memory (Norman, 2004). Creating either a positive or negative direction of perception or understanding of an experience. It is this way of processing, that

gives us the feeling that we are attracted to. What we can take out of this research is that happy memories and connections to earlier observed shapes, colors, language, culture, etc., make us also connect to the design in which those attributes are implemented (Viewsproject, 2019). This is what the designs of the codes have attempted to do, whether knowingly of the scientific information or not, has done.

Within this realm of the selected codes, the focus has been on the design that contains an emotional and aesthetic value, in the development of each of the visual elements; inspirations, environmental influences, contrast, writing direction, the optical direction of the character, decorative elements, etc.

A codes cannot exist without stories, without the worlds, they are created for. Yes, we use them in the outside world but is solely thanks to those stories that introduced us to the existence of codes existence. Once these stories will be forgotten, the languages and their scripts will probably do the same. Therefore, looking at type design without taking the altered worlds into account will give us a deceptive view of the "why" behind the design choices.

I want to prove that even in purpose-limited type design, type design still plays

a big role. Cottes may have their limitations, but their usage goes beyond mere enhancement, allowing them to embody the ideologies of intricately crafted worlds. Or as Yaguello said in her book *Imaginary Languages*: "... the history of imaginary languages—which unfolds in an imaginary elsewhere—cannot be separated from the exploration of the world (or worlds). Whatever is supposed, or imagined, to exist invites speculation as a matter of course. It is inseparable from the history of ideas and linked, in particular, to the latter's driving force, the history of ideologies." – Marina Yaguello (*Imaginary Languages*: 5)

For instance, Helvetica, while it is a widely appreciated typeface, would have felt out of place within the context of Middle Earth due to its design mismatch with the intricacies of that fictional world.

3.1 METHODOLOGY EXPLORATION

What started as a data analysis of found information regarding cottes, turned into a system-based design approach in which an own cottes can be made. This started when the search of the specific cottes in use of this research was discussed, and their information was compared

to each other. Out of this was concluded that not all cottes are comparable to each other as some have more in-depth groundwork to them than others. Different cottes were strong because of different reasons. The cottes Klingon, created by Marc Okrand, was created before the franchise of Star Trek took off as an assigned linguist for the cottes, other than Utopia by Thomas More, which was created afterward (Fimi & Higgings, 2017). Also, the languages of the alien creatures named the Heptapods in the movie *Arrival*, created by Martine Bertrand under the guidance of art director Patrice Vermette (Bertrand, 2017), who only has 100 words in its lexicon (Rhodes, 2016), will be no equal opponent for the Tengwar script, in which the language Quenya has 2500 words in its lexicon (Coker, 2016).

There are quite some differences in the creation of cottes, some are minor details while others have a big impact. What has been found throughout the beginning of the research process is that these differences are conscious and subconscious choices the designer makes. Subconscious choices are choices that the designer has no control over which are influenced by the environment they are in, the education they have had, relationships in their life, life experiences, etc. While the conscious choices are sources which they actively have taken inspiration from. These

can be influenced by different cultures, different languages, different time periods, the list goes on (Gordon & Poze, 1981). These choices together with the purpose of the cottes, world, and creature the cottes are created for will then differ with the output of the type design.

When we compare Tengwar and Klingon with each other, they are aesthetically very different from each other. Their intended purpose within the story is also very different. Klingon was designed for the science-fiction world and Tengwar for the high-fantasy world. Also, the time spent on the designing of the cottes (linguistics included), makes it that the cottes will have less or more background information, conjugations, exceptions, the history of the cottes (in the constructed world), and so on. From this, it can be concluded that the cottes, made for the entertainment industry, take different approaches and subsequently have different outcomes around the world of make-belief. The final design choices themselves make a difference as well.

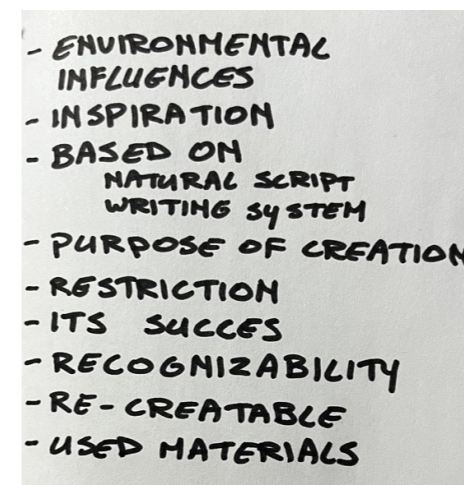
A cottes created for fun and a cottes created for a big 10-year project will have totally different outputs on the same storyline. Again, Tengwar is the best example of this.

Tengwar ticks off all the boxes when it comes to the quality and quantity of design pa-

rameters in type design, which speaks for itself. Tolkien uses a foundation to focus his cottes on, with a main character who uses it. This is common for every cottes. Therefore, the research starting from the Tengwar standpoint will give us a good comparison of the "essentials" needed to create sufficient type design for storyline purposes. These essentials will be introduced later.

The intention of this research is to eventually make an accessible and user-friendly system, presenting a step-by-step process for comprehending the intricacies of cottes' creation while enabling individuals to craft their own.

A system that can make us see similarities between the storyline and design approach, the contrast between (high)fantasy and science fiction, as well as the personalities of the writer (in the story) themselves. Over time, integrating the reflections of the creator's conscious and subconscious choices creates a valuable resource for creativity, knowledge-sharing, and appreciating cottes' artistry. To be able to categorize the found information of the researched cottes, on the image 'starting parameters' were the parameters that set the foundation.



Starting parameters . Kayra Rommen (2023)

Out of the final system, we will be able to observe the results of participants' creations of their own *cotdes*. We will be able to see a reflection on their perception of type design and writing systems in general. With the set questions and parameters given, different creations can still be made. This research will shed light on the intricate interaction between human cognition, creativity, and the impact of personal experiences and backgrounds on the formation and interpretation of constructed languages and the *cotdes* design. This will give us the opportunity to reflect on these creations and further possible research on the perception of type design. The results of the research will serve as an informative study into the details of perception and creativity, underscoring how our unique perspectives are influenced by both design choices and external environmental influences.

3.2 SMALL INFLUENCE, BIG INFLUENCE

The topic of *cotdes*, constructed scripts, or the more common term, constructed languages (conlangs) has often been, and still is, a concept that was oftentimes overlooked because it is seen as a "non-serious" topic, as I didn't carry a

big burden of the real world. This can be because the purpose that *cotdes* pursue is very limited. The purpose of *cotdes* goes no further than the purpose they were created for, enhancing a story by changing a basic asset of communication. For example, constructed languages like Esperanto -referring to the language as a whole and not the script aspect- are constructed languages that are created for an ideology in the real world (Esperanto, 2017). Other constructed languages like braille, sign language, and Morse code are constructed languages created for a purpose beyond what the written language could offer. This is by changing existing language and typography aspects to texture, hand gestures, and sound to convey meaning to people who need it.

With the knowledge we have of language and constructed scripts in the real world, we see design as a solution-oriented process in which the result needs to be an active (and positive) change in the world of (type)design (Boutkan & Panton, 2022). People generally have looked at constructed scripts and languages as something weird and funny, something that is for nerds who are obsessed with a franchise, like Lord of the Rings, Star Wars or Star Trek. So much so that we don't stop to look at why these type design choices get made in the entertainment industry and why people are so in love with the creation

and use of these constructed scripts. The *cotdes*' whole existence is foundational in design. As the scripts themselves serve no further purpose outside of its created world and creatures. You can see it as a form of escapism by building and altering familiarities we can hold on to. So much so that we as an audience take it out of the world it was built in. If I can't physically go to this fantasy world, then bring this world to me.

3.3 COTDES ROLE IN FICTION

Cotdes' have served as powerful tools to enhance the depth, aesthetics along with emotional value that creators aim to combine in their narratives (Cheyne, 2008). In the past years, general type design has witnessed a growing emphasis on experimentation by pushing the boundaries of letter shapes for visual aesthetics (Ejlers, 2014). And scripts are a way to create familiarity in an otherwise unknown world yet create deviation from what we can read (Viewsproject, 2019). In that way pushing the boundaries of legibility and readability and testing the limits on which we as humans observe something to be a script. Fimi and Higgings (2017) mentioned in chapter 3 of

the book 'The routledge companion to imaginary worlds', by Mark J. P. Wolf, that *cotdes* are used to: "... emphasize the "otherness" of a particular race or culture in a secondary world.". By this aiding my assumption that the purpose of *cotdes* is limited by and made for human communication (Fimi & Higgings, 2017: 22).

The understanding of sound also plays a major role in our perception of shapes and colors. The most well known project around this subject is the kiki and bouba phenomenon (Cuskley et al., 2015 and Cohen-Garcia, 2016). Illustrating the connection between the auditory and visual representations of a sound, color, and the corresponding shapes, simply means the rounder shapes (structures) will have a greater connection to the rounded letterforms and softer-sounding characteristics of a given word. We can then assume that this will also be the case for the structures and theories used in developing the *cotdes*. Meaning the creator will, can choose the design of each *cotdes* accordingly to the surroundings that it is placed in. An example being: a connection between a harsh-sounding language and a warlike culture, which will not have a wavy and or bubble *cotdes*. On top of the culture and surroundings connections, the creatures who live in these cultures and environments will of course

also have a great hold on the design, as they are the ones to write the codes. The bigger the creature, the bigger the codes will be and the lesser detail will be present. Those bigger creatures like trolls, cyclops, and dragons are often connected to harsher shapes and a bigger contrast in type design. But the same goes for the opposite of big, where the small creatures, such as fairies or scorpion and ant colonies, again have smaller and more refined codes.

3.3.1 COTDES OUTSIDE OF ITS INTENDED PURPOSE

What is it that makes the idea of a constructed script attractive to the viewers and readers for constructed world stories? And how did we as an audience get motivated to use them in the first place?

An example of this is that codes get used in more small and casual ways like creating trinkets that fit the same time frame as the story the code was placed in. Also tattoos are popular among enthusiasts of these stories. Here, codes often get used as a subtle nudge to the story. In a way, taking the constructed world to the real world, bring it closer to home.

The concept of constructed worlds, languages, and scripts is very much a fan-based field of research. The creator constructs the world and everything in it, but the audience (the fans) will deep dive into these worlds and will collect all the information possible. The newly created world is filled with dragons, faeries, witches, and heroes. A world that is a better place than the one the audience currently lives in. Being able to a thrilling vantage point where the audience themselves becomes the savior of a meticulously sculpted world. A place altered to the needs and wants of its audience. Being able to visit places all from the comfort of your couch. The creators of these worlds made these worlds for the audience to experience, so it is understandable that the audience will collect a lot of information and will talk about it with each other.

This presents the outcome that the scripts used in these stories become more than just tools; they turn into vehicles that transport individuals into the worlds they adore, sparking creativity and cultivating a sense of community.

4.1 STARTING POINT OF *COTDES* RESEARCH

At first, by collecting all possible information about every *cotdes*, a main pattern showed up. These patterns were then divided into their own fitting information clusters. These clusters are selected with a view on only aesthetics and emotional value. What should be made clear is that this subdivision was made based on recurring information that came back in each of the researched *cotdes*. Limited research has yet been done on purely formal features into *cotdes*, this is often done in the context of linguistics, spelling, grammar, conjugation, etc. and not only based on purely formal manners. For this reason, these divisions have been compiled from personal observation. Thus, for this reason, linguistic aspects will not be discussed.

Cotdes can be divided into clusters of information. These clusters are environmental influences and shapes and systems. These two had their own subdivisions. The environmental influences cluster has the subdivisions; creator of the *cotdes*, the source it came from (entertainment medium), location and time of *cotdes* creation, inspiration, and world description of the story. The shapes and system division has technical, practical, and visual subdivisions.

The environmental influences help us understand the reason behind the creation. It will help us understand cultural references and inspirations. All the used *cotdes* for this research are created by Western designers and may have similar directions of output because of this reason.

Something we need to pay attention to when talking about *cotdes* and type design

terms is that because of the otherness of the script, and the placement in altered worlds, the common terms to describe type design features may be too modified to the Latin script. As this research is based on Western culture *cotdes*, it would be assumed that the terminology would be the same. Western culture has a big influence on the designed *cotdes*, yet the designs that are created within this culture can still take inspiration from different parts of the world. Here the limits of type design can be experimented with and start to look otherworldly. Therefore, some terms were rephrased to broaden the understanding of the variable all the while respecting boundaries of common type design terminology. This is why there are terms on the shown images (the data-collecting images) that are not in the text, as these are experimentations to find a common terminology for these broader design choices.

A script is recognizable by order, repetition, pattern, structure, and style (BBC, 2020). The cluster of shapes and systems focuses on those recognizable aspects of a script. In the technical subdivision, the focal point is the objective information about the *cotdes*; the number of characters, and the number of movements/strokes per character. We recognize letter shapes by the number of strokes. In the paper of Changizi and Shimojo (2005), the number of strokes was researched to look at the recognizability of the letter shapes. The number of strokes was divided to recall an estimate of 3 among all researched writing systems (Abjad, Abugida, alphabet, syllabary, and numeral) shown in the image Illustration of the method for determining character lengths.

Environmental influences	
history	
inspiration	
	inspiration taken from:
world description	

- Environmental influences chart example:
- Technical chart example.
- Practical chart example.
- Visual chart example.

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cotdes: analyzing the shapes and systems. typology	
technical	
amount of characters	
amount of movements needed to write the character	
grid used	draw here
recreatable	<div style="display: flex; justify-content: space-around; width: 100px;"> <div style="width: 15px; height: 15px; background-color: green;"></div> <div style="width: 15px; height: 15px; background-color: yellow;"></div> <div style="width: 15px; height: 15px; background-color: red;"></div> </div>

practical					
beginning and ending					
relation to phonetics (intonation)					
ascender descender					
baseline					
writing direction					
capitals					
mediums	<table border="1" style="width: 100%;"> <tr> <td>surface: not specified</td> <td>medium: not specified</td> </tr> <tr> <td colspan="2">why? (what context is given)</td> </tr> </table>	surface: not specified	medium: not specified	why? (what context is given)	
surface: not specified	medium: not specified				
why? (what context is given)					

visual (aesthetic value)	influence of medium used
slope / axis	
contrast	
looks like (compare to existing scripts)	
most frequent shape	
optical direction of characters in script	
recognizability of script	<div style="display: flex; justify-content: space-around; width: 100px;"> <div style="width: 15px; height: 15px; background-color: green;"></div> <div style="width: 15px; height: 15px; background-color: yellow;"></div> <div style="width: 15px; height: 15px; background-color: red;"></div> </div>
recognizability of characters	<div style="display: flex; justify-content: space-around; width: 100px;"> <div style="width: 15px; height: 15px; background-color: green;"></div> <div style="width: 15px; height: 15px; background-color: yellow;"></div> <div style="width: 15px; height: 15px; background-color: red;"></div> </div>
influence of medium on perception	

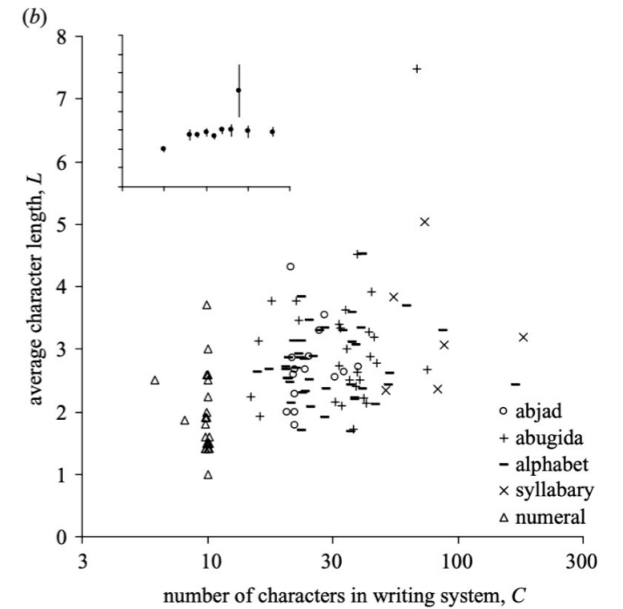
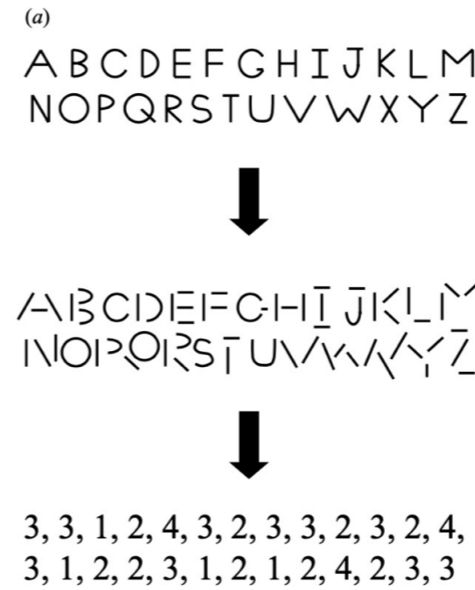


Illustration of the method for determining character lengths (Changizi & Shimojo, 2005)

An artist who also inspired me with his work is Mark van Wageningen. He approached type design with color, playing with the recognition points of the Latin alphabet. Regardless of the fonts he creates not being black-on-white letter shapes, you are able to read his created text just fine.

Mark van Wageningen is also a good example of using recognizable forms within the design framework he employs. Using the recognizable parts of the Latin script to base his shapes

and overlays on.

Typography has a system base its design on, this being placement on a paper or proportions of a shape, as Müller-Brockmann (1996) shows so perfectly in his book Grid Systems in Graphic Design. The same can be said about type design where proportion plays a big role in the consistency and thus recognizability of a script (Baines & Haslam, 2005). These proportions ensure repetition within the type design. These repetitions ensure patterns, and the patterns will give it structure which will create the script to which the



Mark van Wageningen 'Multicolor' (Van Wageningen, n.d.)

styling of the codes begins. These repetitions, patterns, structures, and styles were placed to find common ground within the use of a grid, yet this was not operational. The reason this is still included in the final thesis output is because of its significance in creating a bigger ingredient of the system's creation.

These ingredients of structure and order is the final output of a ruler that will serve as a guiding tool. This will make it possible to have the consistency of what a grid would provide to a codes without the necessity of relying on a grid system as the foundational structure. This also allows the creator of the codes to design as their hearts desire. Not every codes follows a uniform system, they may even totally differ from each other. The use of rulers can give constancy in the final output of a codes design.

The ruler itself will be explained in further detail in its own subchapter 'ruler' under 'simplifying the found information' of the paper. Mentioning the ruler in this chapter serves the purpose to explain some parameters shown in the previous examples of the codes collection and to explain how these are still relevant to the final output.

The practical subdivision is based on the information of the codes we need to pay attention to when we use the script; connected script or dis-

connected script, writing direction, and mediums used.

Lastly, the subdivision of visuals, where the emphasis lies on what we perceive of the codes. This has oftentimes to do with the design choices and the influence the mediums have on the script's display. These parameters are slope/axis, contrast, looks like X (other script or shapes), most frequent shape, recognizability, and influence of the medium on perception.

4.2 SIMPLIFYING FOUND INFORMATION

The abundance of information needs a connection of found information to establish a common thread about the codes creation process. The information as of now is still separate and thus unclear to look at and make a clear understanding of how a codes is created. While all the necessary information is available, the question remains: Where should we begin?

A codes exists only within a newly created world. A world in which beings other than humans live. The storylines of those different creatures can be translated within their own constructed script. As previously mentioned, specific forms have the capacity to enhance spoken articulations and reinforce inherent characteristics of

both the creatures and their environments. Therefore, it is important for codes design to name those factors that play an important role in assigning and constructing a language of form. Therefore, we need to start with the story and the main character or a creature that will use it. The creator will have this already taken care of when starting to design a codes. In the story, the use of the codes will also become clear. Is it going to be used to talk to the gods or as an extinct script? Will it be written by everyone in the story or a select few? What are the environmental influences; living place, transport, food sources, religion, haunting gatherers, or stationary cultures? It will give the framework of the direction of the type design. The story will be addressed in upcoming sections of the paper where this will be discussed in further detail.

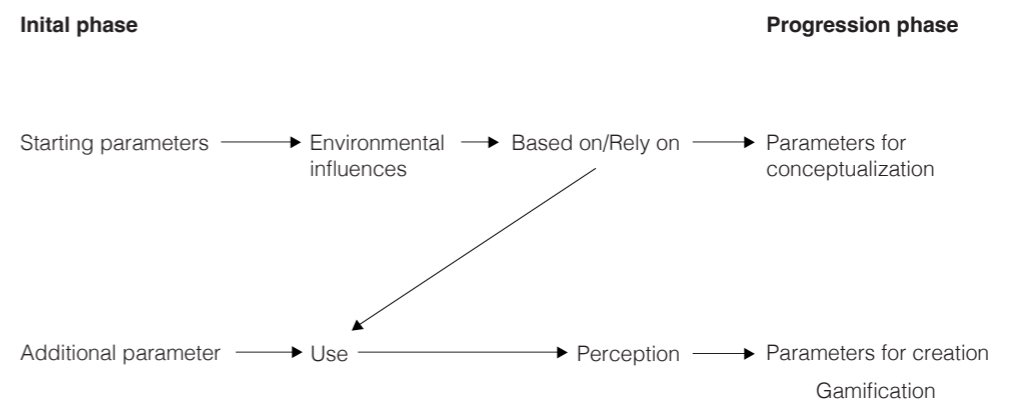
The selection of the following parameters will summarize and explain how the found information is systematically arranged in chronological order, aligned with the creation of a codes. By comprehending this arrangement, we gain valuable insights into the underlying reasons guiding the design process, allowing us to witness a step-by-step journey of its creation. This creation process will follow the following steps by means of questions that will be asked to the participant of

the system. However, we first need to understand the construction of the system before we can run through the questions that will be asked.

4.2.1 INITIAL PHASE

4.2.1.1 STARTING PARAMETERS

We will build upon the story that the creator made. This will already give contextual clues on which the creator will be inspired by this conscious or subconscious type design decision. If the world is set in the future, the medium of communication will rely more on technology than it will paper and a quilt. The opposite counts for more fantasy-based stories where the use of candles and caves is more probable. These two opposite scenes will create opposite feelings and thus will require opposite aesthetics to fit their narrative. Now begs the question, what elements of our real world —history, present, or future— are closest to that set narrative?



Environmental influences (subconscious choices)

This division stays the same as the explanation at the starting point of the *cotdes* research. The background information will form a mental picture of the final aesthetic. It gives a clear picture of which surroundings the *cotdes* will be linked to. The motivation of subconscious choices and biases from our living environments —be it education, time, period, culture, religion, and more.

Based on / rely on (conscious choices)

This will be the source of inspiration for the *cotdes* creation. It will give us answers to what languages, historical scripts, natural scripts, altered scripts, and stereotypes influenced the *cotdes*' creator at a conscious level. What did he choose to use as a foundation for the visuals?

4.2.1.2 ADDITIONAL PARAMETERS

The additional parameters will center around the technical, practical, and visual aspects of *cotdes* design. It will delve deeper into the tangible crafting of a script. By combining the technical, practical, and visual elements, these factors aim

to create a more deliberate and thought-through approach to reflecting on the 'act' of writing. This 'act' of writing will then influence the final output of the *cotdes*, the story it wants to portray, and the reasons —that were based on conceptualization.

Use

Administration, religion, love notes, weather predictions, speaking to the gods, communicating with passed loved ones, casting a spell, the list goes on. What was the reason for its use and how does this use make an impact on the type design? Well, we already went over conceptualizing the setting of the scene and the storyline but not yet the actual writing aspect of the *cotdes* process.

A real-world example of this can be the Oracle Bone used in Chinese history, used for pyromancy. Where several questions are written on a bone and through "the promise of truth from the flames of the sacrificial fire" (DBNL, 1858), an answer word is given. A fire would be started, and a "poker" would be heated. By putting this hot "poker" on the bone, the bone would crack, and the crack would display an answer (BBC, 2020). In this case, the tradition made the culture determine the mediums used for the script.

The motivation behind the creation will

determine the mediums that are chosen. In the case of this project, the mediums will already be mentioned in the generated stories that will be used, this is also free to fill in in a custom world.

Perception

We can identify a Mandarin script as being Mandarin because it has certain design indicators that make it easy to identify. These design indicators are the use of a calligraphic writing style or the use of combining straight and slightly curved lines into an ideographic character. West European's knowledge of other natural writing systems can be limited. Yet, environmental influences and basic knowledge of general history can help identify a runes script from a cuneiform script. Certain design choices are typical for a certain time frame or location in connection with the meaning and motivation of creation and what can be read out of it. The same goes for *cotdes*, where the way they look will give us an indication to their stories' intention.

4.2.2 PROGRESSION PHASE

4.2.2.1 PARAMETERS FOR CONCEPTUALIZATION

The starting parameters (environmental influences and based on/rely on) are clustered into the conceptualization of *cotdes* creation. This is because this information serves as the root of the concept on which the design thrives. Without this underlying foundation, a *cotdes* would lack the necessary pillars to support its design. This placement under the term conceptualization gives reason to the design. Its positioning under the term "conceptualization" gives logical background to the design process. Within this division, questions enhance the perception of the world where the *cotdes* will be placed in by environmental influences, and cognitive connections that our brain makes relate to earlier experiences (Norman, 2004).

4.2.2.2 PARAMETERS FOR CREATION

From additional parameters (use and perception), we can emphasize the visual aspects of *cotdes* creation, intertwined with the concep-

tualization, which ultimately shapes the creation process. This process centers around the actual act of translating *cotdes* onto paper. This step can be quite overwhelming, definitely for someone who isn't familiar with type design. Given my goal to make this project accessible to all worldbuilding enthusiasts, the system must be clear and comprehensible. It will provide a structured approach, allowing one to formulate answers that contribute to the bigger picture, thus transforming abstract ideas into shapes. By mapping out the visual aspects before writing anything down, the system paves the way for a smoother transition from conception to paper, clearing the way for the creative journey.

By implementing gamification, it will be made possible to relieve the workload of the participant. This is by connecting the dice used in Dungeons and Dragons (D&D), polydice, as parameter-bound objects.

Also, the overall gameplay of D&D was an inspiration due to the big story aspect that undeniably connects to the foundation of the *cotdes*' design. As previously discussed, there are a series of parameters that surround the *cotdes* design, more than just the creation of shapes, the shapes need, should be rooted in the environmental conditions.

A little context: Dungeons and Dragons is a board game in which a group of friends each have their own creature (character) that they have created themselves. These creatures can be human, humanoid, elves, gnomes, elementals, the list goes on (Look at the appendix for their descriptions). The players will then act out these creatures each having their own developed personality traits, way of living, characteristics, and histories. The players will be combined as a team for each adventure designed by a dungeon master (narrator). The Dungeon Master is the one who decides the storyline and where it goes, the possible other beings the team will meet, and what plots and twists await them. What is inherent with this style of gaming, is that each action or move that needs to be taken in these adventures will be decided through the rolling of dice. These are no normal six-sided dice, they can easily vary from 4 sides to as many as 100 sides. Each style dice is then referred to by the letter D (standing for die, the singular of dice) and the number of sides that dice has. For example, D6 is a dice with 6 sides and a D20 is a dice with 20 sides. But the most used dices for the D&D are: D4, D6, D8, D10, D12, D20, and the percentile dice (D100 thrown with two D10 dice from 0-9 & 00-90). The used dice in this project will be D8, D12, and D20.

4.2.3 RULER

A ruler has been created to help write the *cotdes*. It helps create consistency in your designed structures. It is a tool based on the visual features of the researched *cotdes*. Tengwar looks like a natural script and uses many curves. Aurebesh, Cirth, and Utopian use very angular shapes with occasional geometrically correct curvature. Klingon is an interesting mix of different shapes and use of contrast. Still, we can see the diagonal lines being used the most. For Golic Vulcan, it is a combination of many different swirls and curls. It uses only rounded shapes based on a vertical straight line. The Heptapods *cotdes* from the *Arrival* movie is a non-linear orthography using the circular shape to convey meaning and not sound (Chiang & Heisserer, 2016). With this, the shape itself, unlike the other *cotdes*, is more complicated. As the environmental influences behind the other *cotdes* are clearly based on a disconnected script, like Latin, the Heptapod *cotdes* is not. If we must select the most common shapes out of the *cotdes*, it would be the circles together with the perpendicular use of straight lines.

By providing the most common shapes from the researched *cotdes*, creating a skeleton or key form pre-existing letter shape. It is certain-

ly possible to sketch out your *cotdes* beforehand and use the scale afterward to give the *cotdes*, once created, a more uniform effect.

On the wavy side of the ruler, you will see that the arcs have no spotless joints. This is because these arcs which are each form half a circle approach in different gradations. The engraved lines on those joints mark the end of each arc. You will see several sharp corners on the ruler. These are made to have possible different degrees of angles at hand so that they do not change throughout the created script. These angles are determined starting from a 1 cm by 1 cm grid where I have placed different transition lines from the horizontal line to the vertical line. these transition lines are a fair subdivision of this transition from horizontal to vertical. Here you can see that there are 3 different line angles. First, each is shown as a broken-up triangle and later down the ruler, these different angled lines are connected to each other. This adds extra angle degree options to the *cotdes* creation. The reason that this triangle is interrupted is because of the same reason. There is an extra possibility to add extra angles. This is done to add vertical/horizontal lines (depending on how you have the ruler placed).

The final measurement of the ruler is 295 mm x 80 mm and 3 mm thick. The ruler itself is transparent so you can see what you've already

written and it's easier to make the right connections when you're making the notebook. Also, the orange color given to the ruler gives a higher contrast to the partial *cotdes* already on paper.

4.2.4 ONE STEP CLOSER TO THE FINAL SYSTEM

The outcome of this deconstruction of type design will give a comprehensive guide that unlocks a multitude of possibilities for *cotdes* creation. Illuminating the significance of design choices in the art of storytelling, giving it an appeal that breathes life into the intended purpose of *cotdes*. The deciphering of this understanding will allow us to attach values that elevate the very essence of *cotdes*, making its appeal bigger and making it even more captivating to its audience. With this, it will give you the opportunity to experiment with design parameters by weaving captivating narratives into your own *cotdes* design. My system gives people a new way of looking at scripts as well as bringing their attention to this concept.

The testing of the system is mentioned after the explanation of the system as the changes that were made were minor every time. Type design parameters being the starting point of the creation of my system, the typographical comments on codes deconstruction that were given were set quite early in the creation of the system. Therefore, the elimination and implementation of unneeded and needed parameters were cleared out quite fast. After this, the focus changed to my testing audience. Their feedback led me to the final system setup that will be presented here.

Having deconstructed the found information in logical divisions, the construction of the system will take place. The system takes the same order as the parameters discussed earlier, at first the conceptualization parameters will be introduced and the creation parameters will follow by means of gamification. The same way Tolkien did with the Tengwar script. Providing an extensive history to the Elves who use the script which enriches the script itself. Without the history that Tolkien gave to the Elves, the Tengwar script would not have become the script that we all know today. It can be understood that by implementing the characteristics of a group first, the changes in the script will follow. Thus collecting the conceptualization parameters first, hereby answering

the question that makes the subconscious decisions more conscious. The parameters based on creation will then build upon the conceptual foundation that has been created by providing visual features that will fit the narrative.

The formation of the storylines will play a major role in the outcome of each possible codes, yet the stories are not the focus of the research. As mentioned earlier, a codes cannot exist without stories. The stories are the basis of a codes existence. For this reason, the parameter for the storylines was generated by means of an AI, allowing the visual narrative to play its needed role but not taking any focus away from the process of creating the codes. In this way, it can be incorporated and used as just another parameter while still giving you the guidelines for simulating a balance between a sense of creative freedom and that of a helpful framework. The storylines provide structure without hindering your imagination, allowing you to create a codes that can aesthetically fit. These narrative base elements serve in providing each script with a more diverse environment to immerse the codes in.

Three worlds were chosen with each their own storylines, as well as a custom world to fill in freely for people already indulged in the world of fantasy and make-believe. These stories will be discussed more thoroughly in the next chapter.

5.1 CONCEPTUALIZATION BEFORE THE COTDES CREATION

Out of the conceptualization, we can say that the stereotypes (default knowledge) of the most well-known cotdes that exist are universally understandable (Koch, 2012) within the Western world.

This can be seen and further elaborate on through Tolkien's Tengwar script as the audience will associate it with 'times long gone' through our own histories. A time without technology, the use of armor, swords, light by candles, and torches, and the existence of creatures out of folklore and legend, an age of dragons. Or to a time when we would travel through the stars like the oceans of our past and communicate with other beings that live outside of our known human universe. The writers have tried their best to design something of another world, something we as humankind would not recognize but in the end, we see human-like features and scripts based on Western structures in this paper's selected cotdes.

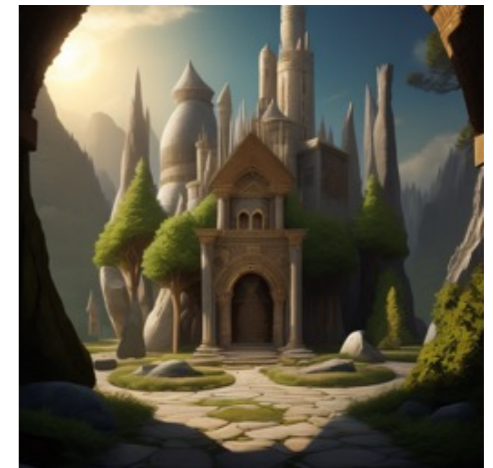
The view of everything around us is shown in the cotdes. For this, the conceptualization parameters are important to deal with first. If

the audience knows the who, what, where, why, and how of a cotdes environment, the audience will make links within their past experiences, memories, feelings, and stereotypes to become the final noted parameters to their cotdes (Norman, 2004).

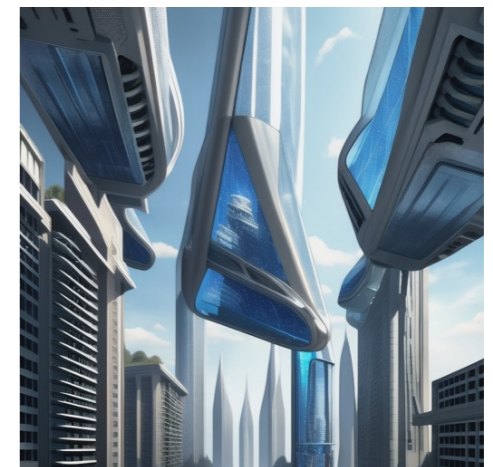
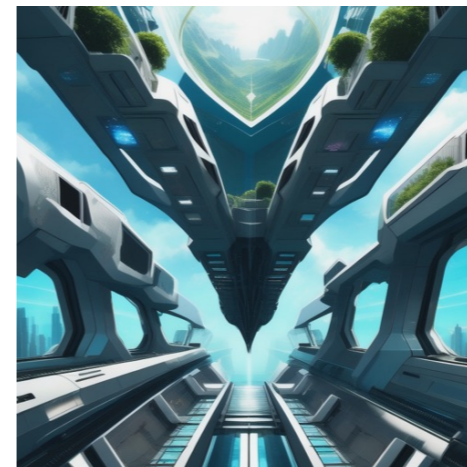
All the acquired background information will play a major role in the conceptualization of each cotdes and will assist in forming an overall mental picture of what could be the final aesthetic of the cotdes. Providing a clearer image of which surroundings the cotdes' will be linked in a larger storyline.

The stories on which the type design is based on will be integrated into my work with its own approach. The stories always carry the same common thread. AI is known for using existing information on the Internet (Gurung, 2023). It will combine common features of storylines to make it its own. This way incorporates the common knowledge that is already out there in the world to newly constructed worlds the cotdes can exist in. When asked ChatGPT itself about 'What is artificial intelligence?' and 'Where do you get your sources from?', this is the answer it gave me: "As for sources, I have been trained on a mixture of licensed data, data created by human trainers, and publicly available data. I do not have direct access

to my training data or know where it came from. In order to provide me with a diverse range of language patterns and concepts, however, OpenAI used a variety of sources, including books, websites, and other texts, to train me. My knowledge is based on the data used to train me and my ability to generate language-based responses." (ChatGPT, n.d.-b)



Images of Zalanthea generated by Hotpot AI generator (Hotpot.ai, n.d.), using AI-generated world descriptions by ChatGPT (ChatGPT, n.d.).



Images of Cynosure generated by Hotpot AI generator (Hotpot.ai, n.d.), using AI-generated world descriptions by ChatGPT (ChatGPT, n.d.).



Images of Arcadia generated by Hotpot AI generator (Hotpot.ai, n.d.), using AI-generated world descriptions by ChatGPT (ChatGPT, n.d.).

To create each world, AI was asked questions regarding the creation of new storylines. The first question was: 'Can you make me X different world descriptions of both fantasy and science-fiction? These fantasy and science fiction worlds can be divided, combined, or combined with multiple storylines. The one thing they need to have in common is a writing system, mediums that are used for these writing systems can vary. This writing system can belong to one group of creatures, or it can be universal, you may decide.' By this question, the general direction of the world was required without pushing too much detail on the participant. This way the participant can process this information and is still able to envision their own version of this world. This gives the opportunity for the world to be interpreted in many ways in which the then script can vary in the design outcome. Who is going to write it, on what material, and with which purpose? These questions were answered in the results.

The second question was: Can you give me a short but detailed world description for X, Y, and Z? More specifically, descriptions of the buildings (materials and placing), transport, and mood? The same counts here too, again an open enough question for a targeted answer which is still open to interpretation. For example, if the text says; 'The brick towers grew over the bushy forest surrounding it', the participant can still create

the general look and "feeling" (idea) of the tower, without limiting it to shapes or style, unless this is needed in terms of the story of course.

The third question: 'Can you give me a description of what the creatures in this world look like?' Here the different creatures get described so the participants, who are not as well versed in the possible creatures and their names, are able to understand the very basic physical attributes and possible powers, abilities, and so on.

The structure of each new world description is the same as the questions asked. First, The name of the world. These are also named by means of AI. After that, it will give you a general description of the world, its creatures, and beings, its architecture, transport, and mood. You can see this as a short introduction. Then you get the creatures that live in this world together with their descriptions. Here you also get the option to choose one of these given creatures to start the system from.

Custom worlds

This sheet of paper is left empty but with the same text as the AI stories. World description (including the name of the world) and creature description, together with small directions in the brackets.

(Custom world fill-in sheet. Kayra Rommen 2023)

Zalanthea (AI generated)

In this world, magic and technology co-exist in perfect harmony. The inhabitants of Zalanthea have developed a unique writing system that uses both magic and science to create complex symbols that can be read and interpreted by both humans and other sentient beings. The symbols are etched onto special crystals used for communication, education, and entertainment.

Zalanthea is a world of magic and mystery, where towering spires of polished stone rise from lush, enchanted forests. The wizarding academy is the heart of Zalanthean culture, a sprawling complex of ornate buildings and winding, cobblestone paths that wind through fragrant gardens and hidden grottoes. The buildings are crafted from a combination of shimmering quartz and enchanted wood and are adorned with intricate carvings and glowing runes. The wizards and witches of Zalanthea travel by broomstick or enchanted carriage, and the air is alive with the hum of magical energy. The mood of Zalanthea is one of wonder and curiosity, as the inhabitants of this world are constantly seeking to unlock the secrets of the universe.

(Zalanthea fill-in sheet. Kayra Rommen 2023)

Cynosure (AI generated)

A planet that orbits around a binary star system, Cynosure is home to a diverse range of species that have developed their own writing systems over time. Some use glyphs and symbols, while others communicate telepathically. For species that employ glyphs and symbols, an assortment of materials becomes the canvas upon which their written language takes form. Elaborate scrolls made of aged parchment, embellished with vibrant pigments extracted from native flora, carry the meticulously crafted glyphs of ancient wisdom. The most advanced species on Cynosure, however, have developed a neural interface that allows them to directly communicate with each other through their minds.

Cynosure is a world of technology and innovation, where gleaming skyscrapers of steel and glass rise from the bustling streets below. The research labs and factories are the beating heart of Cynosurean culture, a labyrinthine network of interconnected buildings and monorail systems that stretch across the horizon. The buildings are crafted from a combination of reinforced steel and shimmering, energy-absorbing glass, and are adorned with cutting-edge holographic displays and interactive interfaces. The citizens of Cynosure travel by hovercar or maglev train, and the air is alive with the hum of advanced machinery.

(Cynosure fill-in sheet. Kayra Rommen 2023)

Arcadia (AI generated)

This world is a magical realm filled with mythical creatures and supernatural beings. The residents of Arcadia communicate through a system of intricate glyphs, reminiscent of ancient runes, which are no longer etched into ruins but rather imprinted onto a new medium that harmonizes with the magical essence of the realm. The glyphs are imbued with magic and allow the inhabitants of Arcadia to cast spells, communicate with each other over long distances, and even summon mythical creatures.

The buildings in Arcadia range from grand castles and fortresses made of stone and marble to cozy cottages and homes made of wood and thatch. Many of the buildings incorporate magical elements, such as enchanted doorways and windows that can only be opened with a specific spell. The primary mode of transportation in Arcadia is through magical means, such as flying on the backs of dragons or using teleportation spells. However, some creatures still use traditional methods such as horses and carts to get around. The mood of Arcadia is one of wonder and adventure, as characters explore the magical world and uncover hidden mysteries and ancient prophecies.

(Arcadia fill-in sheet. Kayra Rommen 2023)

Cotdes Master project 2022 - 2023

CREATE THE NARRATIVE, START TO BUILD YOUR WORLD.

WORLD DESCRIPTION

(NAME WORLD)

(DESCRIPTION OF THE WORLD)

Two columns of horizontal dotted lines for world description.

CREATURES OF THIS WORLD

(GENERAL CREATURES DESCRIPTION)

(CHOSEN CREATURES DESCRIPTION)

Two columns of horizontal dotted lines for creature descriptions.

International Master Reading Type and Typography

Custom world fill-in sheet. Kayra Rommen 2023

Cotdes Master project 2022 - 2023

CREATE THE NARRATIVE, START TO BUILD YOUR WORLD.

WORLD DESCRIPTION

ZALANTHEA

In this world, magic and technology coexist in perfect harmony. The inhabitants of Zalanthea have developed a unique writing system that uses both magic and science to create complex symbols that can be read and interpreted by both humans and other sentient beings. The symbols are etched onto special crystals used for communication, education, and entertainment.

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CREATURES OF THIS WORLD

The inhabitants of Zalanthea are a diverse group of creatures, ranging from humans with magical abilities to sentient beings made entirely of energy. Some of the most common creatures on Zalanthea include:

- ELVES: Tall and slender, with pointed ears and long hair that shimmers with magic.
GNOMES: Small and stout, with bushy eyebrows and beards. They are skilled in engineering and technology.
NAGA: Serpentine beings with the upper body of a humanoid and the lower body of a snake. They are powerful mages and skilled in martial arts.
ELEMENTALS: Creatures made entirely of one of the four classical elements (earth, air, fire, water) and can take on a humanoid form. They are masters of their respective elements and can manipulate them to their will.

International Master Reading Type and Typography

Zalanthea fill-in sheet. Kayra Rommen 2023

Cotdes _____ Master project 2022 - 2023

**CREATE THE NARRATIVE,
START TO BUILD YOUR WORLD.****WORLD DESCRIPTION****CYNOSURE**

A planet that orbits around a binary star system, Cynosure is home to a diverse range of species that have developed their own writing systems over time. Some use glyphs and symbols, while others communicate telepathically. For species that employ glyphs and symbols, an assortment of materials becomes the canvas upon which their written language takes form. Elaborate scrolls made of aged parchment, embellished with vibrant pigments extracted from native flora, carry the meticulously crafted glyphs of ancient wisdom. The most advanced species on Cynosure, however, have developed a neural interface that allows them to directly communicate with each other through their minds.

Cynosure is a world of technology and innovation, where gleaming skyscrapers of steel and glass rise up from the bustling streets below. The research labs and factories are the beating heart of Cynosurean culture, a labyrinthine network of interconnected buildings and monorail systems that stretch across the horizon. The buildings are crafted from a combination of reinforced steel and shimmering, energy-absorbing glass, and are adorned with cutting-edge holographic displays and interactive interfaces. The citizens of Cynosure travel by hovercar or maglev train, and the air is alive with the hum of advanced machinery. The mood of Cynosure is one of progress and ambition, as the inhab

CREATURES OF THIS WORLD

The creatures of Cynosure come in all shapes and sizes, some of which are completely alien in appearance. Here are a few examples:

- **DRAKONS**
Dragon-like creatures that come in a variety of colors and sizes. They are intelligent and fiercely territorial.
- **TARK**
An insectoid species with chitinous exoskeletons and multiple limbs. They are known for their engineering and architectural skills.
- **AVIANS**
Winged beings with feathers and talons. They are skilled in aerial combat and communication.
- **MOKRA**
A gelatinous species that can change shape and color at will. They are excellent spies and infiltrators.

International Master _____ Reading Type and Typography

Cynosure fill-in sheet. Kayra Rommen 2023

Cotdes _____ Master project 2022 - 2023

**CREATE THE NARRATIVE,
START TO BUILD YOUR WORLD.****WORLD DESCRIPTION****ARCADIA**

This world is a magical realm filled with mythical creatures and supernatural beings. The residents of Arcadia communicate through a system of intricate glyphs, reminiscent of ancient runes, which are no longer etched into ruins but rather imprinted onto a new medium that harmonizes with the magical essence of the realm. The glyphs are imbued with magic and allow the inhabitants of Arcadia to cast spells, communicate with each other over long distances, and even summon mythical creatures.

The buildings in Arcadia range from grand castles and fortresses made of stone and marble to cozy cottages and homes made of wood and thatch. Many of the buildings incorporate magical elements, such as enchanted doorways and

windows that can only be opened with a specific spell. The primary mode of transportation in Arcadia is through magical means, such as flying on the backs of dragons or using teleportation spells. However, some creatures still use traditional methods such as horses and carts to get around. The mood of Arcadia is one of wonder and adventure, as characters explore the magical world and uncover hidden mysteries and ancient prophecies.

CREATURES OF THIS WORLD

The creatures of Arcadia are magical and mystical, often resembling creatures from mythology and folklore. Some of the most common creatures on Arcadia include:

- **DRAKONS**
Large and powerful, with scales and wings. They are revered as the guardians of the magical realm.
- **UNICORNS**
Elegant and graceful, with a single horn on their forehead. They are symbols of purity and goodness.
- **CENTAURS**
Humanoid creatures with the lower body of a horse. They are skilled in archery and horsemanship.
- **NYMPHS**
Ethereal beings that embody the natural elements of the world, such as water, forests, or mountains.

International Master _____ Reading Type and Typography

Arcadia fill-in sheet. Kayra Rommen 2023

5.1.1 CONCEPTUALISATION PARAMETERS EXPLANATION

After having looked at the stories, and having chosen one of the four, the conceptualization parameters will be filled in by the participant going through the system. Here the first question is (1.) 'Choose the world you want to start from', referring to the custom or AI-generated worlds I have presented earlier. Once chosen, this world needs to have a 'main character' who is going to write the script ((2.) 'Choose creature from your world'). As you need a main character in the story to write the *cotdes*, the generated world has a pre-set number of creatures from which the participant can choose. The idea of using creatures is inspired by the concept of Dungeons and Dragons as here participants of that gameplay by means of supernatural beings. In the custom world, that the participant has filled in themselves, they also get to choose the creature freely as well.

Choosing the world and creature parameters provides a basis for further building the new *cotdes*. The world and the creature now form a foundation on which to build the rest of the script. On this foundation, the participant will use the following questions to form a 'mental picture'

around the culture, personality, and environmental influences, and shape the connection between this world and creature. (3.) 'How do you see the personality of the culture of the chosen creature?', (4.) 'Write down writing materials, or the *cotdes* description, of the world'. This makes it so the participant thinks more about the background information of everything and thus the background information of the *cotdes* creation.

The following questions within the conceptualization part of the system are more so focused on the direct connection between the *cotdes* and the visual choices we make about the design. Here the questions will be asked about specific inspiration sources and visuals that come to mind when we try to conceptualize our *cotdes*. These inspiration sources refer to scripts we may associate with the earlier questions, like the connected personality. Warlike personality traits of a creature will feature other shapes than traits of elegance will (also referring to the *kiki* and *bouba* experiments (Cuskley et al., 2015 and Cohen-Garcia, 2016)). These questions are; (5.) 'What shapes do you connect to the story, creature, and writing materials?', (6.) What does the connected language sound like?', (7.) 'Environmental influences; which thing in your environment inspires you?', (8.) 'Which shapes will occur most often in your *cotdes*?'

5.2 GAMIFICATION OF COTDES CREATION

After having dealt with the conceptualization of the *cotdes*, we can move forward into the gamification aspect of this project. As mentioned before, Dungeons and Dragons (D&D) was a big inspiration for the gamification aspect of the system. Using the dice will give control of the *cotdes* creation, but also limitations. The system can be used without the use of the dice. The questions that will be asked here can also be answered by choice, yet for most participants – as will show in the testing of the system, the creation of a whole new script on a visual level is too overwhelming. The questions may guide them through the process, the dice will make this a lot easier and will make sure there is consistency.

After having created an overall picture of the world, its storyline, and creatures (characters), the actual design aspect of the *cotdes* can now come into play, in this case, literally.

5.2.1 GAMIFICATION PARAMETERS EXPLANATION

There will be 3 different kinds of die, the D8, D12, and D20. Each of the needed dies are mentioned with its corresponding parameter and its coinciding design restrictions that can be formed from it. These findings came with a common thread of design aspects that each of the existing *cotdes* had. Each die assigned to the parameter decides which parameter to choose. The designed aspects are then turned into design features, letting the participant roll the designated die to create a new and unique *cotdes*, that is aesthetically the right fit for your storyline.

These gamification parameters are all about the writing aspect of *cotdes* creation. The moment when we focus on what the participant will write down on paper. These parameters will be: (9.) 'Number of characters in the script' 2 x D20, (10.) 'Number of strokes per character' 2 x D8, (11.) 'Connected or disconnected script' 1 x D8, (12.) 'Optical writing direction in the character' 2 x D8, (13.) 'Writing direction of *cotdes*' 1 x D12, (14.) 'Extended stroke parallel to baseline' 1 x D8, (15.) 'decorative elements' 1 x D8. Here we are going to go through them all one by one.

ABOUT THIS PROJECT

This typographic work is about constructed scripts based on fictional stories. Here referred to as *cotdes* (COnstructed, Type DEsign, Script).

This master project focuses on creatively developing a generative system to build constructed scripts based on fictional stories. This generative system was conceived starting from the analysis of design parameters from the existing *cotdes* and was designed by applying the process of gamification to the construction of the scripts. On top of this, narrative elements are created for the atmospherical values of the newly created *cotdes*.

The parameters that are mentioned in this system are parameters that have been found in the research of existing *cotdes*. Starting with Tengwar and following with Klingon, Utopian, among others. These parameters start with creating a bigger conceptual context around the world that the *cotdes* will be placed in, as well as the creatures that exist in this world.

After these more contextual parameters, the gamification aspect of the system comes into play. These common thread design aspects are turned into the gamification feature by letting the creator, you, roll the designated dice.

The outcome of this typographic research project is a comprehensive guide that unlocks a multitude of possibilities for *cotdes* creation. It will give you the opportunity to experiment with design parameters by weaving captivating narratives into your own *cotdes* design.

CONCEPTUALISATION BEFORE COTDES CREATION.

- Choose the world you want to start from.
- Choose creature from your world.
- How do you see the personality of the culture of the chosen creature?
choose 3
 - loyal
 - generous
 - kind
 - evil
 - warlike
 - graceful
 - advanced
 - elegant
 - brave
 - intelligent
 - selfless
 - selfish
 - treacherous
 - misleading
 - dishonest
 - honest
 - snarky
 - fickle
 - mischievous
 - other
- Write down writing material, or the *cotdes* description, of the world.
- What shapes do you connect to the story, creature, and writing materials?
choose 2
 - round
 - straight
 - sharp
 - organic
 - wavy
 - structured
- What does the connected language sound like?
choose 2
 - high-pitch
 - low-pitch
 - sharp
 - soft
 - loud
 - light
 - long
 - short
 - other
- Environmental influences; which things in your environment inspire you?
examples / own choice shapes, colors, patterns etc.
 - timeline
 - location
 - culture
 - art
 - movies or tv shows
 - existing scripts
 - other
- Which shapes will occur most often in your *cotdes*?
 - rectangles
 - squares
 - triangles
 - circles
 - ovals
 - diamonds
 - other

GAMIFICATION OF COTDES CREATION.

The used dice in this process:
D8 D12 D20

- Number of characters in the script. +
- Number of strokes per character.
range from X to X. &
for example: 'A' = A = 3
- Connected script or disconnected script. even = yes
uneven = no
- Optical writing direction in the character.
Roll twice for two different directions.
1-2 3-4 5-6 7-8 &
- Writing direction of the *cotdes*.
1 2 3 4
5 6 7 8 9 10 11 12
- Extended strokes of *cotdes* parallel to baseline.
Ascender - descender
1-2 3-4 5-6 7-8
- Decorative elements even = yes
uneven = no

*Cotdes system poster, Kayra Rommen 2023
Also included as a mini poster in the back of this thesis.*

Parameter 9. (2 x D20) / number of characters
here a D20 is rolled twice. The numbers thrown with the dice are added together to become the final number of characters. This parameter is based on that estimate of 12 to 40 characters per script, yet lower numbers are also possible within a script. Here, smart use of decorative elements can help you out.

Parameter 10. (2 x D8) / number of strokes
The number of strokes per character was a parameter that was complex for people who weren't into type design. That is also the main motivator as to why I show an example here. Even though this parameter was more difficult for some participants, I wanted to keep it in the system as it is an important aspect of type design. Every script, natural or constructed, has a system in which the number of movements per character -the number of strokes – shows a big importance in the recognizability of a script as well as the meaning that the characters carry as mentioned earlier by Changiz and Shimojo (2005).

Parameter 11. (1 x D8) / connected or disconnected script
On this note, building on the number of strokes is connected or disconnected script. This is based on a separate character writing system or a writing system in which the characters are connect-

ed. Some examples are the Latin script and the Hebrew script as a disconnected script and the Arabic script as a connected script.

Parameter 12. (2 x D8) / Optical writing direction in the character

This is based on the direction of the lines in a separate character. For example, an 'X' has two diagonal lines in two different directions that cross each other in the middle. An 'A' has two diagonal lines in two different directions that meet on top with a horizontal line in the middle connecting the two diagonal lines. And an 'O' is just a circle. The alphabet is, as we have seen in the division of the number of strokes, mostly consisting of horizontal, vertical, diagonal, and curved lines. nbvcAs goes for other natural scripts that have common shapes that come back in a set number of characters. Take, for instance, Cuneiform, which is crafted using a tool that leaves impressions on clay. This gives a consistent recurring form – an elongated pyramid, mirroring the shape of the stencil that is used. Here, the combinations consist of vertical, horizontal, and diagonal lines of different lengths. This also refers to parameters 5 and 8 where the use of shapes has been discussed to not only describe the general "feeling" of the *cotdes* but also constancy in the *cotdes*. As a script is made recognizable with order, repetition, patterns, structure, and style. So, if a *cot-*

des consists of different shapes and directions for every character, the cotdes would no longer be recognizable as a script.

Parameter 13. (1 x D12) / Writing direction of the cotdes

The writing direction conveys both the arrangement of characters on the page and the way they are read. This can be from left to right like the Latin script or from right to left like the Arabic script. But also, other writing directions are possible. This is also often taken advantage of when creating a cotdes. Because of the purpose of a cotdes, to make it feel otherworldly, recognition points like writing direction will be experimented with. As mentioned above, I created 12 different possibilities, each direction is connected to a number on the D12 dice. (no. 1) Spiral counterclockwise outwards, (no. 2) spiral counterclockwise inwards, (no. 3) spiral clockwise inwards, (no. 4) spiral clockwise outwards, (no. 5) left to right, (no. 6) diagonally right down, (no. 7) downwards, (no. 8) diagonally left down, (no. 9) right to left, (no. 10) diagonally left up, (no. 11) upwards, (no. 12) diagonally right up.

Parameter 14. (1 x D8) / Extended strokes of cotdes parallel to the baseline.

This parameter refers to the ascenders and descenders in the type design. Because of the

term's Latin-based origin and the participant's possible limited knowledge about type design, the term was rephrased to 'Extended strokes of cotdes parallel to the baseline'.

A D8 is thrown here with 2 following numbers referring to one possibility. 1 And 2 will refer to the letter within the x-height, meaning, no ascender or descender is used throughout the whole newly created cotdes by the participant. 3 And 4 will refer to only the use of ascenders, 5 and 6 will refer to only the use of descenders and 7 and 8 will refer to the use of both ascenders and descenders.

Parameter 15. (1 x D8) / Decorative elements

The inclusion of decorative elements is not an obligatory aspect of type design; thus, this parameter serves as the determiner of their use in the cotdes. The reason for leaving this as a part of the system is because of the use of diacritics in both natural and constructed scripts. This is only used when a script is based on phonetics. A script based on meaning will not use this. As this system concentrates purely on the visual composition of cotdes, distinct from linguistic considerations, and acknowledging that linguistics might not exert a significant influence on cotdes design, the addition of diacritics can contribute to its aesthetic appeal. Hence, it finds its place in the system, positioned as the final parameter, encapsulating its supplementary role.

6.1 SYSTEMS' TESTING DEVELOPMENTS

Collectively, my system underwent evaluation by 17 participants, from which the results of 9 of these individuals' works were put in the proof-of-concept result. The other not selected works are no longer the correct representation of the parameters of the final system as they were made throughout the creation of the system and not at the end. Meaning that the system has changed direction using questions, structure, and thus outcome of the results to which the results were no longer corresponding to the final system.

The testing participants vary from type designers to fantasy lovers as well as people who have nothing to do with either of them. By doing this, it provided me with a good foundation of feedback on which I could collect honest and fruitful opinions.

For the people who had no interest in either world-building or type design had the most trouble making codes. The system was easy to follow for them but only needed some more explanation on some fields. For instance, imagining a creature was not something that was easy for them, together with connecting personality traits to that creature. Yet the connection to the sound of a language this creature might speak (param-

eter 6) was easier done. For the gamification, things like the number of strokes (parameter 10), optical writing direction in the character (parameter 12), and extended strokes (parameter 14) were the ones the participants asked for further explanation. Decorative elements (parameter 15) were a parameter in which they didn't know what to do. This was most likely because of the open interpretation of the parameter.

The type design participants provided me with more parameters that they found were missing. Not all of those are included in the final product or the parameters were merged. These parameters included connected and disconnected scripts and help phrasing the ascender and descender parameters. Their candid and open feedback and viewpoints were immensely valuable, improving the system's chronological logic, and thereby ensuring its coherence and accessibility.

The individuals with an interest in fantasy, science-fiction, and general worldbuilding will be referred to as "world-building participants" in the testing explanation. For the most part, they were the final group to test the system, this being a deliberate decision. As an enthusiast of fantasy myself, I carried my own sense of direction and

was fortunate to be surrounded by people who share my passion. The overarching purpose of this project was to establish a system accessible to anyone keen on crafting codes, there was a need for diverse viewpoints. Yet, leaving the world-building participants as the last ones to test the system was to ensure that it made sense for them on a step-by-step order. As they are unfamiliar with type design they would not be able to provide me with typographical knowledge. Throughout the codes creation journey, the input of select world-building participants helped me with what they found was missing, and the final participants ensured it. As they are my target audience, they needed to understand it and needed to find it useful.

Although the overall concept of giving your creature a backstory and having a living place or origin place of the creature is something that every person within the D&D world has, questions on the characterization of the world and creatures and implementing these in type design were oftentimes admired as something they wouldn't have thought of. This was something that felt very natural to them to stick to a fixed font format without too much thought involved.

6.2 THE PROCESS OF THE GENERATED WORLDS

The AI-generated stories used in this system were received well. At the start of this story parameter, there were multiple AI-generated stories than the ones presented in the final output. This was done to give the participants enough opportunities to build their worlds. At the beginning of making this codes system, the intention was that the participants did not know which world they would choose. They would pick up a card in front of them with a description of the world on it. Over time this was narrowed down to three AI-generated worlds and one custom world. The goal of this research is to be able to prove my system and this can also be done with 3 examples. The stories would otherwise become too large a part of the research, and ultimately overpower the system.

The three AI-generated worlds represent different degrees of the generated worlds: a high-fantasy world, a science-fiction world, and a world that fits in between the high-fantasy and science-fiction descriptions.

The custom world option was created due to the feedback from the world-building participants who wanted to continue working from

their own created worlds. This has been listened to and therefore also applied.

6.3 GENERAL REFLECTION ON THE SYSTEM

The project so far has also been greeted with enthusiasm and interest, with comments ranging from "I had never thought about this before" and "This makes creating a script easier". Although some did comment that the dice were at times restrictive. As this comment came from Dungeon Masters themselves who loved the concept but still wanted freedom when it comes to the actual script design parameters. But other than that, for individuals outside the focus group of this project, the system was received well.

Out of the testing of my system has been found that the approach to this concept is something quite new, and thus at first contact, quite overwhelming. Once the participants were at the gamification parameters, where the decisions were made for them utilizing the dice, they started to envision their codes already. They have told me that at the gamification point in the system, they started to understand the concept

more and more. Some feedback I've gotten: "The limitations through the dice would make it challenging but also makes sure it is consistent.", "it takes me more time to think about what I'm going to write down", and "This would be useful to plan my next campaign (Dungeons and Dragons gathering)".

With the feedback that I have gotten, the research has come to a good point in which it can evolve beyond this master's project. There have been questions asked if I could share the system after my research was over. After the master, I will look for different options for this in which all aspects of the system are represented in their value. So far, the use of an online platform seems the best choice as this way makes the sharing process easier and ensures that it ends up with the right people.

This project will be shared with the world and reach the target group for which it was created. I want participants to experiment and have fun creating codes in a way that helps them do so on the visual level. As for that is oftentimes the most difficult choice to make.

A possible growth of this system is possible as a way of reflecting on natural scripts, past or present, to fill in the holes in this system (as it is a work in progress) and to do a thorough and

understanding reflection within features of these pre-existing natural scripts. I see the future of this project to better understand our writing systems as well as the writing systems we have created for entertainment and possibly unlock new pathways to understand scripts in general.

The result of this project is limited in its output as it is still able to grow. More time and more reviews will be able to finetune this project in a way that it can become accessible to everyone in the world, without the focus solely relying on Western culture.

Over time this project will grow into an archive with the results of the participants. It gives a nice representation of the different approaches to the same stories. The archive will collect the results of everyone who has participated. This data will be collected and is able to be researched again.

Cotdes is an overlooked subject within the professional type design field yet plays a big role in conveying important narrative values. A well-made cotdes can give a constructed world an almost living soul. There are common features in cotdes that can explain a story solely by design. The way Tolkien was able to represent the Elves in his created world Middle Earth was remarkable. By implementing aesthetics as well as intricate details he was able to show us who the Elves were without having to explain everything by words.

However, crafting a cotdes from the ground up based solely on visual elements presents a big challenge. While fantasy enthusiasts appreciate the incorporation of cotdes in narratives, they often lack familiarity with the intricacies of type design. Offering them a dependable system for creating their own cotdes addresses this gap and empowers them to participate in a deeper design process.

This system, relying on the Tengwar script of Tolkien, has given fruitful information on guidance in cotdes creation. It made the concept more accessible in a coherent way. By following a logical order in the step-by-step construction, participants will be more likely to adapt to this knowledge on a conscious level. This is because of the highlighted aspects of subconscious choices and exploration of design possibilities that the participants wouldn't have thought of otherwise.

Through this research, cotdes have shown itself as more than mere design elements. They make a bridge between the realms of imagination and reality, enhancing both fictional narratives and the appreciation of type design. This research has not only contributed to a deeper understanding of their impact but has also opened the door to a reinterpretation of natural writing systems. Cotdes will keep serving as proof of human captivation over otherworldly elements within the limits of their own imagination.

8.1 DATA COLLECTING SCHEMES.

Tolkien: Tengwar (Elvish)		
Environmental influences		
J.R.R. Tolkien		
England		
history	English	
	1954	
	the post-World War II boom, the dawn of the Cold War and the civil rights movement in the United States.	
inspiration	Based his script on already existing writing systems.	
	inspiration taken from:	
	languages: welsh	
	scripts: Arabic	
world description		
In a place called Middle earth, a Hobbit is given an evil ring that must be broken. The journey through the world of middle earth to destroy this ring. This breaks the Hobbit, as the ring thrives on fear, hate and distrust, but with the power of comradery and faith, the hobbit is able to cast the ring into the fire in which it was made.		
phonetic, not based on existing writing system		
communication (in story / ennalis)		
sender (encoding)	the Elves	order
receiver (decoding)	The reader	▼
channel (how) = medium	/	repetition
noise	/	▼
feedback	/	pattern
time	arbitrary due to medium	▼
space	/	structure
use	writing	▼
		style
codex: analyzing the shapes and systems.		typology
technical		
amount of characters		34
amount of movements needed to write the character		±4 / 5
grid used	draw here	
recreatable		
practical		
beginning and ending	arbitrair	
relation to phonetics (intonation)	/	
ascender descender	present	
baseline	horizontal	
writing direction	►	
capitals	yes	
mediums	surface: flat surface	medium: brush (broad nip pen)
	why? (what context is given)	
	connection to the stereotype that is connected to the brush writing system. To to represent elegance and grace.	
visual (aesthetic value) influence of medium used		
slope / axis	vertical	
contrast	transition contrast (brush nip pen)	
looks like (compare to existing scripts)	Hebrew, arabic / persian	
most frequent shape	curves and straight lines	
optical direction of characters in script	vertical	
recognizability of script		
recognizability of characters		
influence of medium on perception		
Communication --> convention --> purpose		
Communication		
sender / user	Elves and who can read the script	
use	Elves are elegant beings,	
channel	yet to go into	
noice	yet to go into	
time	arbitrair	
usability		
re-creatable		

Star Trek: Klingon		
Environmental influences		
Marc Okrand		
American		
history	English	
	1984	
	Assassination of Indira Gandhi	
	recorded the song "Do They Know It's Christmas"	
inspiration	Based his script on already existing writing systems.	
	inspiration taken from:	
	Tibetan	
world description		
the crew of the starship USS Enterprise, whose five-year mission is to explore space and, as stated in the title sequence		
phonetic, (abugida) based on alphabet		
communication (in story / ennalis)		
sender (encoding)	Klingons	order
receiver (decoding)	receiver of message	▼
channel (how)	arbitrair	repetition
noise	/	▼
feedback (emot. Connect.)	/	pattern
time	directly after sending	▼
space	in sapace	structure
use	direct communication	▼
		style
codex: analyzing the shapes and systems.		typology
technical		
amount of characters		26
amount of movements needed to write the character		±4
grid used	draw here	
recreatable		
practical		
beginning and ending	arbitrair	
relation to phonetics (intonation)	no punctuation marks	
ascender descender	not in those terms	
baseline	horizontal	
writing direction	/	
capitals	/	
mediums	surface: flat surface	medium: not disclosed
	why? (what context is given)	
visual (aesthetic value) influence of medium used		
slope / axis	depending on medium: calligraphic	
contrast	Expansion contrast (brush nip pen)	
looks like (compare to existing scripts)	Tibetan, Hebrew	
most frequent shape	curved lines	
optical direction of characters in script	vertical	
recognizability of script		
recognizability of characters		
influence of medium on perception		

Tolkien: Cirth	
Environmental influences	
J.R.R. Tolkien	
England	
history	English
	1954
	the post-World War II boom, the dawn of the Cold War and the civil rights movement in the United States.
inspiration	Based his script on already existing writing systems.
	inspiration taken from:
	languages: welsh
	scripts: Futhark runes, nordic runes
world description	
In a place called Middle earth, a Hobbit is given an evil ring that must be broken. The journey through the world of middle earth to destroy this ring. This breaks the Hobbit, as the ring thrives on fear, hate and distrust, but with the power of comradery and faith, the hobbit is able to cast the ring into the fire in which it was made.	
phonetic, not based on existing writing system	
communication (in story / ennal)	main guidelines
sender (encoding)	Dwarves (Khuzdul)
receiver (decoding)	The reader
channel (how) = medium	repetition
noise	▼
feedback	▼
time	arbitrary due to medium
space	▼
use	writing
	style
codex: analyzing the shapes and systems. typology	
technical	
amount of characters	60
amount of movements needed to write the character	±3
grid used	draw here
recreatable	
practical	
beginning and ending	nothing specific
relation to phonetics (intonation)	no punctuation marks
ascender descender	no
baseline	horizontal
writing direction	▶
capitals	no
mediums	surface: stone medium: chisel
	why? (what context is given)
visual (aesthetic value) influence of medium used	
slope / axis	no
contrast	minimal to no contrast
looks like (compare to existing scripts)	scripts: Futhark runes, nordic runes
most frequent shape	vertical line
optical direction of characters in script	horizontal
recognizability of script	
recognizability of characters	
influence of medium on perception	

Star wars: Aurebesh NEME OF ENTERTAINMENT O	
Environmental influences	
Stephen Crane	
English	
history	American
	1976
inspiration	
	inspiration taken from:
	a made up 34 letter alphabet for Galactic Basic. It doesn't show up until Return of the Jedi
world description	
an acronym of the Greek letters Alpha and Beta, the Aurebesh is named after its first two letters: Aurek and Besh. Aurebesh was a writing system used to transcribe Galactic Basic, one of the most used languages in the galaxy. -Wookieepedia The story takes place in a distant galaxy, where the ultimate battle between good and evil is being fought. A mysterious force ("the Force") plays a central role in this. Aurebesh was thought to have been derived from the writing system of the Rakatan Infinite Empire, introduced to the galaxy at large during that Empire's reign. It spread during the Alsakan Conflicts approximately 17,000 years before the Battle of Yavin.	
phonetic, based on the alphabet	
communication (in story / ennal)	main guidelines
sender (encoding)	order
receiver (decoding)	▼
channel (how) = medium	repetition
noise	▼
feedback	▼
time	arbitrary due to medium
space	▼
use	writing
	style
codex: analyzing the shapes and systems. typology	
technical	
amount of characters	34
amount of movements needed to write the character	±5-6
grid used	draw here
recreatable	
practical	
beginning and ending	arbitrair
relation to phonetics (intonation)	yes, almost same a alphabet
ascender descender	not used
baseline	yes, horizontal
writing direction	▶
capitals	not used
mediums	surface: not specified medium: not specified
	why? (what context is given)
visual (aesthetic value) influence of medium used	
slope / axis	no
contrast	uniform
looks like (compare to existing scripts)	hebrew and other
most frequent shape	straight line
optical direction of characters in script	horizontal
recognizability of script	
recognizability of characters	
influence of medium on perception	

Star Trek: Golic Vulcan	
Environmental influences	
Mark R. Gardner	
American	
history	English
	2008
	/
inspiration	Based his script on already existing writing systems.
	inspiration taken from:
	/ ?
	/ ?
world description	
the crew of the starship USS Enterprise, whose five-year mission is to explore space and, as stated in the title sequence	
phonetic, Alphabetic (from logographic roots)	
communication (in story / ennal)	main guidelines
sender (encoding)	Golic clan
receiver (decoding)	receiver of message
channel (how)	handwriting / calligraphy
noise	repetition
feedback	▼
time	directly after sending
space	in sapace
use	direct communication
	style
codex: analyzing the shapes and systems. typology	
technical	
amount of characters	12000+
amount of movements needed to write the character	±6-8
grid used	draw here
recreatable	
practical	
beginning and ending	start detemended by horizontal line at top.
relation to phonetics (intonation)	
ascender descender	
baseline	vertical
writing direction	▼
capitals	yes
mediums	surface: flat surface medium: non-committal
	why? (what context is given)
visual (aesthetic value) influence of medium used	
slope / axis	depending on medium: calligraphic
contrast	Expansion contrast (brush nip pen)
looks like (compare to existing scripts)	random
most frequent shape	curves
optical direction of characters in script	horizontal
recognizability of script	
recognizability of characters	
influence of medium on perception	

Thomas More: Utopia	
Environmental influences	
Thomas More	
English	
history	American
	1516
	Selim I of the Ottoman Empire declares war on the Mamluk Sultanate of Cairo and invades Syria. etc
inspiration	greek philosophy and christian religion
	inspiration taken from:
	stereotypes of extraterrestrial life
world description	
He was not satisfied with Western society and thought about a better world. Based on Greek philosophy and Christian religion, he designed a utopian society where people live together in an atmosphere of brotherhood.	
phonetic, based on the alphabet	
communication (in story / ennal)	main guidelines
sender (encoding)	order
receiver (decoding)	▼
channel (how) = medium	repetition
noise	▼
feedback	▼
time	arbitrary due to medium
space	▼
use	writing
	style
codex: analyzing the shapes and systems. typology	
technical	
amount of characters	22
amount of movements needed to write the character	±2
grid used	draw here
recreatable	
practical	
beginning and ending	arbitrair
relation to phonetics (intonation)	same as alphabet
ascender descender	not used
baseline	horizontal
writing direction	▶
capitals	no
mediums	surface: not specified medium: not specified
	why? (what context is given)
visual (aesthetic value) influence of medium used	
slope / axis	/
contrast	uniform
looks like (compare to existing scripts)	
most frequent shape	curved lines and circles
optical direction of characters in script	round
recognizability of script	
recognizability of characters	
influence of medium on perception	

Futurama: Alienese	
Environmental influences	
show creators	
America	
history	American
	1999
	new millenium, rise of technology
inspiration	making the script random and alien looking in a comedic way, joking with alien stereotypes and symbols
	inspiration taken from:
	stereotypes of extraterrestrial life
world description	
the alien written language seen throughout the show, was created as an in-joke to see how fast fans could decipher it.	
phonetic, based on the alphabet	
communication (in story / ennalis)	main guidelines
sender (encoding)	random
receiver (decoding)	The reader
channel (how) = medium	/
noise	/
feedback	/
time	future (time in space)
space	/
use	/
	order
	repetition
	pattern
	structure
	style
codtess: analyzing the shapes and systems. typology	
technical	
amount of characters	26
amount of movements needed to write the character	±4
grid used	draw here
recreatable	
practical	
beginning and ending	arbitrair
relation to phonetics (intonation)	same as alphabet
ascender descender	not used
baseline	horizontal
writing direction	▶
capitals	no
mediums	surface: not specified medium: not specified
	why? (what context is given)
visual (aesthetic value) influence of medium used	
slope / axis	/
contrast	/
looks like (compare to existing scripts)	random "alien" symbols connected to latin letters
most frequent shape	dots, curves and straight lines
optical direction of characters in script	nor vertical or horizontal, each character fits in a square
recognizability of script	
regognizability of characters	
influence of medium on perception	

arrivals: tatling in circles	
Environmental influences	
Eric Heisserer	
Oklahoma, Verenigde Staten	
history	English
	2016
	/
inspiration	something alien, a never before human made language
	inspiration taken from:
	other than already existing human communication, This by visuals and mening behind these visuals
world description	
Aliens landing on Earth in 12 different spaceships. The aliens (heptapods) try to communicate with humans, but they cannot understand each other. Louise, the linguist recruited by the government, tries to communicate through written language. This is followed by the study of the written language of the heptapods to explain the purpose of the landing.	
Ideogram: sign (semasiography)	
communication (in story / ennalis)	main guidelines
sender (encoding)	heptapods
receiver (decoding)	Human population
channel (how)	in air, ink look, fragments
noise	unfamiliar to humans
feedback	/
time	directly after sending
space	in sapace
use	direct communication
	order
	repetition
	pattern
	structure
	style
codtess: analyzing the shapes and systems. typology	
technical	
amount of characters	unlimited (can build)
amount of movements needed to write the character	depends on how humans d
grid used	draw here
recreatable	
practical	
beginning and ending	a circle, non linear (how they experience time)
relation to phonetics (intonation)	no
ascender descender	not in thoes terms
baseline	circle
writing direction	circle (no direction bacause of meaning of character)
capitals	no
mediums	surface: arbitrair medium: unknown
	why? (what context is given)
	They dont have hands, they have tenticles, they write with an ink like supstance to form a circle.
visual (aesthetic value) influence of medium used	
slope / axis	/
contrast	/
looks like (compare to existing scripts)	coffee stains
most frequent shape	circle, splash shapes, ink in water
optical direction of characters in script	circular
recognizability of script	
regognizability of characters	
influence of medium on perception	

8.2 CREATURES' DESCRIPTIONS

AVIANS

Winged beings with feathers and talons. They are skilled in aerial combat and communication.

CENTAURS

Humanoid creatures with the lower body of a horse. They are skilled in archery and horsemanship.

DRAGONS

Large and powerful, with scales and wings. They are revered as the guardians of the magical realm.

DRAKONS

Dragon-like creatures that come in a variety of colors and sizes. They are intelligent and fiercely territorial.

ELEMENTALS

Creatures are made entirely of one of the four classical elements (earth, air, fire, water) and can take on a humanoid form. They are masters of their respective elements and can manipulate them to their will.

ELVES

Tall and slender, with pointed ears and long hair that shimmers with magic.

GNOMES

Small and stout, with bushy eyebrows and beards. They are skilled in engineering and technology.

MOKRA

A gelatinous species that can change shape and color at will. They are excellent spies and infiltrators.

NAGA

Serpentine beings with the upper body of a humanoid and the lower body of a snake. They are powerful mages and skilled in martial arts.

NYMPHS

Ethereal beings embody the natural elements of the world, such as water, forests, or mountains.

TARK

An insectoid species with chitinous exoskeletons and multiple limbs. They are known for their engineering and architectural skills.

UNICORNS

Elegant and graceful, with a single horn on their forehead. They are symbols of purity and goodness.




8.3 TESTING RESULTS FROM FILL-IN SHEET

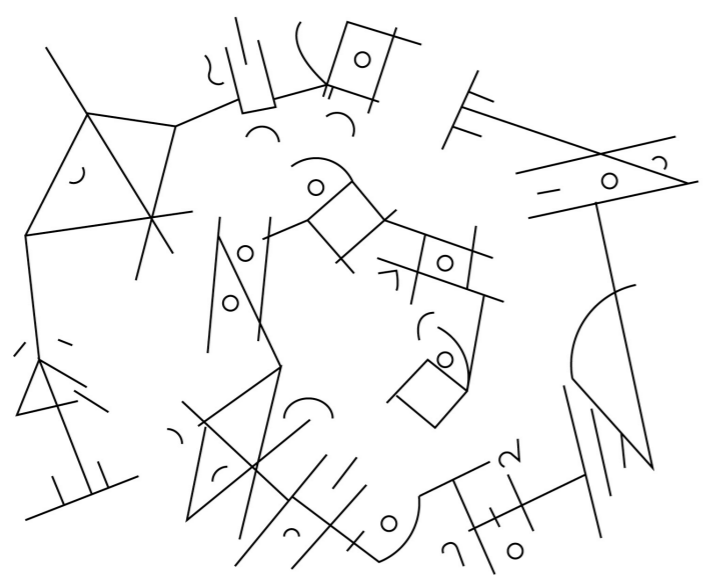
Cotdes _____ Master project 2022 - 2023

CONCEPTUALISATION BEFORE COTDES CREATION.

The world of	Arcadia
The creature	Unicorn
The personality being	elegant graceful dishonest
Writing material being	carved on marble with the horn.
The shapes connected to the languages, story, creature and writing materials are	sharp and structured shapes
Sound of the connected language	low-pitch and soft
Inspired by	movies: Unicorn Wars
Most occur shapes in the cotdes.	circles squares

GAMIFICATION OF COTDES CREATION.

10	Characters in the script.
6 - 8	Range of strokes per character.
Yes	Connected script.
	Optical writing direction in the character.
	Writing direction of the script.
Yes	Extended strokes. 
No	Decorative elements.






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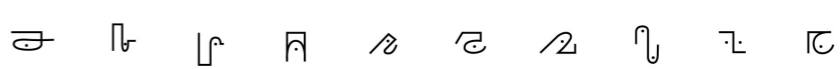
Cotdes _____ Master project 2022 - 2023

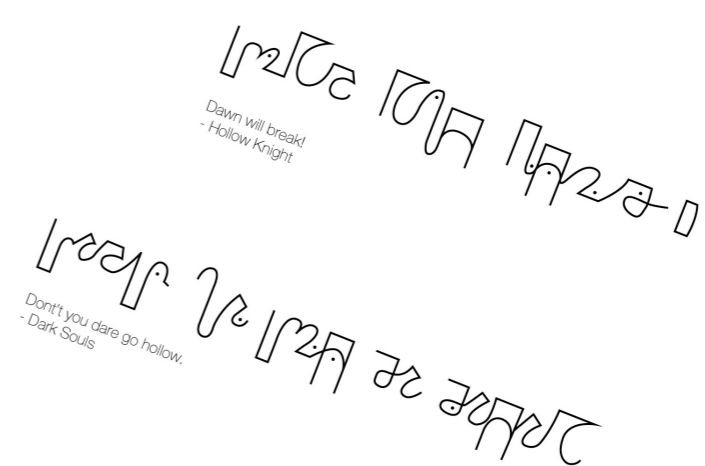
CONCEPTUALISATION BEFORE COTDES CREATION.

The world of	The Everrealm
The creature	Mix of undead and humans
The personality being	loyal advanced selfish
Writing material being	pen and paper
The shapes connected to the languages, story, creature and writing materials are	straight and structured shapes
Sound of the connected language	sharp and low-pitched
Inspired by	Egypt
Most occur shapes in the cotdes.	rectangles and ovals

GAMIFICATION OF COTDES CREATION.

10	Characters in the script.
3 - 4	Range of strokes per character.
Yes	Connected script.
	Optical writing direction in the character.
	Writing direction of the script.
Yes	Extended strokes. 
Yes	Decorative elements.





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Cotdes

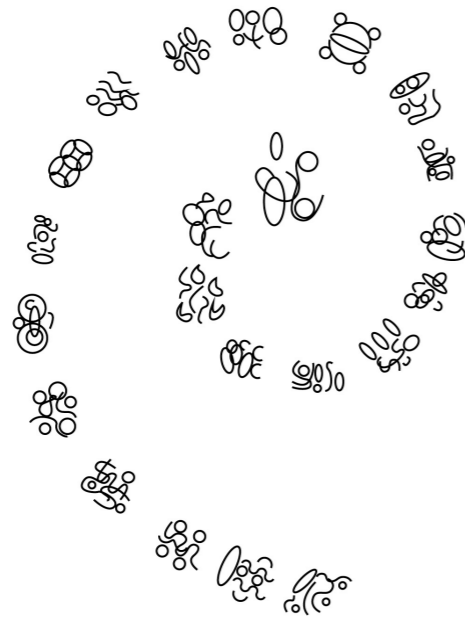
Master project 2022 - 2023

CONCEPTUALISATION BEFORE COTDES CREATION.

The world of	Cynosure
The creature	Mokra
The personality being	intelligent misleading fickle
Writing material being	ink and parchment
The shapes connected to the languages, story, creature and writing materials are	Organic and waivy shapes
Sound of the connected language	low-pitch
Inspired by	fantasy books
Most occur shapes in the cotdes.	circles ovals

GAMIFICATION OF COTDES CREATION.

27	Characters in the script.
7 - 7	Range of strokes per character.
No	Connected script.
—	Optical writing direction in the character.
↻	Writing direction of the script.
No	Extended strokes. 
No	Decorative elements.



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
Cotdes

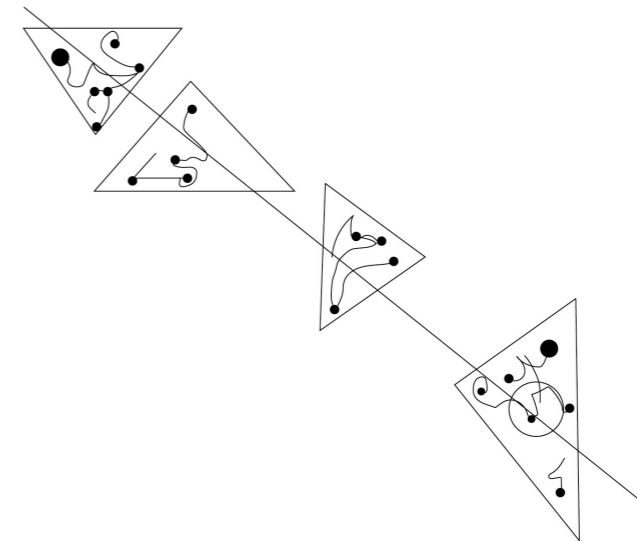
Master project 2022 - 2023

CONCEPTUALISATION BEFORE COTDES CREATION.

The world of	Zalanthea
The creature	Elves
The personality being	graceful elegant kind
Writing material being	ink and carving
The shapes connected to the languages, story, creature and writing materials are	sharp and wavy shapes
Sound of the connected language	low-pitch and soft
Inspired by	medieval future, star signs
Most occur shapes in the cotdes.	triangles

GAMIFICATION OF COTDES CREATION.

14	Characters in the script.
3 - 6	Range of strokes per character.
Yes	Connected script.
↔	Optical writing direction in the character.
↙	Writing direction of the script.
Yes	Extended strokes. 
Yes	Decorative elements.



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Cotdes

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CONCEPTUALISATION BEFORE COTDES CREATION.

The world of	Arcadia
The creature	Dragons
The personality being	warlike fickle intelligent
Writing material being	claw cravings
The shapes connected to the languages, story, creature and writing materials are	sharp and organic shapes
Sound of the connected language	high-pitch and loud
Inspired by	art
Most occur shapes in the cotdes.	claw marks (lines)

GAMIFICATION OF COTDES CREATION.

23	Characters in the script.
2 - 7	Range of strokes per character.
Yes	Connected script.
↓	Optical writing direction in the character.
↻	Writing direction of the script.
Yes	Extended strokes. 
No	Decorative elements.



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Cotdes

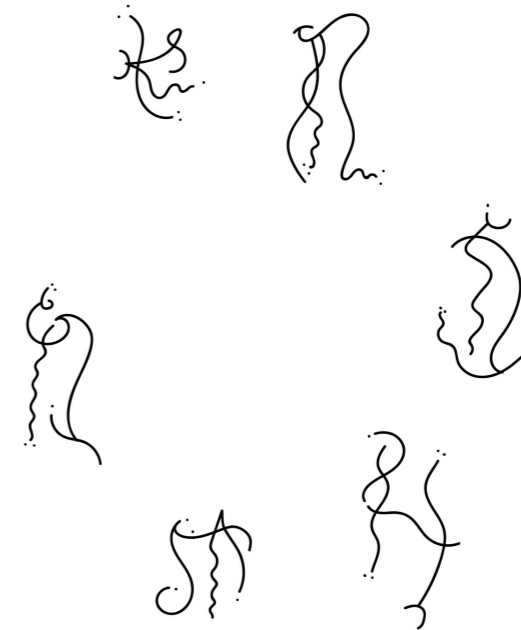
Master project 2022 - 2023

CONCEPTUALISATION BEFORE COTDES CREATION.

The world of	Zalanthea
The creature	Naga
The personality being	intelligent treacherous snorky
Writing material being	snake fangs used like a fountain pen
The shapes connected to the languages, story, creature and writing materials are	sharp and wavy shapes
Sound of the connected language	sharp and soft
Inspired by	art & nature
Most occur shapes in the cotdes.	rounded shapes

GAMIFICATION OF COTDES CREATION.

22	Characters in the script.
4 - 8	Range of strokes per character.
Yes	Connected script.
↓	Optical writing direction in the character.
↻	Writing direction of the script.
Yes	Extended strokes. 
Yes	Decorative elements.



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Cotdes

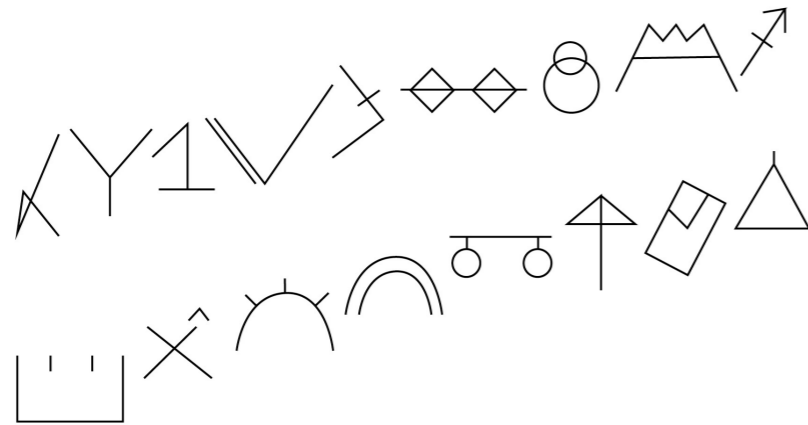
Master project 2022 - 2023

CONCEPTUALISATION BEFORE COTDES CREATION.

The world of	Omen
The creature	Bhanda Korr
The personality being	loyal barbaric savage
Writing material being	stones, paint, cabbage
The shapes connected to the languages, story, creature and writing materials are	drawings angular sharp
Sound of the connected language	low-pitch, loud and short
Inspired by	culture, laukon
Most occur shapes in the cotdes.	squares and trangles

GAMIFICATION OF COTDES CREATION.

33	Characters in the script.
2 - 7	Range of strokes per character.
No	Connected script.
↙	Optical writing direction in the character.
↘	Writing direction of the script.
Yes	Extended strokes. 
Yes	Decorative elements.



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Cotdes

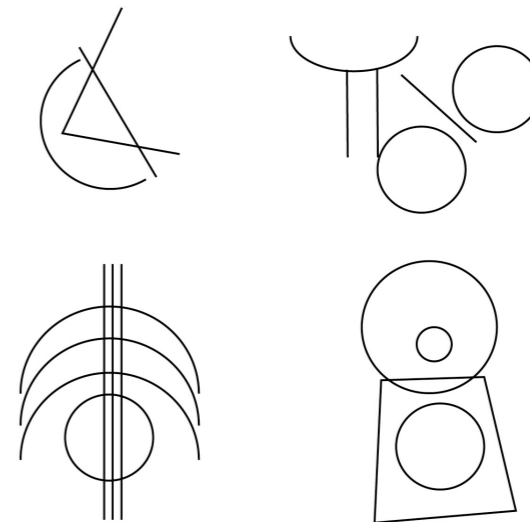
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CONCEPTUALISATION BEFORE COTDES CREATION.

The world of	Zalanthea
The creature	Elementals
The personality being	evil brave intelligent
Writing material being	etched in cristal
The shapes connected to the languages, story, creature and writing materials are	round and straight shapes
Sound of the connected language	sharp and loud
Inspired by	culture, cuneiform
Most occur shapes in the cotdes.	circles lines

GAMIFICATION OF COTDES CREATION.

9	Characters in the script.
1 - 7	Range of strokes per character.
No	Connected script.
↕ ↙	Optical writing direction in the character.
↘	Writing direction of the script.
No	Extended strokes. 
No	Decorative elements.



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9.1 TEXTUAL SOURCES

Arda Philology 3: Proceedings of the third international conference on J.R.R. Tolkien's invented languages (By Arda society; Vol. 3). (2011). [GoogleBooks]. <https://books.google.be/books?id=cq2QRcYySHIC&printsec=frontcover&hl=nl#v=snippet&q=Devanagari%2C%20Hebrew%20or%20Arabic.2&f=false>

Baines, P., & Haslam, A. (2005). *Type & typography* [PDF]. Laurence King Publishing.

Barry, A. M. (2001). Faster than the Speed of Thought: Vision, Perceptual Learning, and the Pace of Cognitive Reflection. *Journal of Visual Literacy*, 21(2), 107–122. <https://doi.org/10.1080/23796529.2001.11674574>

Boutkan, D. & Panton. (2022, October). To construct a sentence. *Panton Magazine*, 114–119.

Cambridge [Cambridge Dictionary]. (2023). A posteriori. Retrieved August 3, 2023, from <https://dictionary.cambridge.org/dictionary/english/a-posteriori>

Cambridge Dictionary. (2023). Artificial Language. In Cambridge Dictionary. Retrieved October 8, 2022, from <https://dictionary.cambridge.org/dictionary/english/artificial-language>

Changizi, M. A., & Shimojo, S. (2005). Character complexity and redundancy in writing systems over human history. *Proceedings of the Royal Society B: Biological Sciences*, 272(1560), 267–275. <https://doi.org/10.1098/rspb.2004.2942>

ChatGPT. (n.d.-a). <https://chat.openai.com/?model=text-davinci-002-render>

ChatGPT. (n.d.-b). Openai. Retrieved August 12, 2023, from <https://chat.openai.com/c/ba01e933-95af-43a6-8da7-342e43fd10c8>

Cheyne, R. (2008). Created Languages in Science Fiction. *Science Fiction Studies*, Vol. 35(No. 3), 386–403. <https://www.jstor.org/stable/25475175>

Chiang, T., & Heisserer, E. (2016, November 11). *Arrival* (J. Walker, Ed.). FilmNation Entertainment, 21 Laps Entertainment, Lava Bear Films, FilmNation. <https://www.imdb.com/title/tt2543164/>

Cohen-Garcia, X. (2016, April 1). Media Guide: The Bouba-Kiki Effect. *Science Friday*. <https://www.sciencefriday.com/educational-resources/media-guide-the-bouba-kiki-effect/>

Coker, L. (2016). *Tolkien's Linguistics: The Artificial Languages of Quenya and Sindarin* [Undergraduate Research]. University of North Carolina Asheville.

Cuskley, C., Simner, J., & Kirby, S. (2015). Phonological and orthographic influences in the bouba–kiki effect. *Psychological Research-psychologische Forschung*, 81(1), 119–130. <https://doi.org/10.1007/s00426-015-0709-2>

DBNL. (1858). P., *Kunstwoordenboek: P. Weiland* - DBNL. Retrieved August 4, 2023, from https://www.dbnl.org/tekst/weil004kuns01_01/weil004kuns01_01_0016.php#p2191

- Ejlers, S. (2014). When is typography conceptual? *Artifact*, 3(1), 1. <https://doi.org/10.14434/artifact.v3i1.5041>
- esperanto. (2017, December 3). *hejmo-nl - esperanto*. Esperanto. <https://esperanto.net/nl/>
- etymologically. (2023). <https://dictionary.cambridge.org/dictionary/english/etymologically#>
- Fandom. (n.d.). *Tengwar I The One Wiki to Rule Them All*. Retrieved July 29, 2023, from <https://lotr.fandom.com/wiki/Tengwar#:~:text=Tolkien%20developed%20the%20Tengwar%20in,of%20the%20Rings%20in%201955>.
- Fimi, D., & Higgings, A. (2017). *The Routledge companion to imaginary worlds*. In M. J. P. Wolf (Ed.), Routledge eBooks. <https://doi.org/10.4324/9781315637525>
- Gordon, W. J. J., & Poze, T. (1981). Conscious/Subconscious interaction in a creative act. *Journal of Creative Behavior*, 15(1), 1–10. <https://doi.org/10.1002/j.2162-6057.1981.tb00269.x>
- Gurung, R. (2023). *Visual Art in the Age of AI [2023 Spring Cybersecurity Undergraduate Research Projects]*. Old Dominion University.
- Handbook of Visual Communication. (2004). In Routledge eBooks. <https://doi.org/10.4324/9781410611581>
- Hotpot.ai. (n.d.). *AI Art Generator - AI Image Generator API*. <https://hotpot.ai/art-generator>
- Ibn Thabit, Z. (n.d.). *Section from a Qur'an Manuscript: Section from a Qur'an Manuscript*. The Metropolitan Museum of Art. <https://www.metmuseum.org/art/collection/search/453987>
- Koch, B. E. (2012). Emotion in Typographic Design: An Empirical Examination. *Visible Language*, 46(3), 206. <https://www.questia.com/library/journal/1P3-2837612821/emotion-in-typographic-design-an-empirical-examination>
- Meyer, J. (2016). *What we do - Esperanto*. Esperanto. <https://esperanto.net/en/what-we-do/>
- Müller-Brockmann, J. (1996). *Grid systems in Graphic design: A Visual Communication Manual for Graphic Designers, Typographers and Three Dimensional Designers*.
- Norman, D. A. (2004). Emotional design: why we love (or hate) everyday things. *Interactions*, 41(11), 36–42. <https://doi.org/10.1145/543434.543435>
- Pyromantie. (n.d.). *Encyclo.nl*. Retrieved August 4, 2023, from <https://www.encyclo.nl/begrip/pyromantie>
- Rhodes, M. (2016, November 16). *How Arrival's designers crafted a mesmerizing alien alphabet*. WIRED. <https://www.wired.com/2016/11/arrivals-designers-crafted-mesmerizing-alien-alphabet/>
- Salo, D. (2004). *A gateway to Sindarin: A Grammar of an Elvish Language from J.R.R. Tolkien's*

Lord of the Rings. University of Utah Press.

Tolkien, J. R. R., Carpenter, H., & Tolkien, C. (1995). *Letters of J.R.R. Tolkien: A Selection*. HarperCollins Publishers.

Universität Bielefeld. (1518). *De optimo reipublicae statu deque nova insula Utopia (On the best state of the republic and the new island of Utopia)(By T. Morus)*. Goobi Viewer. Retrieved July 22, 2023, from <http://ds.ub.uni-bielefeld.de/viewer/image/2006024/8/#topDocAnchor> p. 8

Van Wageningen, M. (n.d.). *Novo Typo (was: Atelier van Wageningen) (Typefaces, Interviewer; By L. Devroye)*. Luc Devroye, School of Computer Science, McGill University. Retrieved August 7, 2023, from <http://luc.devroye.org/fonts-24016.html>

Viewsproject, V. a. P. B. (2019, July 28). *Tolkien and Elvish writing*. WordPress.com. Retrieved July 30, 2023, from <https://crewsproject.wordpress.com/2019/07/29/tolkien-and-elvish-writing/>

Yaguello, M. (2022). *Imaginary languages: Myths, Utopias, Fantasies, Illusions, and Linguistic Fictions*. MIT Press.

9.2 VIDEOS

BBC (Director). (2020, September 14). *The Secret History of Writing [Video]*. YouTube. Retrieved December 18, 2021, from <https://www.youtube.com/watch?v=BxUuPq3mWaU>

Bertrand, M. (2017, February 28). *Language artist Martine Bertrand on "Arrival" (Made in Hollywood Teen, Interviewer) [Video]*. YouTube. Retrieved August 3, 2023, from <https://www.youtube.com/watch?v=aKrfEBLmZg>

TED-Ed. (2013, September 26). *Are Elvish, Klingon, Dothraki and Na'vi real languages? - John McWhorter [Video]*. YouTube. Retrieved October 10, 2022, from <https://www.youtube.com/watch?v=a5mZ0R3h8m0>

9.3 IMAGES

Bergeson, L. F. H. (2022, August 25). *'The Lord of the Rings': Everything you need to know about Amazon's big money adaptation*. IndieWire. <https://www.indiewire.com/gallery/amazons-lord-of-the-rings-explained-plot-cast/>

Gardner, R. & Omniglot. (n.d.). *Golic Vulcan : Alphabet and language*. Omniglot. <https://www.omniglot.com/conscripts/vulcan.htm>

More, T. (1516). *Utopian alphabet*. Omniglot. <https://www.omniglot.com/conscripts/utopian.htm>

Morrison, A. (2016, November 16). *How Arrival's designers crafted a mesmerizing alien alphabet (By M. Rhodes)*. WIRED. <https://www.wired.com/2016/11/arrivals-designers-crafted-mesmerizing-alien-alphabet/>

Okrand, M. (1984). Klingon alphabet, pronunciation and language. Omniglot. <https://www.omniglot.com/conscripts/klingon.htm>

Omniglot. (n.d.). Tengwar alphabet for English. https://www.omniglot.com/conscripts/tengwar_eng.htm

One Ring inscription. (2008, April 28). Wikimedia Commons. https://commons.wikimedia.org/wiki/File:One_Ring_inscription.svg

Stephen, Crane. (1983). Aurebesh alphabet. Omniglot. <https://www.omniglot.com/conscripts/aurebesh.htm>

Tolkien, J. R. R. (1937). Cirth runes. Omniglot. <https://www.omniglot.com/conscripts/cirth.htm>

Tolkien, J. R. R. (2001). The Lord of the Rings: The Fellowship of the Ring [Video]. New Line Cinema, Saul Zaentz Film Co., WingNut Films. <https://www.imdb.com/title/tt0120737/>

Wiki, C. T. F. (1999). Alienese. Futurama Wiki. <https://futurama.fandom.com/wiki/Alienese>



