

# **Apprehending the semiotics of global typography:**

A Systemic Functional Grammar approach of Japanese and Latin typefaces

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国際タイポグラフィの記号論を理解する  
日欧フォントの選択体系機能文法のアプローチ

THESIS SUBMITTED TO  
SEINAN GAKUIN UNIVERSITY GRADUATE SCHOOL  
FOR THE DEGREE OF  
**DOCTOR IN PHILOSOPHY**  
IN LITERATURE

*by*

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Presented

27<sup>th</sup> January 2017

“  
*Type is a beautiful group of letters, not a group of beautiful letters.*”

– Matthew Carter

## ACKNOWLEDGEMENTS

Completing a dissertation is a cause for personal celebration, but until one has reached a critical distance from one's own paper, it is difficult to know how much it will please other people to be associated with it through an acknowledgement. I am very gladly not in the position of the writer who would have liked to acknowledge his friends, yet no one helped him<sup>1</sup> nor, at the other extreme, of another whose debt to a friend was so great that "*he alone is to be blamed for any shortcomings this book may have*"<sup>2</sup>.

I owe a debt of gratitude to my supervisor and mentor, Pr. Akira Miyahara. His help and his resourcefulness have made these three years in Japan much easier, and his trust has greatly helped me push my research further. I would also like to thank Pr. Kaori Sugiyama for her insight and her great support during my field study. It is owing to her knowledge that I have been able to complete my survey. Furthermore, my thoughts go to all the people in Seinan Gakuin University who have contributed to making my stay in Japan such a fulfilling experience:

- The financial support from 平和中島財団, and 日本学生支援機構, which greatly encouraged me to focus on my research.
- My Japanese teachers: Yasue Jo, Mariko Takao, Tomoko Takahashi, and Sugako Fukumori, whose teachings have opened my eyes on the country I am living in, and provided great understanding on the language.
- My kanji teachers, Duane Olson, and Meiko Ikezawa, whose classes were a great ground of inspiration for the current paper.
- The international division, and the Centre for International Education of Seinan Gakuin University, for always doing everything to make my school years in Japan a great experience.

I am very grateful for the help I have received from overseas. A special mention goes to Catherine Nivoit, who has followed me from the first word to the last, as she was going through the same experience herself, in the good days and the bad. To all the teachers and

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<sup>1</sup> The preface to Jan V White's *Graphic idea notebook* (1980) reads "*It is customary to thank the people who have been helpful in the process of book-making, How I wish I could have palmed off some of the labors onto someone else! Alas...I was stuck with doing it all.*"

<sup>2</sup> Talbot Taylor, *Linguistic theory and structural stylistics*, Pergamon Press, Oxford 1981.

professors who have sent me their articles, references, or suggestions, a very heartfelt thank you: Joël Robin, Franck Celhay, Jo Mackiewicz, and Gennifer Weisenfeld.

To all the people who have participated in structuring, or answering the survey, a warm thank you.

I am also indebted to all friends and family members, who have supported me in the moments of doubt, and shared my happiness in those of celebration. A very warm thank you to my very dear friend Alisa Tanaka-King, who has contributed to this paper in many ways.

Lastly, I want to thank my partner, Kazuya, for whom this experience was as much of a marathon as it was one for me. He put up with the traditional unconventionalities and bouts of despair of the dissertation-writer with flying colours, and was the strength that helped me overcome the obstacles.

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## INTRODUCTION

Typography, much like wireless connections or forks, is a tool that is taken for granted; so much so that most of us use it without giving it a second thought. Very few people wonder about the technology behind instant messaging, or speculate how the family dinner would look without forks on the table. To many, letterform is merely what its name entails - the appearance of writing, despite the act of writing itself being celebrated as one of the greatest inventions of humankind.

For others, typography goes far beyond “*the art of arranging and styling the appearance and printing of type*” (Weisenfeld, 2011). In 2004, Bringhurst wrote “*Like oratory, music, dance, calligraphy - like anything that lends its grace to language - typography is an art that can be deliberately misused*”. The words of Bringhurst bring about the interesting question of use and misuse of typography, which implies that *meaningful* uses of typography exist.

The notion of meaning and significance often falls within the research field of semiotics. Semiotics could rudimentarily be defined as the study of meaning-making, and the interpretation of an ensemble of symbols and signs as they operate. Combining the field of typography and the perspective of semiotics could seem futile, and sound dangerously close to the famous quote of William J. Mayo (1927) “*A specialist is a man who knows more and more about less and less*”. However, in an age when we all use typography daily, it seems important, if not urgent, to understand the meaning behind this tool. While the ramifications of typography may not be of immediate concern to the everyday citizen, it is the responsibility of research and academia to delve further into the impacts and power of said device.

The aim of this paper is then to assess the meaning-making potential of typography. Since the research falls within an intercultural communication approach, the examination will focus on two very different cultures: the West (here considered as an ensemble gathering Europe and North America), and Japan. Stemming from these two writing systems, and these two cultures, we aim at understanding whether there is one identical global approach to typography as a semiotic resource, or if differences in the writing system influence the approach.

Research around typography, especially the semiotics of typography, is a field that is still in its infancy. The works of Theodore Van Leeuwen (1996; 2005; 2006) have paved the way for other academics such as Nørgaard (2009) to expand on the topic, but there is still much left to do. For instance, these studies have all been conducted specifically on the English

language. To this day, semiotic research about Japanese typography is simply non-existent. The dearth of sources about this topic makes for both a thrilling and a challenging task, as is all exploration of uncharted land. Continuing and expanding the scope of the research launched by Van Leeuwen, this paper will examine both Japanese and Western typography through the lens of the Hallidayan Systemic Functional Grammar.

The research will be divided in two different sections: the first theoretical, followed by an empirical assessment of the topic.

The first section falls into three parts which leads into the empirical study. Before focusing on typography itself, it is essential to understand the origin and design of the letters we use today. To answer this question, the literature review opens with a retrospective of the history of writing, tracking the origins of the Latin alphabet, as well as Japanese characters. Bringing us to the present, the study will also illustrate our journey from pictoriality to lettering, and how our writing systems are in fact operating on a cycle, as we return to image based script. The literature review will then explore typography's evolution - beginning with handwriting, and moving on to ever more advanced technological systems, from the printing press to computerised typefaces. The chapter will not only detail the development of printing devices, but focus on the impact that the various systems have had on the appearance and design of letters and characters.

Lastly, the first section will offer a state of the art review on the field of semiotics. Not only does this provide an explanation of semiotics, it also discusses how it can be applied to the field of typography. Furthermore, this chapter highlights the importance of studying typography as well as other modern fields of communication, in an era in which we have become globally digitised. Here, the theory of SFG (Systemic Functional Grammar), and how it can be applied to (Western) typography will be explained.

The second section follows the construction of the empirical study. Prior to detailing the research and results, the theory of applied research is discussed. It opens on the description and justification of the chosen methodological approach, as well as a presentation of the reasoning process that carries the analysis. The conceptual frame chapter that follows, presents the independent variables (the individual characteristics of the respondents) that are applied to some selected theories (the dependent variables), and highlights how these intertwine in a

conceptual model. From this theoretical visualisation, the next chapter follows the study from the ground up - from the scripting of the questionnaire, to the feedback of the respondents. Lastly, we will analyse, then discuss the outcomes of the field study, and try to evaluate whether letterform can be recognised as a global semiotic mode. In turn, recognising typography as a mode will prove that it can be understood through similar systems all over the world, allowing the elaboration of a grammar of typography to be born.

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## **SECTION ONE: THEORETICAL FRAME**

*“No one ‘invented’ writing. Perhaps no-one independently ever ‘re-invented’ writing, either, be it in China or Mesomerica.”*

(Fischer, 2003)

To understand where typography comes from, one must know where, when and how the characters transcribed through typography emerged. Defining a history of what is writing implies that one understands what ‘writing’ really means (Fischer, 2003). The description that could be accepted as an accurate definition of what writing is “*the sequencing of standardized symbols (characters, signs or sign components) in order to graphically reproduce human speech, thought and other things in part or whole*” (ibid.). From a Western point of view, readers are mostly familiar with a single way of reading, using a system of consonants and vowels, ordered in horizontal lines that ought to be read from left to right, in descending horizontal lines. However, oriental systems such as the Japanese language accept many more ways of reading, allowing vertical and horizontal lines, and a reading direction from both left to right and right to left. These core differences could suffice to prove that the oriental and occidental writing systems have nothing in common. Nevertheless, beyond proving the common misconception that the Latin and Asian alphabets are “*world historical opponents*” (Stetter, 1999) wrong, digging in the past of languages and their scripts allows us to get a better grasp at our current society. Understanding the roots of writing systems is also trying to understand the “*fundamental need to store information in order to communicate*” (Martin, 1996). Going back to the origins of script is also a way to show that, just as Fisher defends in his *A History of Writing* (2003), “*all writing systems appear to be descendants of earlier prototypes or systems*”. Last, investigating the past of writing could be the way to comprehend the rise of new visual script systems.

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## **I. Origin and history of characters**

### **a. Apparition and development of the Latin alphabet**

#### ***i. The emergence of first alphabet***

The ability to write did not dawn on the human race. Although the belief that script has a divine origin survived well and strong in Europe until well into the 1800s, and is still accepted

as a truth in some communities, it is the result of a long, and for some parts, still mysterious course. There have been theories that the first forms of writing might have come from Uruk about 4,000 years BCE, when a Sumerian was searching for a method to handle complex accounting (Nissen et al., 1993).

Researchers do agree that evidence of signs prior to the first traces of the first actual systems. Before actual systems were put in place, the human mind used a complex amount of graphic signs and mnemonics. The paintings and other art form that are found in caves, and which could be traced to the Ice Age, like appendix 1 shows for instance, are part of these mnemonics. As time passes by, these mnemonics were gradually used in some specific linguistic contexts, such as accounting, or the retransmission of messages. Robinson (2007) calls them “*proto-writing*”; Fischer (2003) calls them “*early writings*”. Most of them are tallies (Harrison, 2007), or, not dissimilar to appendix 2, bones carved with notches following the lunar movements, creating the first calendars. The need for script, or pictorial representation, might have derived from the need to represent in what could have been considered a more objective or extensive manner (Martin, 1996). It is referred as a “*solidifying symbolic system*” (ibid.).

One of the proto-writing systems that has gained a lot of interest among the researchers is the Inca system of *quipu*. This system is based on knotted ropes. The knotting system is very old, and first evidences of it dates as far back as the last period of the Stone Age (Birket-Smith, 1966). With the Inca civilisation, this art reached a peak of complexity. Appendix 3 depicts an imperial clerk holding one of those *quipu* circa 1613 CE. The South American civilization had achieved elaborate ways of counting thanks to the knots, giving them different numerical significations according to the place they were on the rope, their shape but also their colours, for it has been assumed that different colours of knots meant different commodities. There were knots for immediate and long-term expenditures, decimal values, and type of goods. Such an intricate code made it very easy for the accountants, or *quipucamayocs*, to follow the movements of goods within the empire (Quilter and Urton, 2002). The system was so efficient that it was kept for daily accounting even after the Spanish conquest from the XVI<sup>th</sup> century.

However impressive these proofs of civilization might be, they cannot count for a script system. According to Coulmas (1989), a complete script system, or “complete writing”, is to match three main criteria:

- “*Complete writing must have as its purpose communication*”
- “*Complete writing must consist of artificial graphic marks on a durable or electronic surface*”

- “*Complete writing must use marks that relate conventionally to articulate speech (the systematic arrangement of significant vocal sounds) or electronic programming in such a way that communication is achieved*”.

Most of the “proto writing” systems fulfil at least one, or even all three of these criteria, and as such could be considered as ‘writing’. They are however, for most part, incomplete systems. The American linguist Bloomfield set a distinction between ‘picture writing’ and ‘real writing’ by further sets of criteria, such as the representation of certain semantic and linguistic elements, and the limitation of signs in use (Bloomfield, 1933). A separation also needs to be made between primitive semasiography, where graphic marks and signs deliver meaning with no help from the language, and ‘full writing’, considered to be ‘writing’, in the ‘true’ sense of the word (Gelb, 1952). The only script that, so far, could be attested as “*the first writing system in the world*” is the Sumerian system, which in its late stages will be known as “Cuneiform”. Many scholars, such as Woods et al. (2010), to whom the first forms of the Egyptian hieroglyphic system came prior to the Sumer script system, debate this assumption. Still, a few decades ago, the fact that the Sumerian system was the only script whose origin could be attested, and because it is older than all other signed artefacts has led a few academics to think that Sumerian was the original writing system. The one who defended this theory most adamantly was I. J. Gelb (1952) in his *Study of Writing*. Although he was not the first one to defend the theory of monogenesis, his works, and his construction of the concept of “*stimulus diffusion*” place him at the head of this now outdated hypothesis. Scholars supporting the idea of monogenesis of writing essentially agree on the following ideas: the system originated in Mesopotamia with the Sumerian invention. Then, from its southern Iraqi cradle, the idea of writing, more than the technology itself has spread through eras of strong cultural influences. The first wave hit Egypt at the beginning of the third millennium BCE, and then, through unknown circumvolutions, found its way to China. The writing systems from America were, according to Gelb, “not real writing at all”. Most detractors of Gelb’s assumptions argue that it is very unlikely that Chinese originates from Sumerian, based on practical grounds, such as geography, understood as the distance between current Iraq and China. Most people have now revoked the idea, albeit the works of sinologist Pulleyblank in 1979 that advocate that the Chinese script might share some common origin with the Western Asiatic writing.

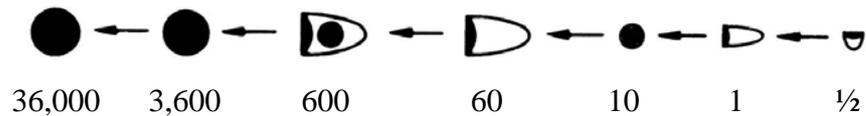
When dealing with languages and scriptures, the way they originate and change, Fischer (2003 and 1999) advises a word of caution: “*There is certainly no ‘evolution’ in the history of writing, not in the sense the word generally conveys. Writing systems do not change of their own accord in a natural process; they are deliberately elaborated or changed by human*

*agents*”. These changes mainly occur when speech changes, for the writing systems are, in some way “*the graphic counterpart of speech, the fixing of spoken language in a permanent or semi-permanent form*” (Diringer, 1962). Transformation, deformation and disappearance is also what makes the quest of the origins so intricate. May it be in Uruk or in Egypt however, researchers agree that there is in accounting the cradle of writing (Bernal, 1971).

In the case of the Sumerian empire, some six thousand years ago, the society was faced with the growing obligations of its expansion: raw materials and transformed goods to supervise and manage, workers, agriculture, domestic and international finances, inventories, etc. During the Late Uruk era (circa 3350 – 3100 BCE), the Uruk population expanded up to 50,000 inhabitants, and stretched to 2.5 square kilometres, making it, for some, the first true city in the world (Woods, 2010). All those new factors called for a new system, for mnemonics and short-lived systems were no longer enough. This need for bookkeeping is the reason some of the oldest graphic symbols are marks of possession, such as the ones provided by the Vinča culture circa 5300-4300 BCE (Martin and Cochrane, 1994, Winn, 1981). This culture settled in the Balkans in the current Romania and left quite an intricate system of symbols (30 main ones, and 180 being variations of the main ones, such as the ones presented in appendix 4). The need for ‘proof’ of inventory could also have instigated the idea to create the first clay ‘tablets’ for the Vinča (cf. appendix 5). Clay is reasonably easy to mark with a stylus, and in case of mistakes, it is relatively easy to erase it. Besides, once fired, it left the possibility of leaving a more permanent testimony. However, the authenticity of the Vinča tablets as part of the 6,500 years old civilization is debated amongst scholars (Hood, 1967), for some think they might have been re-written centuries after the end of the civilization. However clever, the Vinča system is considered a symbol system, not a sign system, and therefore not a writing one. “*A ‘symbol’ is a graphic mark that stands for something else, while a ‘sign’ is a conventional component of a writing system* (Fischer, 2003).

The oldest clay tablets found form a system of symbols themselves. They do not show signs of full writing, but more calculations, accounting, and a set of signs that are much closer to pictograms than signs. The symbols were printed into the clay using the round end of a reed stylus (cf. appendix 6), either vertically to make a circular dent in the soft clay, or at an angle to create more of a fingernail-shaped mark. This is where the name of the script comes from: in Latin, *cuneus* means *wedge*, which is why this writing system is named *cuneiform*. Where the numbers exactly come from is still discussed: they could have been created separately, to be used on the clay tables, or come from the system of *bullae*, which were inscribed envelopes

of clay used by the Sumerians since the VIII<sup>th</sup> millennia BCE. They were mostly used for agronomic transactions as a form of credentials and for tamper proofing. They served as receipts and encapsulated clay tokens that represented the quantity and types of goods loaned out. Appendix 7, retrieved from Robinson's *The Story of Writing*, shows the different parts of the transaction specifics, and the structure of the tablet. One thing that is worth noting about the Sumer accounting and counting system, is that it is a sexagesimal one, which means it is based on multiples of 60 (Schmandt-Besserat, 1992):



The sexagesimal system is based on phalanges. Take one of your hands and count your phalanges (more specifically, the joints between phalanges) from your index to your little finger: twelve phalanges. Multiply it by the number of fingers on your other hand, and you have  $12 \times 5 = 60$ . What is interesting here is that, as far as time and angle measurement are concerned, we still use this system: there are 60 seconds in a minute and 60 minutes in an hour, 60 minutes in a degree and 360 degrees in a full circle. The sexagesimal system was used in Sumer to count distinct units, such as animals, stone implements, humans, etc. There were many other systems, to count grain (as seen in appendices 6 and 7), malt, or even barley groats. Things tended to become confusing sometimes, since 1 ● meant 10 ◁ as far as sheep are concerned, but 18 ▷ in the context of fields and crops.

The turning point between a system of symbols and a system of signs (hence, a writing system) is *systemic phoneticism*. The idea of phonetization comes from Coulmas (1989), who writes that “*the decisive step in the development of writing is phonetization: that is, the transition from pictorial icon to phonetic symbol*”. Phonetization, or ‘sounding out’ for Fischer (2003) is the “[acknowledgement of] *the special relation between an object, its graphic representation and its phonetic value or cue. Over time, pictograms became standardized and abstract, but retained their phonetic value. There came a point when the object itself was often no longer recognizable in the pictogram, though the pictogram’s relation to the object and its phonetic value were: the pictogram became a symbol*”. Although it allowed the scribes to describe a fair amount of transactions related to a variety of objects (thanks to a lexicon of more than 1,500 symbols), the equivocation of the system caused problems. For instance, does the pictogram of a foot stand for *to go* or *to come*? Systemization of sounds, concepts and writing soon became a necessity, for as it was said earlier, social pressures due to the rapid growth of

Uruk made the written language an increasingly urgent necessity (Michalowski, 1994). Therefore, the archaic texts do not really include religious or historical documents, nor letters or literature. Such texts arise in the middle of the third millennium BCE, more than seven hundred years after the first written tokens.

The nature of the Sumer's spoken language probably impelled the systemic phonetic result. Sumerian was, for the most part, monosyllabic, with a vast number of homophones. Besides, Sumerian was a split ergative language. In an ergative language the subject of a sentence with a direct object is in the so-called ergative case, which in Sumerian is marked with the suffix *-e*. David Crystal's *Dictionary of linguistics and Phonetics* (2008) defines ergative languages as "A term used in the grammatical description of some languages, such as Inuktitut and Basque, where a term is needed to handle constructions where there is a formal parallel between the object of a transitive verb and the subject of an intransitive one (i.e. they display the same case). The subject of the transitive verb is referred to as 'ergative' whereas the subject of the intransitive verb, along with the object of the transitive verb, are referred to as absolutive. In some languages, this kind of case marking (ergativity) is displayed only under certain circumstances, with accusative patterns being used elsewhere (split ergativity)". Sumerian also was an agglutinative language, meaning that words could consist of an ensemble of clearly discernible and separable prefixes, infixes, and suffixes. The difference between nouns and verbs, as it exists in the Indo-European or Semitic languages, is unknown to Sumerian. The word *dug* alone means both "speech" and "to speak" in Sumerian, the difference between the noun and the verb being indicated by the syntax and by different affixes. The affixes were not independent of course, and the root words needed them to make sense when said. As sound gradually became the priority in the system, incomplete writing (as in the set of logographs and pictograms that existed at the time) turned into complete writing. Conventions vary as to when this happened, be it around 3700 BCE (Fischer, 2003), or 3200 BCE (Englund et al., 1993). The reason the dates vary so much is that most of the tablets fragments were found in secondary archaeological situations, along with other clay fragments and waste. The remains of earthenware, potshards and others were used as foundations for more recent constructions, making it impossible to actually date the tablets. It is clear however that the Sumerian people considers itself the inventor of writing.

Such a proof is related in *Enmerkar and the Lord of Aratta*, a cycle of epic poems describing the enmity between Uruk and the legendary city of Aratta, some mountain ranges away. The story comes from early Old Babylonian bases (*circa* 2000 BCE), but was most probably first assembled during the Ur III period, around 2100 BCE. The setting takes place in

the semi-mythological times of the First Dynasty of Uruk, *circa* 2800-2700 BCE. The excerpt of the invention of writing (lines 500-506 of *Enmerkar and the Lord of Aratta*, after Vantisphout and Cooper, 2003) goes as such:

*“(Enmerkar’s) speech was very grand; its meaning very profound. But the messenger’s mouth was too heavy, and he could not repeat the message. Because the messenger’s mouth was too heavy, and he could not repeat it, the Lord of Kulab (that is, Enmerkar) patted some clay and put the words in it as on a tablet. Before that day, words put on clay had never existed. But now, when the sun rose on that very day – so it was! The Lord of Kulab had put words on a tablet – so it was!”*

What is remarkable here is that writing is definitely a human invention, not the consequence of a divine intervention. Of course, this is a fabled story, and it takes more than a frustrated lord to have a whole civilization put pen to paper – or rather, wedge to clay. How is it possible to create systems of sounds, and turn symbols into signs? To scholars such as Jensen (1969), the *rebus principle* is the key to shift from pictographs to signs. The emergence of this system derives from – and was greatly helped by – the fact that Sumerian was a monosyllabic language. The rebus system takes advantage of the many homophones of a language, and by allowing only one picture to express a syllable, manages to avoid the pitfalls of confusion due to homophony. Jensen acknowledges that switching to rebus was not a gradual process: it likely was a quite sudden, localized event to respond to the social pressures. The result was immediate: the previous symbols, which were linked to a system external referent, were hard to understand without the object in to matter. The relationship was then triangular (cf. appendix 9, retrieved from Fischer’s *A History of Writing*). From such an intricate pattern, it became bilateral: sounds were written in one way, and written signs were pronounced one way, which made it much easier in case of the absence of the external referent. For instance, the symbol of a triangle with a slit, standing for the vagina, used to mean *girl, woman*. Associated with the three hills symbol, which stands for *foreign land, or mountain*, it could mean *foreign woman, or female slave*. Without the external referent, it was near impossible to know what was referred to.

This new system was first used as a side tool, mainly used to process foreign words. Some rare signs, like the *mesh*, became a sign of plurality, with time. The language was mostly pictographic, with over fifteen hundred pictograms (Woods, 2010). These were listed on “*lexical lists*” (Nissen et al., 1993), such as appendix 10, retrieved in Englund’s *Texts from the Late Uruk Period* (1998). This specific list is a catalogue of occupations. It was the most

important list, and most copied lexical list known (id.), and was still copied some two millennia after it was first designed. These served both as training for the scribes, but also as a means to organize knowledge. Syntax got simpler over time, through the use of phonetic writing, and went down to a set of roughly eight hundred pictograms, symbols and signs (Bord and Mugnaioni, 2002). The development of a Sumerian fully script system, supported by phonetic writing (phonography), and whole-word writing (logography) came about later, around 2400 BCE. Here are the first bases of the future success of cuneiform set, and the beginning of its expansion to other uses and even languages (Labat and Malbran-Labat, 1988), so much in fact that from the end of the III<sup>rd</sup> millennium BCE onwards, as the Sumerian language is waning, people tend to write the grammatical affixes of Sumerian, helping people who don't practise it every day, and who used cuneiform only phonetically to transcribe their own language (Michalowski, 2008), meaning the script long survived the language.

As time went by, the signs became increasingly “cuneiformized”, taking the shape of wedges and corners. What used to be lines becomes nail-shaped, following four different directions: vertical, horizontal, diagonal and a herringbone pattern, where the head of the nail only is sliced (cf. appendix 11). Abstracting the signs and using nail-like shapes instead of lines allowed a faster writing, and fewer mistakes (Labat and Malbran-Labat, 1988). One other key change was the reading system of signs. It was vertical (top to bottom), and became horizontal (left to right). What is also interesting is that the signs also underwent a 90° rotation (cf. annexe 11). The exact moment of this transition is still debated, but happened between the very end of the third millennia BCE and the half of the second millennia BCE. During this period, both system coexisted, and royal decrees and other very formal inscription traditionally kept the vertical reading (Studevent-Hickman, 2007) for a longer period. However long the script system lasted, it evolved greatly over time and places it was used, which is why it is easy for experts to date and locate the texts according to the types of signs that are used (Charpin, 2008). As far as the sole Mesopotamia is concerned, the cuneiform script underwent a general simplification over time, with a gradual suppression of marks. During the first millennium BCE, Assyrian scribes had the tendency to use vertical or horizontal strokes instead of diagonal ones, whereas Babylonian people kept a graphic system much closer to the original. From the end of the second millennium BCE, the Assyrian script became the norm, and kept gaining fame during the neo-Assyrian period (911-609 BCE) (Walker, 1987). In fact, it became so famous that when modern editors created cuneiform printing blocks they used the Assyrian script for their books. However, this is the consequence of a contemporary interpretation of the script system, for the scribes were not aiming at a completely identical written style, and for every scribe there were slight differences (Villard, 2001).

One defining moment in the development of the cuneiform script is its expansion and adaptation to the Semitic languages. Those were spoken by the people around Sumer, such as the Akkadians in the south, but also the Eblaite in the north (Huehnergard and Woods, 2004), spoken in current Syria, in Elba in particular. Akkadian scribes started to use the cuneiform signs as soon as 2500 BCE. Most of their use of the Sumerian script was phonetic, since they were primarily using the sounds of the characters to adapt them to their own language, which they mixed to some logograms, so as to keep things simpler. For instance, the DUG sign, which means *vase*, was used as it is in Akkadian writing, when it was actually pronounced *karpatu(m)*; it could also be used for its mere sound, [dug] (Labat and Malbran-Labat, 1988). Akkadian is an inflexional language, which Crystal's *Dictionary of Linguistics and Phonetics* (2008) defines as "a type of language established by comparative linguistics using structural (as opposed to diachronic) criteria, and focusing on the characteristics of the word. In this kind of language, words display grammatical relationships morphologically: they typically contain more than one morpheme but, unlike agglutinative languages, there is no one-to-one correspondence between these morphemes and the linear sequence of morphs. In languages such as Latin, Greek and Arabic, the inflectional forms of words may represent several morphological oppositions, e.g. in Latin *amo* ('I love'), the form simultaneously represents tense, active, first person singular, indicative. This 'fusing' of properties has led to such languages being called *fusional*, and has motivated the word-and-paradigm model of analysis. As always in such classifications, the categories are not clear-cut: different languages will display the characteristic of inflection to a greater or lesser degree". Because of the inflexions in the words, Akkadian is much more suited than Sumerian to a phonetic type of writing, provided that a few adaptations are defined, such as the definition of affix types of signs defining the value, gender or number of the logograms. The only problem resided in the differences of sound between Sumerian and Akkadian, mainly the lack of emphatic and glottal consonants, which did exist in Akkadian. The only thing left to do was to use the neighbouring sounds: the DUG sign mentioned before could be used to transcribe different sounds, such as [dug], but also [duk], or [duq], since k, q, and g are very close (Labat and Malbran-Labat, 1988). Ironically enough, the language that used the cuneiform system the most was really not adapted to it.

The Sumerian language eventually disappears between the end of the third and the beginning of the second millennium BCE (Michalowski, 2006), but as mentioned before, the writing system survived, adapted to transcribe the languages spoken by the surrounding elites. Most languages adopted cuneiform the way Akkadian did, mostly through phonetic system only.

So as to avoid confusions due to the vast amount of homophones, about 100 to 150 phonetic signs only were kept, and a selection of original logograms (Woodard, 2004). Importing the language also meant inviting Sumerian or Akkadian scribes, which greatly contributed to the spread of the Babylonian culture, even as far as Egypt (Beckman, 1983 and Van Soldt, 2011). During the second half of the second millennium BCE, the cuneiform script went through a very interesting change. As the writing system reached the kingdom of Ugarit in the current Syria, it has to be twisted to fully transcribe the local language, Ugaritic. For the first time, it is not adapted following the logograms + syllables system, but rather through an alphabetic system (Dietrich and Loretz, 1999) of 30 letters (cf. appendix 12). The two authors write that “*The language [the 30 signs] represented could be described as an idiom which in terms of content seemed to be comparable to Canaanite texts, but from a phonological perspective, however, was more like Arabic*” (p. 82).

ii. *The alphabetic system and the genesis of roman letters*

Before we dive into the actual transformation of the alphabetic system, from Proto-Semitic to Latin, let us make a point on the use of this writing system. There is no doubt that of all the systems that came from the ancient Middle East, the alphabet has had the longest impact. The other systems, namely the cuneiform and the Egyptian hieroglyphs, eventually withered away with the decline of the civilization they were linked to. In fact, in today’s world, most of the languages use alphabetic scripts derived from the West Semitic alphabet (Lam, 2010). So why use an alphabet instead of a set of logograms and phonetic signs? The first advantage of an alphabet resides in the fact that it is very economical. An alphabet is the graphical depiction of phonemes, which Crystal’s *Dictionary of Linguistics and Phonetics* (2008) describes as “*The minimal unit in the sound system of a language, according to traditional phonological theories*”. Representing phonemes instead of syllables is the best way to greatly decrease the amount of signs; therefore, the alphabets tend to count a few dozens of signs, when the other ones (logographic and/or syllabic) gather a few hundreds of them. This also means that an alphabetic system is easier to learn, and to master. However, it should not suppose a higher level of literacy, even though this opinion is debated. Scholars have claimed that for even the most diligent learners, developing significant capability in the logographic and syllabic systems required years of strenuous training. On the other hand, it has typically been claimed that becoming proficient at linear alphabetic Northwest Semitic was possible without difficulty, necessitating just days or weeks of study. Concerning the Old Hebrew character set, for example, Albright

(1960) declared that “*since the forms of the letters are very simple, the 22-letter alphabet could be learned in a day or two by a bright student and in a week or two by the dullest.*” He also stated that he did “*not doubt for a moment that there were many urchins in various parts of Palestine who could read and write as early as the time of the Judges*”. Jamieson-Drake (1991) has argued that the same alphabet was “*simple enough that functional knowledge of it could be passed on from one person to another in a comparatively short time*” and that “*schools would hardly have been necessary*”. Weeks (1994) writes that “*the Phoenician alphabet adopted and then adapted in Israel is neither complicated nor arcane, and it is not necessary to suppose that lengthy schooling and a course in reading literature was necessary for a good grasp of the essentials*”. However, researchers such as Rollston (2010) or Lam (2003) disagree, writing that these statements are “*too sanguine*” (Rollston). Although both acknowledge that it will take much less time to learn an alphabet than a syllabic writing system, based on empirical studies (such as Ehri, 1998 and 2002) that for children to become skilled in a contemporary writing system (i.e., their *first* writing system), a few years are generally necessary, not a few days or weeks (Ehri 2002; Henderson 1985). “*Of course, it is readily apparent that emergent writing (“bare bones literacy”) is often attested within “initial” periods of instruction, but proficiency (e.g., capacity to produce “documents” with minimal orthographic errors, and with the letters reflecting accurate morphology and stance as well as standard relative size) requires substantial time*” (Rollston, 2010). Therefore, although it did make the scribal training much easier, the use of an alphabetic system did not guarantee any higher level of literacy, especially, as Lam (2003) says it, because “*it is doubtful whether literacy was at all a necessary skill for the vast proportion of people in antiquity*”.

In 1905 in Serabit el-Khadim (الخدّام سراييت) in Sinai, Sir Flinders Petrie made a most important discovery. As he was unearthing some antique turquoise mines that were in use during Ancient Egyptian times, he found a sphinx (cf. appendix 13) covered with inscriptions. Estimations vary as to how old these are: Albright (1966) states that they are from 1525 to 1475 BCE, while others such as Sass (1988) believe they are from the XIV<sup>th</sup> to XIII<sup>th</sup> century BCE. As McCarter (1974) notes, people knew about such engravings in this area since the sixth century CE, however Petrie’s discovery made things official. As time went by, other discoveries of the same signs were made (Lam, 2003), in Serabit el-Khadim, and further away, in Wadi el-Hol (الهلّول وادي) (cf. appendices 14 and 14b), which was an ancient military path between Thebes and Abydos. The signs in Wadi el-Hol might be older than the ones found by Petrie (as soon as 1700 BCE), making them the remnants of the oldest fully alphabetic writing system (Chesson et al., 2005) found to this day.

The signs depicted come from what is called the Proto-Sinaitic script. It is a script that is yet to be fully deciphered, but is considered to be the origin of most of the alphabets in use nowadays, through mechanisms such as Gelb's "stimulus diffusion" (cf. *supra*). Also called linear alphabet (not to be confused with Linear A and Linear B), the Proto-Sinaitic script is an abjad. *Abjad* is a linguistic term suggested by Daniels and Bright (1996) to define a consonantal alphabet, which means that there are no vowels in the alphabet *per se*, phonology implies the vowel sound, with a diacritic, a minor attachment to the letter, or a separate glyph. This is due to the fact that the Egyptian hieroglyphs were also an abjad, and the Proto-Sinaitic script is inspired from the unilateral signs. The Egyptian hieroglyphic script contained 24 *unilaterals*, which are symbols that represented single consonants. It would have been possible to write the complete Egyptian lexicon using these signs, but the Egyptians never did so and never simplified their intricate writing into a true alphabet (Gardiner, 1957). Another strong source of inspiration for the Semitic script are the hieratic signs (Hamilton, 2006), which were invented and developed around the same time as the hieroglyphic script and were used in parallel with it for daily purposes such as bookkeeping or writing letters. The proto-Sinaitic script contains between 23 and 29 characters per different sources (Sass, 1988; Simons, 2011), the majority of which can be allocated phonetic values with something with some confidence. It is impossible for the time being to be more accurate as far as this number is concerned, as it is not yet known whether some signs symbolize new characters or simply varieties of already known ones. The proto-Sinaitic script almost likely used the principle of *acrophony* to assign phonetic values to its signs. This means that the first letter of the object characterised by each sign gives that sign its phonetic value. For instance, the sign m stands for *water*, the word for which in Semitic languages is *mem*, and so this symbol represents the phoneme *m*. Likewise, B symbolises a *house*, read as *beth* in Semitic (or *baytu* according to Goldwasser, 2010), and is therefore a *b*. It is then reasonable to accept that this alphabet was invented among Semitic speakers in Egypt, visually inspired by the hieroglyphic system but not bound by its pronunciation. Several scholars, such as Gelb (1963), or Tur-Sinai (1950) have refused the existence of the acrophonic principle. However, considering this theory has greatly helped deciphering the Proto-Sinaitic script, it is widely accepted now. The current research lists the Proto-Sinaitic as the characters listed in appendix 15, which also shows the original hieroglyphs they come from, and their probable pronunciation.

In the current region of Syria, there has been proof of another alphabet: the Ugaritic script (cf. *supra*). The most striking evidence of this alphabet was found in Ugarit, next to what

is now Ras Shamra. Scribes in Ugarit were using an alphabetic system, which was not linear, but inspired by the Sumero-Akkadian cuneiform writing system. Many texts using this script have been discovered (Bordreuil & Pardee, 2004), but what is unique to Ras Shamra is the discovery of an abecedy (appendix 16), used in scribal training (Milik & Cross, 1954). This alphabet was composed of thirty signs, the first twenty-seven of them being consonantal phonemes (close to the *ajbad* system). The other three were variants of other signs: numbers 28 and 29 were alternatives for the first sign 'aleph, and number 30 was most likely a borrowing or a substitute form of *samekh* coming from contemporary Canaanite (Tropper, 2000). This script – and most probably the civilization and languages it was linked to – disappeared *circa* 1200 BCE “wiped out (...) by the influx of the Sea Peoples” (Robinson, 2007).

As time goes by, the Proto-Sinaitic (or Proto-Canaanite) alphabet gets less and less figurative (cf. the differences between later- and proto-Canaanite scripts in appendix 17), away from pictograms and more into linear, abstract shapes. The Proto-Sinaitic script then split into two separate forms, North and South Semitic (Fisher, 2003) (cf. appendix 18). The Phoenician alphabet is a direct continuation of the northern Semitic script of the Bronze Age collapse period. However, this era only provides sporadic texts, and the script will not be broadly used before the new Semitic kingdoms of the XII<sup>th</sup> century BCE. The oldest Phoenician inscription comes from the grave of Byblos king Ahiiram (Coulmas, 1989) (cf. appendix 19). As the Phoenician system evolves, a unique sense of reading is progressively set in place: from right to left (Lam, 2010). “The twenty-two-letter system that came as a result of this stabilization corresponds exactly to the phonemic inventory of the Phoenician language” (ibid.), for the Phoenician language had dropped some consonantal phonemes, and an alphabet of twenty-two signs only covered all of the remaining ones. Fisher (2003) even wrote “Ugaritic was seemingly abandoned overnight”. What survives is a twenty-two-letter system, only composed of consonants (cf. appendix 20), which can qualify it also as an *abjad* (see *supra*). Vowel sounds were transcribed through *mater lectionis*, consonant graphemes that were used to transliterate vowels. This characteristic is quite peculiar to Semitic languages, and is still in use in some scripts, such as Arabic, where the *matres lectionis* are <sup>h</sup>alif, <sup>w</sup>waw, and <sup>y</sup>ya', or Hebrew, with <sup>h</sup>aleph, <sup>h</sup>he, <sup>w</sup>waw (or *vav*) and <sup>y</sup>yod (or *yud*). The *yod* and *waw* are more often used as vowels than they are as consonants. In Phoenician, the *mater lectionis* were for example, the two letters *w* *wāw* and *y* *yōdh*. They respectively stood for both the approximant consonants [w] and [j], and the long vowels [u] and [i]. The Phoenician letterforms shown in appendix 20 are of course idealized – actual Phoenician writing was rougher and more flexible in appearance. There were also significant variations in Phoenician letterforms by era and region. As for the names of the letters, researchers such as Demsky (2015) showed that there

were sequences of letters with close meanings, proving the correct reading of the drawings: y *yod* is the arm or handle, k *kaf* stands for the hand, paw or shovel, M *mem* is the water and N *nun* is the fish. He also suggests that the alphabet is in fact two complete lists, the first dealing with land agriculture and activity, and the second dealing with water, sea and fishing. The first half begins with a 'aleph, the *ox*, and ending with l *lamedh* - a *whip*. The second list would start with M *mem*, *water*, and continues with N *nun* – the *fish*, Z *samekh*, the *fish bones*, O 'ayin, a *water spring*, P *peh* - the *mouth of a well*, S *tsadi* - *to fish*, K *kaph*, r *reš* and s *šhin* are the *hook hole*, *hook head* and *hook teeth*, known to exist from prehistoric times, and the t *taw* is the mark used to count the fish caught.

The Phoenicians were among the Ancient world's greatest traders, and spread out from the city of Byblos very quickly, and very strongly, as they superseded the Danaans as rulers of the Mediterranean Sea. They explored the Mediterranean and Atlantic coastlines, and even ventured around Africa (Robinson, 2007), more than 2000 years before the Portuguese tried to. They were famous for their most refined purple dye, sourced in the *Hexaplex trunculus*, or 'murex' sea snail, tinting fabrics in a colour, which is now known as "Tyrian red". "Phoenician" comes from the Greek word φοίνικι *phoiniki*, which can be found first in Homer's *Iliad*. It means *red*, or *purple*, and by extension *dealer in purple*, or *land of the purple*. The success of their luxurious trade helped spreading the use of their writing script in parts of North Africa and Europe (Daniels and Bright, 1996). The alphabet's success was due in part to its phonetic nature; Phoenician was the first widely used script in which one sound was represented by one symbol, which meant that there were only a few dozen non-pictorial symbols to learn. As they were trading with other peoples, the Phoenicians exported their culture, and their script, mainly through bookkeeping. Easy and flexible, the Phoenician alphabet was utilised to write a significant amount of North-West Semitic languages (ibid.). Although the appearance of the characters were different according to the recipient civilizations, each was based on the Phoenician original script. Fischer (2003) writes that "*All Western alphabets derive from this Phoenician script*". Ancient Greeks even called their own alphabetic system φοινικια γράμματα *phoinikia grámmata*, the "Phoenician letters". In the V<sup>th</sup> century BCE, Herodotus (5. 58. 1, translated by de Selincourt) wrote about how Phoenician brought the Greeks the ability to write in the following terms:

*"the Phoenicians who came with Kadmos ... introduced the Greeks to many skills and, what is more, to the alphabet, which I believe had not previously existed among the Hellenes"*

There might be a little misunderstanding on what Herodotus was mentioning, and what happened. He estimates that Kadmos lived about 1,650 years before him – which would mean he brought the Phoenician writing to Hellas somewhere during the early II<sup>nd</sup> millennium BCE..., which is impossible. Herodotus was maybe referring to the first borrowing of writing in Greece, rather than the Phoenician one.

Phoenician was the most used writing system in the Levant until 850 BCE (Aubet, 2001). Because it was adapted so much, to so many languages, the writing was a little erratic: left to right, right to left, or *boustrophedon* (one line from left to right, the next one from right to left, and so on, literally *ox-turning*, mimicking an ox ploughing a field). The “stabilization” mentioned by Lam (cf. *supra*) comes around 800 BCE, and will remain until the first century BCE. When the Greeks borrowed the alphabet, they adapted it. Indeed, the application of the Phoenician signs to the Greek language resulted in quite some transformation. This is first due to the different consonant sounds of the two spoken languages. As Robinson (2007) writes it: “*We can visualize a Greek sitting with a Phoenician teacher and copying down the signs and sounds, as the Phoenician pronounced each sign. The scope for distortion was considerable, because the ‘barbarous’ Phoenician letter names would not have rolled naturally off the Greek tongue*”. Another adaptation was the inclusion of vowels, thus creating the first “complete” alphabet, where both vowels and consonants are equals (Fischer, 2003). The use of the term of completion is of course arguable, for only a linguist’s phonetic alphabet is complete; nevertheless, the inclusion of vocalic sounds in the alphabet is definitely a new step. This is because the Phoenician and Greek sounds are completely different. As Daniels and Bright (1996) write: “*there are languages for which an alphabet is not an ideal writing system. The Semitic abjads really do fit the structure of Hebrew, Aramaic, and Arabic very well, [more] than an alphabet would [...], since the spelling ensures that each root looks the same through its plethora of inflections and derivations*”. The Greeks transformed some of the Phoenician consonants, which were not used in Greek speech into vowels (cf. appendix 21). The Greek vowels are “A” *alpha*, “E” *epsilon*, “I” *iota*, “O” *omicron* and “Y” *upsilon*. “𐤀” *aleph*, which was the glottal stop sound [ʔ], became *alpha*. “𐤁” *he*, which stood for the sound [h], became the *epsilon*. “𐤂” *yod*, which depicted [j], became the *iota*, “𐤃” *ayin*, shifted from [ʕ] to *omicron*, and “𐤄” *waw*, which used to be pronounced [w], became the *upsilon*.

There were many variants to the Archaic Greek alphabet (Jeffery, 1961). All of them share the same Phoenician root, with the exemption of the letter x *samekh*, whose Greek counterpart Ξ *xi* was used only in a sub-group of Greek alphabets, and with the collective adding of Y *upsilon* for the vowel [u], [ū] (Woodard, 2010). The local, so-called *epichoric*,

alphabets were quite different in the way they accepted the Phoenician script. Kirchhoff (1887) separates them in four different groups, labelled with different colours, according to their different treatment of supplementary consonant letters for the aspirated consonants [p<sup>h</sup>], [k<sup>h</sup>] and consonant clusters [ks], [ps] of Greek (cf. appendix 22 the table defined by Voutiras in 2007 to summarize his research). The “green” (or southern) type is the most ancient and closest to the Phoenician. The “red” (or Western) type is the one that was then diffused to the West and became the predecessor of the Latin alphabet, and bears some decisive features distinguishing of that later development. The “blue” (or eastern) type is the one from which the later modern Greek alphabet developed. The “green” (southern) type uses no additional signs beyond the Phoenician set, and characteristically goes without Ξ [ks]. Therefore, the aspirated plosives [p<sup>h</sup>], [k<sup>h</sup>] are written either simply as Π and Κ respectively, without a distinction from unaspirated [p], [k], or as digraphs ΠΗ, ΚΗ. (Yet, for the analogous [t<sup>h</sup>] there is already a dedicated letter, Θ, taken from Phoenician.) Similarly, the clusters [ps], [ks] are simply spelled ΠΣ, ΚΣ. The “red” (Western) type does not show the Phoenician-derived Ξ for [ks], but in its place shows a supplementary sign for that sound grouping at the end of the alphabet, Χ. In addition, the red alphabet also introduced signs for the aspirates, Φ for [p<sup>h</sup>] and Ψ for the sound [k<sup>h</sup>]. The “light blue” type does not have Ξ [ks] either, and its only extra letters are for [p<sup>h</sup>] (Φ) and [k<sup>h</sup>] (Χ). Both resemble the modern standard alphabet. The light blue structure thus still has no distinct letters for the clusters [ps] and [ks]. In this system, these are normally spelled ΦΣ and ΧΣ, respectively. The “dark blue” type, finally, is the one that has all the consonant signs of the modern standard alphabet: more than Φ and Χ (shared with the light blue type), it also complements the end of the alphabet with Ψ, and Ξ (in the alphabetic rank of Phoenician *x samekh* (Woodard, 2010).

Some of the new letters were created to transcribe new vowel sounds. It was the case for example for the letter Ω omega, created to reproduce the long half-open [ɔ:] sound. It was first created in the East, in the Ionian cities of the Levant, at some time before 600 BCE (ibid.). It was created by breaking up the full circle of the omicron (Ο). This first rupture in the letterform was done on the side of the circle, then changed with time, and according to the scribes. The letter was later turned upright and the edges curled outwards:  (Jeffery, 1961). All the variations of the alphabet coexisted until 403-402 BCE, following the shattering downfall in the Peloponnesian War and the restoration of democracy. To unify the state, the Athenians voted to get rid of the old Attic alphabet (also referred to as Pre-Euclidean alphabet) and to introduce a standardized variant of the eastern Ionic alphabet (second column of appendix 23), after a proposal by the leader Eucleides. Throughout the IV<sup>th</sup> century BCE, the new standard spread to eventually displace the local alphabets in the complete Greek-speaking

world (Jeffery, 1961). From this vote also changed the way of writing: after first writing right to left or in *boustrophedon*, the Greeks eventually chose to write from left to right. From that moment onwards, very few important changes were done to the Greek alphabet.

The last transition between Greek and our current alphabet happened in two different steps. The Etruscan people lived in Etruria, which is approximately the current Tuscany (Thomson de Grummond, 2006) from the VII<sup>th</sup> to the IV<sup>th</sup> century BCE, according to their inscriptions (Rix, 1991). Although the people did exist until 408 CE (Robinson, 2007), by the IV<sup>th</sup> century BCE it was more or less assimilated to the Roman republic, and completely dissolved in the empire by the I<sup>st</sup> century BCE. In 775 BCE, the Euboean colonists sailed from Greece to settle in Italy, not far from Naples (Thomson de Grummond, 2006), and later in Cumæ. From these two centres, the Greek began influencing the Etruscans, the local population. The first Greek borrowing was the Euboean script (depicted in the seventh column in appendix 23) to transcribe the Etruscan language. The resulting alphabet (called old Italic script) was composed of twenty letters (Jensen, 1969). The history of the Etruscan civilization is quite short, and its demise was severe, but it was a crucial link between Greek and old Italic scripts, which eventually became the Latin alphabet we know and use nowadays. Unfortunately, we know very little of the Etruscan language, and even now it is near impossible to understand the numerous inscriptions that this civilization has left behind (Bonfante & Bonfante, 2002). The Etruscan spoken language was most probably an isolate, and efforts to link it to European languages, Hebrew or Turkish remained unsuccessful, which means the language can be read, but not understood. The Latin alphabet is then a borrowing from a borrowing, which explains why it is so different from the Greek alphabet (Fischer, 2003). As the Roman power grew, it ended up “swallowing” the Etruscan culture, and imposing the Latin language to all. However, a close study of the Latin language shows that a vast lexicon of words linked to luxury were formerly Etruscan (Bonfante & Bonfante, 2002). According to Robinson (2007), the disappearance of the Etruscan people is linked to the 408 CE Goth invasion of Rome, led by king Alaric. He writes: “*some Etruscan priests recited prayers and incantations; but Rome was still sacked. This was the last time that the Etruscan language was spoken*”. Letters wise, the alphabet underwent some serious changes (cf. appendix 24), simply because the sounds of Etruscan and Greek were very different (Pfiffig, 1998), may it be from a lack of stop consonants (therefore, no distinction between [b] and [p], [d] and [t], [g] and [k]), or for sounds which were written in many different ways according to their place in the word (there were three signs for the [k] sound: C if it was before a [a], Q if it was before a [u], and Γ if it was before a [i] or a

[e]), etc. What also changed was the name for the letters (Sampson, 1985), losing the Semitic names. Instead, the Etruscan names their vowels according to their actual sounds, and the consonants after their sounds, to which was added a neutral vocalic sound, [e]. Thus, T was pronounced [te], and so on. Spirants, which are consonants that elongate sound, were named after their sole pronunciation: for instance, S was pronounced [ssss]. The neutral vocalic affix came later, transforming [ssss] in the [es] we still use nowadays. The language was initially written from right to left, following the Euboean rule, yet later inscriptions show that the left to right Latin system prevailed towards the end of the Etruscan civilization (Fischer, 2003). There was no spacing between the words, only one or two dots.

About a hundred years after founding Rome in 753 BCE, the Romans took part in the long Semitic tradition of script borrowing from the northern Etruscan culture. They also took the writing material and afferent terminology: *cēra*, the wax used for the tablets, *ēlēmentum*, the letter of the alphabet, and so on. As for the alphabet itself, it was modified over the course of a few centuries, as appendix 24 shows. When the Romans borrowed the alphabet, the Etruscan were still making the script difference between *b* and *d* (which they dropped later), which was useful for the Romans since Latin does consider those two consonants very dissimilar. They kept the three different [k] signs, and Q became *Q*. This letter was especially used to transcribe the sound [kw], when placed in front of a [u], thus written *QV*. The Etruscan Z was considered of minor importance, and therefore was pushed to the end of the alphabet – where it still is – by headmaster Spurius Carvilius Ruga (Sampson, 1985). Instead, at the seventh place of the alphabet, he installed a new letter that would be used to transcribe the sound [g]: the G.

During the II<sup>nd</sup> century BCE, Rome conquered Greece, and an important cultural blend took place, which had an impact even up to the sounds of the Latin language – and of course its alphabet. The [y] sound, which can be found in French words such as *tu*, *rue*, or *plus*), which had already been borrowed from Euboean Greek through the Etruscans, was written *V* for both [u] and [y], so the later Greek shape *Y* was adapted for the separate [y] sound, and the Greek name of the letter, *ύψιλον* *upsilon*, remained, but was changed in favour of *i Graeca* (“Greek i”), for it was difficult for Romans to make the difference between *i* and *y* (Sampson, 1985). The name *Upsilon* is still in use in German, and is called “the Greek i” in French. Last, the formerly useless and “exiled” Z found its meaning again, and also kept its Greek name, *ζήτα* *zēta*, sound that is still used in most European languages: it is called *zed* in Commonwealth English and French, for instance. By the end of the I<sup>st</sup> century BCE, the Latin alphabet had reached a level of near complete orthographic phonemism, which means that for each sound of

the Latin language, there was a letter in the alphabet (Allen, 1965). The twenty-three-letters alphabet was kept until the Middle Ages (ibid.).

The basic Roman majuscule letterforms were mostly designed for stone carving. It was separated in two different styles: square and rustic capitals, and uncials. The square style (or *capitalis monumentalis* style) is epitomized by Trajan's Column (cf. appendix 25), so much actually that the main typeface of the same design, created in 1989 by Carol Twombly for the software company Adobe, is still called Trajan Pro (cf. appendix 26). They are defined by their thickness and right angle stressing, sharp, straight lines, supple curves with impressions of upstrokes and downstrokes. They also were the first letters to use *serif*. A serif is a thin line linked to the base of a stroke in a letter or symbol (cf. appendix 27). The use of serif enhanced the beauty of the letters, and facilitated legibility. Edward Catich proposed in 1968 an explanation of their existence in his book *The Origin of the Serif*. He inferred that the Roman letter outlines were first drawn onto the stone, and the stone carvers trailed the brush marks which were flared at stroke ends and corners, thus creating serifs (Samara, 2004). Although his theory is not universally accepted, it is still widely recognized. Another theory is that serifs were carved in to make the ends of lines stand out neater as they were chiselled into stone. The rustic capitals (or, to avoid the derogatory image of 'rustic', *canonized capitals* (Bischoff, 2004)), were more actuarial, which means this letterform was favoured by bookkeepers and accountants. The canonized capital script looks like its square counterpart but is less rigid, since its support is different: where monumental letters were designed to be carved in stone, rustic capitals were defined to be written by pen and ink on papyrus or parchment. The letters are thinner and more compressed, use many more curved lines than do square capitals, and have descenders extending below the baseline. The strokes are slenderer, and the serif as a stroke end make have disappeared, replaced by long foot serifs (Marcos, 2014), as appendix 28 shows. The long foot serifs are for instance the top and bottom strokes of the letter *E* (easily confused with an *F*). Note that the median bar of the *A* is gone, and that, similar to the square letters, there is no spacing between words, only a medial dot (·). The rustic letters also display curvier strokes. The script was used between the I<sup>st</sup> and the IX<sup>th</sup> century CE, especially between the IV<sup>th</sup> and VI<sup>th</sup> centuries. During this time, the writing has evolved, since the first text in this script, *De Bello Actiaco*, found in Herculaneum and dated from 79 CE (cf. appendix 29) (Scappaticcio, 2012). After the V<sup>th</sup> century, they started to fall out of use, only to be displayed in titles and headings, while uncial became the script of the main text (ibid.).

The name *uncial*, first found in the texts of St. Jerome is not evocative, because it means simply “inch high” letters (*litterae unciales*), a name which fits both capital and lower case letters. Uncial comes from the Latin word *uncia*, which exactly means “one twelfth”, which then became the English words *inch* and *ounce*, initially one twelfth of a Roman pound weight. It is a design quite independent of the strict look of the official alphabet, and yet more ornamental than common cursive (cf. appendix 30). Uncial was still mostly a majuscule script and several of its letters, such as *B*, *C*, *O*, *R* and *S*, were almost the same as the capital version. However, in some aspects it might be considered an intermediate script from capitals to minuscule. A majuscule script be considered as written between two imaginary ruled lines; however, uncial ascenders and descenders are obvious in some letters (*p*, *q*, *h*, etc.). The rounded forms of the letters might be an influence from the Greek book scripts as well as including the cursive form of several letters (see *infra*). The reason for the Greek influence is that Greek was still the official church language except for North Africa where Latin was used for church manuscripts (Glaister, 1996). When Latin became the certified language of the Church in Rome, there was a certain unease to use common rustic letters – dedicated to pagan literature – for sacred script. The uncial writing, formal yet quick to pen, became the official script of Church and biblical manuscripts. The transition from papyrus to parchment as a support for writing also helped privilege rounder shapes, since the parchment was smoother (Marcos, 2014). In the oldest examples of uncial, all the letters are detached from one another, and word separation is characteristically not used (*scriptura continua*). Word separation, however, is characteristic of later uncial usage (Jensen, 1969). As the script evolved over the centuries, the characters became more elaborate. Around the year 600 BCE, ornaments such as detailed serifs, flourishes and overemphases of the basic strokes began to appear in more manuscripts (cf. appendix 31). This writing style is called *artificial uncial* or also *imitation uncial*. Ascenders and descenders were the first major alterations. The letters most modified are: A, D, E, G, H, M, Q, T, and U, which became respectively A, D, E, G, H, M, Q, T and U. The last one was the former *V*, which, to respect the rounder style of letterform, became a *U*.

A third style worth mentioning is the Roman cursive style, used for everyday writing (letters, for business purposes, by pupils learning the alphabet, memoranda, and even by emperors delivering commands). There are two styles of Roman cursive: the Old Roman cursive, used from the I<sup>st</sup> century BCE to the III<sup>rd</sup> century CE (Mallon, 1952), and the New Roman cursive, used from the III<sup>rd</sup> century onwards. Despite the “cursive” appellation, Roman cursive is not a flowing, connected handwriting, which can be written without lifting the pen. Old Roman cursive was a majuscule script, which is why it is also called *majuscule cursive*, or *capitalis cursive*. This letterform was found everywhere during archaeological research: the

walls of Pompeii and Herculaneum were covered with cursive graffiti, the price of objects were carved in it, papyri such as the Papyrus Claudius (cf. appendix 32), etc. (Tjäder, 1985). Unlike the handwriting used in books, the cursive style is very hard to read for a modern audience. The reason for this illegibility is that the main characteristic of Roman cursive style is to reduce the amount of strokes as much as possible, and that the separation between the words were inconsistent (a mix between spaces and medial points). Besides, ligatures (the junction of two or more letters) were common, and so was the use of symbols and abbreviations (Marcos, 2014). Occasionally, the *apex* mark is used. The apex mark is a mark roughly with the shape of an acute accent ( ´ ) which is placed over vowels to indicate that they are long. The script was actually so hard to read in the end that the comedian Plautus in his *Pseudolus* (21-30) written during the II<sup>nd</sup> century writes:

*Calidorus:*     *Cape has tabellas, tute hinc narrato tibi quae me miseria et cura contabefacit.*

*Pseudolus:*    *Mos tibi geretur. Sed quid hoc, quaeso?*

*Calidorus:*    *Quid est?*

*Pseudolus:*    *Ut opinor, quaerunt litterae hae sibi liberos: alia aliam scandit.*

*Calidorus:*    *Ludis iam ludo tuo?*

*Pseudolus:*    *Has quibid. pol credo nisi Sibylla legerit, interpretari alium posse neminem.*

*Calidorus:*    *Cur inclementer dicis lepidis litteris lepidis tabellis lepida conscriptis manu?*

*Pseudolus:*    *An, opsecro hercle, habent quas gallinae manus? Nam has quibid. gallina scripsit.*

Which translates as:

*Calidorus:*    *Take this letter, then inform yourself what misery and what concern are wasting me away.*

*Pseudolus:*    *(taking the letter) Compliance shall be given to you. But what is this, I ask?*

*Calidorus:*    *What's the matter?*

*Pseudolus:*    *As I think, these letters are seeking children for themselves: one mounts the other.*

*Calidorus: Are you mocking me with your foolery?*

*Pseudolus: By Pollux I believe that unless the Sibyl can read these letters, nobody else can interpret them.*

*Calidorus: Why do you speak unkindly about these charming letters and charming tablets, written by a charming hand?*

*Pseudolus: By Hercules I beg you, have hens such hands? For indeed a hen has written these letters.*

The New Roman cursive script followed this style. It is also called minuscule cursive, or Later Roman cursive, and quickly became both the administrative and everyday way of writing. This script is simply the result of the permanent evolution of Old Roman cursive. The main reason for the change of style is the waning of the influence of disconnected script and the wax tablets, to which were preferred papyri, parchment and continuous letterforms (Marcos, 2014; Tjäder, 1985). The script became much higher than wide (with very visible ascenders and descenders), and, to a certain degree, inclined to the right, to a quasi-italics fashion (cf. appendix 33), which became popular enough to be the precursor of the minuscule type of letters, used in later styles such as half-uncial and continental writing. Despite a significant amount of modifications, the new Roman cursive style structure remained the same until the X<sup>th</sup> century (Bischoff, 1990). One very new characteristic of the new Roman cursive style is the apparition of joining pen movements, visible on some letters such as “e”  or the letter “c”  with their new right diagonal headstrokes, rising in a tall, diagonal, narrow loop. There are many more connections between the letters, even though some tend to stand independently, and the movement of the pen is prominently rotatory. Compared to the *capitalis cursive* style, the new cursive is a near complete minuscule alphabet (cf. appendix 34). The occurrence of ligatures is rapidly growing (ibid.). In fact, one of the main characteristics of the New Roman cursive script is that it is designed to maintain the scribal momentum. To do so, ensure an optimal fluidity in the strokes, and reduce to a minimum the amount of pen lifts, the structure and appearance of certain letters was modified to enable, or facilitate the ligatures. The most striking example is the one of “e” and “t”: when written next to one another, they were usually deconstructed to be reassembled together to become a new letter built with parts of the two original ones: . The Roman New cursive is, in fact, the original script of most of the styles which will appear later in Europe, North Africa, or the British Isles, influencing for instance the uncial (see *supra*) and its derivative the half-uncial. Last, although the punctuation in this cursive style is rather aleatory – probably due to its focus on rapid writing – the lack of abbreviations makes one wonder how fast it was to read this script.

### iii. Current signs

From then onwards, the alphabet stayed the same for the most part. Following the expansion of the Roman Empire (cf. appendix 35), the use and understanding of the Latin alphabet grew rapidly in Europe, Northern Africa, and the Levant. This confirms the theory that the main advantage of an alphabet is the little amount of letters, and therefore the easiness of adopting it (cf. *supra*). Around the Mediterranean area, Greek was in fact used as a *lingua franca*, yet most people spoke Latin (a *lingua franca* is, especially in trade terms, a language or a dialect used by two countries *systematically* to enable communication between people who do not share a common mother tongue or dialect, in particular when it is a third language, different from both native languages (Chirikba, 2008)). Nowadays' most obvious *lingua franca* has become English. Wherever the Latin language was adopted due to the Roman Empire dominance, the Roman script accompanied it as a rule; and, whether a cultured Italian or Frank, or Gaul, or Briton, or Spaniard transcribed it, it always stayed the Roman script, pure and simple (Coulmas, 1989). However, towards the end of the IV<sup>th</sup> century and the beginning of the V<sup>th</sup> century CE, the wars between Rome and the Germanic tribes was coming to a Roman loss, for the Roman power was undergoing a series of crises (Jones, 1986). A very intense omen of the downfall of the Roman superpower was the Crisis of the Third Century. The Empire suffered from multiple, deep crises during the third century, with the rise of the Sassanid Empire coming from Middle Persia, which inflicted three devastating defeats on Roman field soldiers and remained a potential threat for centuries (Heather, 2005). Other catastrophes involved frequent civil wars, barbarian assaults, and more mass mortality in the Plague of Cyprian (a smallpox epidemic that raged all over the Empire from 250 to 271 CE) (Sherman, 2006). Rome gave up the region of Dacia on the north of the Danube (271 CE), and for a short period the Empire torn apart into a Gallic Empire in the West (260–274 CE), a Palmyrene Empire in the East (260–273 CE), and a chief Roman remnant state. The Rhine/Danube border also came under serious threat from larger barbarian tribes, whose strengths lied in numbers and technological advances (Heather, 2005). The Empire lasted the crisis of the third century, leading its budget successfully towards resistance, but survival came at the price of a more federal and administrative state. The Western Roman Empire conventionally ended on September 4<sup>th</sup>, 476 CE, when the soldier Flavius Odoacer overthrew the emperor Romulus Augustulus and declared himself king of Italia, but this agreement is subject to some qualifications (Jones, 1986). What interests us here is that after the Empire fell, independent nationalities arose and began to develop on their own autonomous paths towards civilization. Then, the handwriting

taught by their Roman masters gradually assumed distinguishing features, and in each country where it was used it changed according to the linguistic surroundings and finally developed into a *national hand* (Marcos, 2014). The term *hand* refers to script styles characteristic to a country, or a specific region (Nesbitt, 1957).

The cursive hand (cf. *supra*) became the basis of the writing styles of what would later become Italy, Spain and France, and from it were shaped the three national hands which we now know as *Lombardic* (and its later form known as *Beneventan*), *Visigothic* and *Merovingian*. Lombardic was the language of a people called Lombards, or Longobardi, a people settled in Italy during the VI<sup>th</sup> century. Their language was Germanic-based (Schweizer, 1948), and have strongly influenced the Italian vocabulary, especially concerning place names. For some linguists, dialects such as Cimbrian and Mocheno are in fact remnants of the Lombardic language (Bidese, 2004). Lombardic originally was a language transcribed with runes, but because of the Roman influence, they then switched to the Latin alphabet. The Lombardic alphabet is composed of 25 graphemes (ibid.): *a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q(u), r, s, z, t, þ, u, w, z* (cf. appendix 36, first column). The use of the letters *I* and *V* for both consonants and vowels became troublesome as the Latin alphabet was used to transcribe Germanic and Romance languages. *W* originated as a doubled *V* (“VV”) used to symbolise the the labial-velar approximant sound [w] of Germanic phonology and found in Old English as early as the VII<sup>th</sup> century. As it was first written, the digraph could be composed of “VV”, “vv”, “UU” or “uu”, since the graphic difference would not be done in Old English before the VIII<sup>th</sup> century, which is why the letter is still called in English *double U* (“Why is 'w' pronounced 'double u'“, 2010). It came into common use in the latter XI<sup>th</sup> century, replacing the runic *wynn* letter þ which had been used for the same sound. Because of the attachment of English to þ, the *W* remained estranged from the Latin alphabets and abecedaria until very late, which caused the German grammarian Valentin Ickelshamer to complain in the XVI<sup>th</sup> century (his writings were reedited in 1969 in an anthology edited by Regiomontanus and Rössing-Hager):

*“Poor w is so infamous and unknown that many barely know either its name or its shape, not those who aspire to being Latinists, as they have no need of it, nor do the Germans, not even the schoolmasters, know what to do with it or how to call it; some call it we, [... others] call it uu, [...] the Swabians call it auwawau”*

The addition of the þ, called *thorn*, or *þorn* pronounced [θ], a legacy of the runic past of Lombardic (the rune þ, called *thurs*, meant “giant” in Old Norse). The thorn found its way later in the English language as either a voiceless dental fricative [θ], the *th* sound for “think”, or

the voiced counterpart of it [ð], which is the *th* sound for “the”, in Old and Middle English (Freeborn, 1992). *Thorn* in the shape of a *Y* survives to this day in pseudo-archaic uses, particularly the cliché appellation “Ye olde”. The definite article spelt with *Y* for *thorn* is often playfully or incorrectly pronounced [ji:] or confused with the archaic nominative case of the second person (both singular and plural) pronoun, “ye”. Just like in Latin, the *qu* stands for a [kw] combination sound (see *supra*). The *ȝ* transcribes [s], for instance *skauȝ* [skaus] is the “womb”. The *z* is a strong sound in Lombardic, [ts]. The *h* is [h] when it is the first letter of a word, and [x] elsewhere (Hutterer, 2008). The Lombardic script then evolved into the Beneventan script. The Beneventan script got its name from the Duchy of Benevento, and was created in the abbey of Monte Cassino in the southeast of Rome around the mid-VIII<sup>th</sup> century (Lowe, 1929). The Beneventan script is the most distinctive and long-lived Roman script. It was a very round script, highly calligraphic and decorated, with thin and slender letters (cf. appendix 37). Towards the XII<sup>th</sup> century, the writing started to change, and became more angular, and more contrasted, and received the name of “broken Beneventa” among palaeographers (*ibid.*).

Visigothic script was a type of feudal script that originated in the Visigothic kingdom in Hispania, set in the Iberian Peninsula, corresponding to the current Spain and Portugal). Although limiting, this script has two other appellations, characterizing its provenance: *littera toletana* and *littera mozarabica*. These nicknames link it with the scriptoria of Toledo, or with the Mozarabic culture. It was considered a very successful script, because of its high legibility (cf. appendix 38), which might have contributed to its longevity (Marcos, 2014). There are two versions of the Visigothic script, a cursive (cf. appendix 39) and a book-hand (Alturo, 2004). The ligatures between letters are very common, with some very interesting rules: for instance, to transcribe the sound “ti” as an assimilated (or “soft”) sound, the ligature  was used. This is what happened when “ti” was followed by a vowel. However, should the same sound be followed by an “s”, then “ti” was unassimilated (or “hard”), the ligature  was used. Other letters, such as *e*, and *r*, were written in very different shapes according to the ligatures they were undergoing. One very interesting feature of this script is the unusual “Visigothic z” , which after entering the Carolingian handwriting eventually transformed into the *c-cedilla* ç (Alturo, 2004; Marcos, 2014).

The Merovingian script received its name from its geographic and political context: it was created in the Frankish Kingdom during the Merovingian dynasty (457 – 752 CE). It was used in the VII<sup>th</sup> and VIII<sup>th</sup> centuries. There were four main scriptoria for the Merovingian script,

each of which developed their own styles: Luxeuil, Laon, Corbie, and Chelles. The base of each script is an adaptation of uncial and half-uncial (see *supra*), which makes it difficult to properly define what *was* the real Merovingian script. It is however safe to say, according to Stiennon (1991) that the essence of Merovingian can be found in its long, slender, near spidery cursive form, found in the diplomas and in the imperial charters (cf. appendix 40), or even more so in the scripts issued by the Merovingian chancery (appendix 41, retrieved in Steffens, 1929). Of all four monasteries, Luxeuil is the one that developed the most characteristic style. Founded between 585 and 590 CE, the Luxeuil monastery quickly became the most thriving one in Gaul, the country that would eventually become France (Stiennon, 1991). The Luxeuil hand, also called *scriptura Luxoviensis*, uses characteristic long, slim capital letters as a display script, and many ornaments, making it the first true calligraphic European hand (Marcos, 2014). A Saracens attack destroyed the monastery in the year 732 (Tolan, 2002), and with it died the script, even when the monastery was rebuilt during the IX<sup>th</sup> century. The Luxeuil script is defined by a “*cranked*” (ibid.) appearance, with dramatic ligatures and long ascenders, so much actually that when one looks at a Luxeuil text (such as appendix 42), the first impression is that all letters are linked to one another. For some, the Luxeuil handwriting is the most beautiful there is, for others, it is completely illegible (Marcos, 2014). The *a* letter in the Luxeuil script looks like two *c* joint together (“*cc*”), a characteristic so strong that this type of writing has been nicknamed “*Merovingian a*”. It usually becomes superscripted when it is in ligatures. The letter *o* is often written as an oval shape, with a smaller *o* written inside. As mentioned before, ligatures and letter deformation for the sake of aesthetics and calligraphic design was very frequent.

Although the abovementioned scripts have been conventionally called “national hands”, the term is rather unfitting as it implies a series of distinct styles, kept separate by concepts of nationhood, and some of the appellations are based on erroneous historical assumptions (Bischoff, 1990). In fact, they stand for very fluid, progressive variations, in an unstable political climate (ibid.; Moss, 1974). Writing was not a nation-wide activity, but was rather focused in some about in centres of literacy all over Europe. The interaction between these centres did not really consider national issues, but depended on the expansion of the monastic culture, the exchange and appropriation (or adaptation) of books and the teaching of script between scriptoria and centres of influence (Nesbitt, 1957). The development of local styles was a process, which gave birth to a significant amount of discrete variations. Styles such as, Lombardic, Visigothic, or Merovingian all evolved into diverse variants. The lexicon and taxonomy tends to be tangled as script styles intertwined, hybridised and influenced each other (Steffens, 1929). In fact, prior to the reign of Charlemagne (from 800 to 814 CE), almost every

part of Europe had its own cursive and book-hand style. During his conquests over Western Europe (the territory bordered with red dotted lines in appendix 43), one of his commands was the unification of all writing styles in the hand called Caroline minuscule (Minois, 2010). Most of the national hands were then annihilated and superseded by the Caroline minuscule (cf. appendix 44). Simply speaking, the only scripts to survive this merger were the Visigothic, which lasted into the XII<sup>th</sup> century, the Bencventan, which was still in use in the XIII<sup>th</sup> century, and the Insular in the British Isles, which is still used in traditional Irish handwriting, although it has been facing a severe waning since the early XX<sup>th</sup> century and has now almost disappeared (Freeborn, 1992).

The last letter that we were missing from the current alphabet is the *J*, which was officially inserted in the Caroline minuscule, yet not differentiated with the *I* until the XVI<sup>th</sup> century, since both letters represent the same sound in Latin. It was also used to write the last number in roman style: for instance, *eight* would be written *VIIJ* instead of *VIII*. This technique was especially used in contacts and imperial charters to avoid fraud. Spain is the first country that will officially create the distinction between *J* and *I*, in 1492 with Antonio de Lebrija, when he published his *Gramática castellana*, making the difference between the consonant and the vowel sound. The same reforms will be directed in Italy in 1524 by Gian GriorgioTrissino in his *Epistola del Trissino de le lettere nuovamente aggiunte ne la lingua italiana* (Guilbert et al., 1989). The letter did not transcribe the affricate consonant [dʒ] in English before the XVII<sup>th</sup> century (Lass, 1999).

## b. Apparition and development of the Japanese written language

### i. Early stages of the language

The origins of the Japanese language are quite mysterious and much debated. Linguistically speaking, Japanese is acknowledged as a mostly agglutinative, mora-timed language with simple phonotactics, a pure vowel system, phonemic vowel and consonant length, and a lexically significant pitch-accent. Let us first define those terms.

According to David Crystal's *Dictionary of Linguistics and Phonetics* (2008), 'agglutinative' is "a term which characterizes a type of language established by comparative linguistics using structural (as opposed to diachronic) criteria, and focusing on the characteristics of the word: in agglutinative or agglutinating languages, words typically contain a linear sequence of morphs – as seen in English *dis/establish/ment* – and thus contrast

*with isolating and inflectional languages. As always in such classifications, the categories are not clear-cut: different languages will display the characteristic of agglutination to a greater or lesser degree.*” In other words, agglutinative particles are so tied to the “full” words they are attached to that they really are, in fact, affixes. Japanese is considered an agglutinative language because what other languages express with periphrases, using helping verbs and other additional words (*was not blue, could not be made to drink*), will be expressed thanks to suffixes that are added to the word root (青くなかった *aokunatta*, 飲まさせられなかった *nomasaserarenakatta*). Because they are conjugated with what is called the copula and not the suffix, nouns are usually not counted as agglutinative. However, in Japanese, should one consider particles to be noun suffixes and not separate words, one could make the case that nouns are also agglutinative, especially since some particles can be agglutinated (私にも *wataшинimo*, 僕だけには *bokudakewa*). These affixed particles cannot be added in any order, and the standard order can be seen as a series of “slots”. In Japanese, as well as in Korean, certain things have to come before others. For instance, if a verb specifies negation it should definitely come after volition (～たい *tai*, that becomes ～たくない *takunai*), but also before the past tense marker (～た *ta*, which evolves in ～なかった *nakatta*). In fact, probably no single grammatical category (as far as case, gender, tense, person, number, volition, negation, etc. are concerned) is done through agglutinative suffixes in all agglutinative languages. Being an agglutinative language has nothing to do with **what** is expressed through agglutination, but rather with **how** it is expressed.

Then, the Japanese language is moraic, or mora-timed. A mora is “*a term used in traditional studies of metrics to refer to a minimal unit of metrical time or weight, and now used in some models of non-linear phonology (e.g. metrical and prosodic phonology) as a separate level of phonological representation. The analysis of segments into moras is usually applied only to the syllabic nucleus and coda (the rhyme), and not to the onset (‘onset/rhyme asymmetry’).*” (Crystal, 2008). It is essential not to confuse a mora and a syllable. A syllable is a unit of organization for a sequence of speech sounds. For example, the word *pantry* is composed of two syllables: *pan* and *try*. A syllable is typically made up of a syllable nucleus (that usually is a vowel) with optional initial and final margins (typically, consonants). A mora, which is what the Japanese language is based on, and which is known in Japanese as 拍 *haku* or モーラ *mōra*, is slightly different, for the English language does not count all of its morae as syllables if they are not stressed. For instance, the second syllable of the word *rabbit* might

be considered as monomoraic. However, in Japanese, all morae count. The Japanese syllable-final *n* is also said to be moraic, as is the first part of a geminate consonant. For example, the Japanese name for “Japan”, 日本, has two different pronunciations, one with three morae (*Nihon*) and one with four (*Nippon*). In the hiragana spelling, the three morae of *Ni-ho-n* are represented by three characters (にほん), and the four morae of *Ni-p-po-n* need four characters to be written out as にっぽん (Howell & Borsel, 2011). Similarly, the names Tōkyō (*to-u-kyo-u* とうきょう), Ōsaka (*o-o-sa-ka* おおさか), and Nagasaki (*na-ga-sa-ki* ながさき) all have four morae, even though, on this analysis, they can be said to have two, three and four syllables, respectively.

Last, a characteristic that is quite typically Japanese is the pitch-accent, or 高低アクセント, *kōtei akusento*. This means that every mora can either be pronounced with a high or low pitch. Not all dictionaries, might they be paperback or electronic, will indicate this, but pitch accent is certainly important because it can make the difference between different words. For example, using bold characters for high pitches: いま **ima** (今) “now”, and いま **ima** (居間) “living room”. However, pitch is, to some extent a characteristic of regional dialects, known as 弁 *ben*. A Kanto speaker may be using the opposite pitches to a Kansai speaker. The way pitch is taught in school is usually a standardized version of it – generally the Tokyo one. When learning Japanese however, foreigners are assured that native speakers easily understand pitchless Japanese, and incorrect pitch will at most sound somewhat odd. Therefore, studying pitch is not seen as essential when learning Japanese and is perhaps best picked up by conversing with native speakers. Jouji Miwa (1998), in his “Japanese word accent” webpage, shows that the sentence ここにきのはしがある *koko ni ki no hashi ga aru*, depending on where the stress is put when talking, can mean “here is a pair of chopsticks”, “here is a wooden bridge”, or “here is the edge of a wood”. Furthermore, famous dictionary smartphone and tablet applications, such as *imiwa*, *JED* or *Weblio* are on the rise. The ever-increasing number of users is due to the democratization of this kind of technology, and the fact that they are free. These applications, although quite extensive in their explanations, do not display pitch-accent (cf. appendix 45). Therefore, the primary source of information and vocabulary for foreigners do not provide insight on stressed morae, which increases the obsolescence of the notion.

The Japanese archipelago has been occupied for a very long time. The first traces of a hunter-gatherer civilization go as far back as the years 14,500 BCE (Habu, 2004). This era is called the Jōmon period (縄文時代, *jōmon jidai*), and extends to about 300 BCE. The name 縄文, “cord-marked” was first applied by the American scholar Edward S. Morse who discovered shards of pottery in 1877 (Mason & Dinwiddie, 2005). Indeed, it appears that a distinctive trait of the artwork of this civilisation was the embossment of clay thanks to ropes (cf. appendix 46), hence the name. Although the Jōmon people have left a significant amount of earthenware and artefacts, there are no written records of the Jōmon era. In fact, the possible earliest record of Japan comes from China. The country is mentioned under the name *Wō* 倭 in the *Shan Hai Jing* (山海經, “Classic of Mountains and Seas”) (Nakagawa, 2003). The textual dating of this collection of geographic and mythological legends is uncertain, but estimates range from 300 BCE to 250 CE (Loewe, 1993). The exact author(s) of the book and the time it was written are yet to be determined. It was originally thought that mythical figures such as Yu the Great or Boyi took part in writing the book. However, the consensus among modern Sinologists is that the book was not written at a single time by a single author, but rather by numerous people from the period of the Warring States to the beginning of the Han dynasty (Bagrow and Skelton, 2010, Lust, 1996). In the book, the twelfth chapter *Hainei bei jing* (海內北經 “Classic of Regions within the North Seas”) includes *Wō* 倭 “Japan” among foreign places both real, such as Korea, and legendary, for instance the Penglai Mountain (Birrel, 1999). Nakagawa (1993) also notes: “*The reference to Wo in the Hai-nei pei ching may indicate a possible tributary relationship between Wo and the kingdom of Yen as far back as the Warring States era, predating references to Wo in any of the Chinese dynastic histories. While Wo did appear at the rim of the northern regions in the Shan-hai ching’s survey of the world, it does not emerge as an isolated country far into the sea, although its cultural and religious practices seem incompatible with those practiced on the continent*”. These cultural differences were maybe a motive to use the derogatory term *Wō* 倭 to define the people living in Japan. An article by Michael Carr (1992) “*compares how Oriental and Occidental lexicographers have treated the fact that Japan’s first written name was a Chinese Wō/Wâ 倭 ‘short/submissive people’ insult.*” The article goes through no less than 92 dictionary definitions of Chinese *Wō* 倭 to illustrate lexicographical problems with defining ethnically offensive words. This corpus of monolingual and bilingual Chinese dictionaries includes 29 Chinese-Chinese,

17 Chinese-English, 13 Chinese to other Western Languages, and 33 Chinese-Japanese dictionaries. In his analysis of the belittling aspects of the term *Wō* 倭, Carr separates the definitions into four types, abbreviated with Greek alphabet letters Alpha through Delta.

- A = “dwarf; Japanese”
- B = “compliant; Japanese”
- Γ = “*derogatory* Japanese”
- Δ = “Japanese”

Alpha (A) type includes both overt definitions like “The land of dwarfs; Japan” (*Liushi Han-Ying cidian* 劉氏漢英辭典 [Liu's Chinese-English Dictionary], 1978) and more sophisticated semantic distinctions like “(1) A dwarf. (2) Formerly, used to refer to Japan” (*Lin Yutang's Chinese-English Dictionary of Modern Usage* 1972).

Beta (B) “*compliant; Japanese*” is illustrated by “*demütig* [humble; submissive; meek], *gehorschen* [obey; respond]” (*Praktisches zeichenlexikon chinesisches-deutsch-japanisch* [A Practical Chinese-German-Japanese Character Dictionary] 1983).

Gamma (Γ) type definitions such as “*depreciatingly Japanese*” (e.g., *A Beginner's Chinese-English Dictionary of the National Language* (Gwoyueu) 1964) include usage labels such as “*derogatory*,” “*disparaging*,” “*offensive*,” or “*contemptuous*”. Some Γ notations are restricted to subentries like “*Wōnú* 倭奴 (*in modern usage, derogatively*) the Japs” (*Zuixin shiyong Han-Ying cidian* 最新實用和英辭典 [A New Practical Chinese-English Dictionary] 1971).

Delta (Δ) “*Japanese*” is the least informative type of gloss; for instance, “*an old name for Japan*” (*Xin Han-Ying cidian* 新漢英詞典 [A New Chinese-English Dictionary] 1979).

Carr evaluates these four typologies for defining the Chinese *Wō* 倭 “bent people” graphic pejoration. From a theoretical standpoint, the A “dwarf” or B “submissive” type definitions provide a more accurate etymological definition, even though it may be deemed offensive. It is no transgression for an abridged Chinese dictionary to give a short Δ “Japan” definition, but adding “an old name for” or “archaic” takes no more space than adding a Γ “derogatory” note. A Δ definition avoids offending the Japanese, but misleads the dictionary user in the same way as the *OED2* defining *wetback* and *white trash* without usage labels.

The table below (Carr 1992, p.31, “Table 8. Overall Comparison of Definitions”) summarizes how Chinese dictionaries define *Wō* 倭.

Definition Type	Chinese–Chinese	Chinese–English	Chinese–Other	Chinese–Japanese
A “dwarf; Japanese”	3 (10%)	10 (59%)	5 (38%)	4 (12%)
B “compliant; Japanese”	0	0	1 (8%)	4 (12%)
Γ <i>derogatory</i> Japanese	0	1 (6%)	3 (23%)	11 (33%)
Δ “Japanese”	26 (90%)	6 (35%)	4 (31%)	14 (42%)
<b>Total Dictionaries</b>	<b>29</b>	<b>17</b>	<b>13</b>	<b>33</b>

More than half of the Western language dictionaries note that Chinese *Wō* 倭 “Japanese” means “little person; dwarf”, while most Chinese–Chinese definitions overlook the graphic slur with Δ type “ancient name for Japan” definitions. This demeaning A “dwarf” description is found more often in Occidental language dictionaries than in Oriental ones. The historically more accurate, and ethnically less insulting, “subservient; compliant” B type is limited to Chinese–Japanese and Chinese–German dictionaries. The Γ type “*derogatory*” notation occurs most often among Japanese and European language dictionaries. The least edifying Δ “(old name for) Japan” type definitions are found twice more often in Chinese–Chinese than in Chinese–Japanese dictionaries, and three times more than in Western ones.

Even nowadays, the Unicode universal character reflects inherent lexicographic problems with this ancient Chinese *Wō* 倭/“Japan” issue. The Unihan (Unified CJK characters) segment of Unicode largely draws definitions from two online dictionary projects, the Chinese CEDICT and Japanese EDICT. The former lists Chinese *wō1* 倭 “Japanese; dwarf”, *wokou4* 倭寇 “(in ancient usage) the dwarf-pirates; the Japs”, and *wonu2* 倭奴 “(used in ancient times) the Japanese; (in modern usage, derogatively) the Japs”. The latter lists Japanese *yamato* 倭 “ancient Japan”, *wajin* 倭人 “(an old word for) a Japanese”, and *wakou* 倭寇 “Japanese pirates.”

Since the Jōmon period left nothing for linguists, archaeologists, and researchers to study about, it is hard to know what the roots of the language itself are. There are many theories, linking Japanese to various language groups. The Japanese language is part of a language group called the Japonic languages that gathers both modern Japanese, and the Ryukyuan languages. This language family is known as 琉球語派 *Ryūkyū-goha*, but also 琉球諸語 *Ryūkyū-shogo* and しまくとぅば *Shima kutuba* “Island Languages” (Shimoji & Pellard, 2010). Japonic languages often sound remote, may it be to one another, or to the Japanese language, which is why they often are divided in six big groups (Kamei et al., 1997). Japanese scholars such as Naitō Konan and Miyazaki Michizaburō in 1907, or Shinmura Izuru in 1916, up to more recent works, with Christopher Beckwith (2007), sustain a theory called the Koguryoic hypothesis. This concept asserts that Japanese comes from a group of extinct languages from the Buyeo-Goguryeo cultures, which gathered in what are currently Korea, south Manchuria and Liaodong. The Altaic, Eurasiatic and Nostratic theories, respectively conjectured by linguists such as Ramstedt (1952 for the first edition, with various addenda in 1954 and 57), Greenberg in 2000 and 2002 with *Indo-European and Its Closest Relatives: The Eurasiatic Language Family*, or Leonhardt with her *Japanese Concordances with Indo-European (IE) Languages* (2012, found on the website konosos.net). Most of the Altaic-related theories have been discredited to this date. Linguists and philologists such as Georg and Vovin have published articles like *From Mass Comparison to Mess Comparison: Greenberg's “Eurasiatic Theory”* (2004) that strongly go against the Altaic and Eurasiatic theories. Keeping this in mind, the works of Leonhardt and the other linguists trying to link Japanese to the Indo-European language family are interesting, as they try to prove linguistically what this dissertation aims at showing through letterform: languages are not hermetically isolated from one another. This theoretical cluster is also an evidence that proves that the quest for a potential Mother tongue (as in a language that would be the origin of all languages) is a very difficult one. Christophe Coupé (2005) even mentions it might be “*impossible*” to go looking for a monogenesis. Freedman and Wang (1996) came up with a Poisson model for language emergence probability (cf. appendix 47). The study shows that polygenesis is probably a theory that is more solid. However, as the authors point out, “[the model’s] *merit is to demonstrate the fallacy in the conventional reasoning, and show that the issue of polygenesis cannot be settled on the basis on à priori statistical reasoning*”. Coupé mentions however that the possibility of a rapidly propagated language could have prevented any other isolate to develop fully.

ii. Origin of the Chinese characters and incorporation in the Japanese language

Until recently, it was believed that the earliest examples of Chinese characters were those that had been discovered in carved pieces of bones used in divination rites and oracles. These date back to the XVIII<sup>th</sup> century BCE. However, excavations made in China in 1986 (Sage, 1992) have shown that even by then, the Chinese characters had already had a history of 1200 years. This astounding discovery pushed back the history of Chinese script to almost 5000 years ago. The earliest characters simply were “*rough sketches of things which they represent*” (Pörtner, 2002). As it has been written above through the example of the roman alphabet, though all the principal writing systems of the world began with pictograms, most of them were simplified to abstract symbols that were used to their sole sound value. This happened everywhere but in China, where the primary function of the characters has always been to express both meaning and sound, rather than just sound. Pictographic characters are more than images; they also convey distinctive phonetics and semantics (Voß, 2003).

Before exploring the characters *per se*, here is a general overview. There are traditionally six categories of letters, the 六書 (*Liùshū*) or the Six Writings. These groups come from the book 說文解字 (*Shuōwén Jiězì*) that was written about 1,900 years ago by the academic and philologist 許慎 (*Xǔ Shèn*), and was published in the year 121. In his book, Xǔ Shèn gathers, explains and analyses over 9,300 characters that were in use at the time, during the Han dynasty (206 BCE – 220 CE).

Appendix 48 shows examples of early character forms and their current shape. The earliest characters were pictographs, or 象形 (*Xiàngxíng*, form imitation), which were simple pictures of what is meant. The “*archaic form*” (Frutiger and Bluhm, 1991) of the object at the origin of the letter is still much recognizable. Pictographs may be combined to form new characters, especially characters that express complex or abstract ideas. Thus 木 “tree” is combined with 木 to give 林 “woods”, and three trees give 森 “forest”. This idea is defended by the KDPS (the Kanji Dictionary Publishing Society) (Halpern, 2001), but is disapproved by a lot of sinologists, such as Zippel (2011), for whom such combinations make them ideogrammatic compounds, hence from the third category. There are roughly only 600 Chinese characters that are stated as pictograms, which is quite a small ratio. Besides the easy combinations we just mentioned, the possibilities of this first category of signs are limited. To

put things in perspective, there are 85,568 characters listed in the 中华字海 *Zhōnghuá Zìhǎi* dictionary, and up to 106,230 characters in the 異體字字典 *Yitizi Zidian*! However, the latter, which is a “Dictionary of Variant-Form Characters”, lists all variants of more common characters. It would be similar to an English dictionary that would make a new entry for every historical spelling of a given word, for instance “*kyng*”, “*kyngē*”, and “*king*”

Another category of signs is the ideograms (指書, *Zhǐshū*, “indication”). Ideograms express, as their category name reveals, ideas. These ideas are usually simple and abstract, and are represented as a “logical shape” (Robinson and Rometsch, 2004). This group of signs gathers characters expressing two main ideas. These ideas are low numerals, such as “one” (一), “two” (二) and “three” (三), that visibly represent the adequate number of strokes, and simple directions, such as “above” (上) and “under” (下). These two characters look like the mirrored version of one another, using the main horizontal stroke as an axis of symmetry. The last part of this group is debated whether to be pictograms or indication characters. The addition of indications to ideograms can change their meaning. For instance, a line added to the bottom of a tree gives 本, which means “root” or “origin”, but having one in its top (末) means “top”, or “end”.

The third type of characters is a mix of the two first groups: the ideogrammatic compound (會意, *Huìyì*). It is the combination of many pictograms and or ideograms together. It is one step further in the process of abstraction of the idea. As Robinson (2004) says it, these characters “represent an idea, not a picture”. Fazzioli (1987) also notes that these characters are born from idea composition and association. For instance, a man (亻) resting next to a tree (木) becomes the character for “rest”, “absence” (休). This is the first and most common method of creating the compounds. The other one was already explained further up: the accumulation of the same character to intensify the meaning of it (the “tree” (木) becomes the “wood” (林), and the “forest” (森), etc.).

The phonetic-ideographic characters, or radical phonetics (形聲 *Xíngshēng*, “form and sound”) follow a different set of rules. When the three first groups connected the aesthetics (the visual aspects) of the character with its meaning, the radical phonetics carry both sound and

semantic pieces of information. For example, 古, “old”, when combined to the “tree” (木), becomes “blight, withered” (枯). There is an estimate that around 90 per cent of all Chinese characters are built according to these rules (Robinson, 2004, Takagi, 2014), which means that the Japanese kanjis follow the same rules. Everyday signs have very interesting stories. For instance, “民, for example, originally a picture of an eye pierced by a needle, represented a slave blinded by his master to keep him from escaping, but later changed to 'ignorant masses' or 'people' in general. As a phonetic-ideographic element in the formation of other characters, it represents the sound *min* and has a basic meaning of 'sightlessness' or 'darkness'. For example, 民 (abbreviated to 氏) is combined with 日 'sun' to give 昏 'darkness, dusk'; 眠 'sleep' consists of an eye (目) in a state of sightlessness (民). An interesting example is 婚 'marriage', which consists of 女 'woman' + 昏 'darkness'. According to one theory, this is because wedding ceremonies were held at night. In this way, a basic unit like 民 contributes its shape, its reading, and its meaning to the formation of other characters” (Halpern, 2001).

The next group of Hanzi gathers the derivative cognates, or 轉注 *Zhuǎnzhù*, that means “reciprocal meaning”. The derivative cognates are a good illustration that a language is most definitely a living concept, that evolves at all times. For example, the Hanzi for “old” 老 and the one for “to inspect”, “to research” (考) may have some common origins, that meant “elderly person” (Norman, 1988 and Zippel, 2011). The modern pronunciations, respectively *lǎo* and *kǎo*, are still quite similar, but the Old Chinese articulation of the words (*\*C-ruʔ* and *\*khuʔ* respectively) was even more so. Despite their common origin, the characters became lexicalized into two separate words and, as it is often the case, the original letter was lost.

The sixth and last kind of Hanzi is the rebus, or phonetic loan. The group name, 借假 *Jiǎjiè*, means “borrowing”, or “making use of”. In this category, meaning is put aside, and everything is centred on sound (Pörtner, 2002). The link is based on complete or partial homophony. Should one character fit the desired sound, it is borrowed and attached to a new word, and a new meaning. According to Fazzioli and Ko (1987), it is near to impossible to trace the etymological background of phonetic loans. Indeed, when the character is “borrowed”, it loses its original meaning, and reflects a “shift” in the language. Of course, the original concept

may still exist, but it is then endorsed with a new character. For instance, 北 *běi*, used to mean “antagonistic state”, or “contrary”, but then changed to mean *běi*, “north”.

As far as the Japanese language is concerned, a seventh category of characters exists, although it is fairly scarce, the 国字, or *kokuji*. This category goes by a few different names in Japanese, may it be 国字, which literally means “the national letters” (in opposition to 漢字 pronounced *kanji* in Japanese, “the Chinese letters”), or 和製漢字 *waseikanji*, which means “the Chinese characters made in Japan”. These were created when the Japanese could not find an appropriate character to represent a specific word. Most of these have only *kun* readings (Japanese-derived pronunciations, see *infra*); some, such as 働 *dō* “work”, have both *on* (Chinese-derived pronunciations) and *kun* readings, while others, such as 腺 *sen* “gland”, have only *on* readings. In such cases, only the “phonetic” part of the kanji, here 泉 *sen* for the *on* reading, is used, although the composition is really a set phrase meaning “organ” (肉 *niku*, that is often transcribed as 月 when it is only a compound) and “source” (泉 *sen*). In some rare cases, as for 腺, a character created in Japan was “exported” back to the Chinese language. There are hundreds of 国字, but less than a dozen is regularly used.

As aforementioned, the Jōmon era, that witnessed the first inhabitants on the Japanese archipelago, has left no written traces. Indeed, the first written record there is in Japan is called the 古事記 *Kojiki*, the “Ancient Chronicles”, or “Record of Ancient Matters” completed in 712 CE, written using Chinese characters. The use of this alphabet can be explained by the “*gradual spread of Buddhism*” (Sansom, 1928), that gave a meaning to the study of Chinese characters, and the Chinese language in general. As Japanese people grew familiar with the characters, their phonetics and the language, they started to transcribe their own literature. This process took a long time. For reasons of sophistry, many of the literate people at the time chose to write their own pieces using the Chinese language instead of theirs. This could easily be compared to Europeans writing in Latin instead of their national language (*ibid.*). However, they did choose to transcribe poems, tales and other stories from the past in their native language, using the sole phonetic aspect of the Chinese characters. These texts are the only way for philologists to study ancient Japanese. The 古事記 is written according to this method (cf. appendix 49)

called 漢文 *kanbun*, “Han writing” (Fischer, 2003). For example, the native Japanese word *yama* “mountain”, that is currently written 山, using the Chinese appropriate Hanzi, was written 也麻, with the first character representing *ya* and the second *ma*. This method of writing is now referred to as 万葉仮名 *man'yōgana* because it was used extensively in the 万葉集 *man'yōshū* “Collection for the Ten Thousand Leaves”, a collection of Japanese poetry that was completed during the Nara period, in 759 CE. The grammatical and linguistic structures of the two languages caused an evident problem, for they were – and are – deeply different, which meant that the Chinese characters were not well-suited for writing Japanese. Whereas since the V<sup>th</sup> century, traditional Chinese is essentially a monosyllabic language with no modulated words, Japanese is a polysyllabic language with various elements attached to the stems of words to express syntactic meanings (see *supra*). One simple example can illustrate this issue. In Chinese, the character 人 *jen*, means “man”, “person”. The Japanese word for the same concept is *hito*. The Japanese people might come to the consensus that 人 should be read *hito*, and make it a conventional sign, like it is now, and like 山 became *yama*, instead of keeping it to 也麻. The problem of course would be the sound. Even if Japanese writers used to strip the characters from their meaning to use only phonetics, both writers and readers were aware of the meanings of the Hanzi. So, to get the sound *hi*, a Japanese person would have to choose between 比 (*bī*, “sort”), 悲 (*bēi*, “grief”), 非 (*fēi*, “not”), and 冰 (*bīng*, “ice”), since the pronunciation is quite close to *hi*. The same process would apply to the *to* mora: there would be many characters to choose from, such as 刀 (*dāo*, “knife”), or 斗 (*dòu*, “fight”, “struggle”), or any of the many characters that are pronounced *to*, or any closely related sound. Therefore, *hito* could be 比刀, 冰斗, or any other combination, which ended up being tricky.

### iii. The creation and use of hiragana and katakana

To simplify the writing process, and ease written communication, the 万葉仮名 system gradually got transformed into a new alphabet, called 平仮名 *hiragana*, which could be translated as “smooth writing” (Fuji et al., 1994). The shapes of the hiragana originate from the

cursive script style of Chinese characters (草書 *sōsho*). Appendix 50 shows the derivation of hiragana from *manyōgana* through cursive script. The upper part shows the character in the regular script form (楷書体 *kaishotai*) (cf. appendix 51), the character in red shows the cursive script form of the character, and the bottom displays the corresponding *hiragana*. Note that there are also various forms of cursive style, not strictly limited to those in the example.

Not everyone accepted hiragana when they were first created. The educated or elites preferred to use the sole kanji system. Historically, in Japan, the regular script form of the letterforms was used by men and called *otokode* (男手), “men’s writing”, while the cursive script (*sōsho*) form of the kanji was vastly used by women. For this reason, hiragana first became popular among women, who were generally not allowed access to the same levels of education as men. Thus hiragana was first widely used among court women in the writing of personal communications and literature (Bowring & Laurie, 2004). From this comes the substitute name of *onnade* (女手) “women’s writing” (Hatasa et al., 2001). Japan’s greatest literary work of the Middle Ages, *The Tale of Genji*, written by Lady Murasaki Shibuku, was originally transcribed and published exclusively in hiragana. To this day, many women have their names written only in hiragana, not in kanji, since this alphabet still stands as an epitome of femininity. Of course, later, male authors also joined in and started to write literary content using hiragana. Hiragana was mostly used for informal writing such as personal letters, while katakana and Chinese were used for official documents. In modern times, the usage of hiragana has become mixed with katakana writing. Originally, for all morae there was more than one possible hiragana. In 1900 however, the system was simplified so each set of sound would be linked to one hiragana only. This change was sanctioned in the 1900 revision of the *Regulations on the Enforcement of the Elementary School Ordinance* (小学校令施行規則 *Shōgakkō-rei Shikōkisoku*) for primary school education. The abandoned *hiragana* are now known as *hentaigana* (変体仮名).

The other alphabet is known as *katakana* (片仮名). It was developed in the IX<sup>th</sup> century (during the early Heian period) by Buddhist monks by using only parts of *man’yōgana* characters as a form of note-taking system, hence this *kana* is so-called *kata* (片 “partial”, “fragmented”). For example, *ka* (カ) comes from the left side of *ka* (加, literally “increase”, but the original connotation is no longer valid to *kana*). Appendix 52 shows the origins of each

katakana: the red markings of the original Hanzi (used as *man'yōgana*) eventually became each corresponding symbol. Early on, katakana was almost exclusively used by men for official text and text imported from China, which could explain the very martial and masculine shape they have. Recent discoveries by Yoshinori Kobayashi, professor of Japanese at Tokushima Bunri University, suggest the likelihood that the katakana-like annotations used in reading guide marks (乎古止点 / ヲコト点 *okototen*) may have been invented in VIII<sup>th</sup>-century Korea – possibly Silla – and then introduced to Japan through Buddhist texts.

Both alphabets enjoy a limited set of diacritics: the 濁点 (*dakuten* “voicing marks”, or 点々 *tenten* “dot-dot”, and the 半濁点 (*handakuten* “half voicing mark”), or 丸 *maru* “circle”. 濁点 is a diacritic mark which indicates that the consonant of a mora should be pronounced, or weakened. For instance, the hiragana は *ha* becomes ば *ba*, き *ki* becomes ぎ *gi*, す *su* becomes ず *zu*, etc. 半濁点 is a diacritic used with the *kana* for syllables starting with *h* to indicate that they should instead be pronounced with [p]. Hence は *ha* becomes ぱ *pa*, and ふ *hu* becomes ぷ *pu*. Both the *dakuten* and *handakuten* are drawn equally in hiragana and katakana alphabets. The similarity between the *dakuten* and quotation marks (“”) is not a problem, as written Japanese uses corner brackets (「」).

The following table summarizes the phonetic shifts that derive from *dakuten* and *handakuten*. Literally, morae with *dakuten* are called “muddy sounds” (濁音 *dakuon*), while those without are known as “clear sounds” (清音 *seion*). However, the *handakuten* (lit. “half-muddy mark”) does not follow this pattern.

清音	濁点	半濁点
か <i>ka</i>	が <i>ga</i>	が <i>nga</i>
さ <i>sa</i>	ざ <i>za</i>	-
た <i>ta</i>	だ <i>da</i>	-
は <i>ha</i>	ば <i>ba</i>	ぱ <i>pa</i>

Handakuten on *ka*, *ki*, *ku*, *ke*, *ko* (rendered as か<sup>ゝ</sup>, き<sup>ゝ</sup>, く<sup>ゝ</sup>, げ<sup>ゝ</sup>, こ<sup>ゝ</sup>) represent the sound of *ng* in *singing* ([ŋ]), which is an allophone of /g/ in many dialects of Japanese. They are not used in normal Japanese writing, but may be used by linguists and in dictionaries (or to represent characters in novels who speak that way). This is called *bidakuon* (鼻濁音, “nasal muddy sound”). In katakana only, the *dakuten* may also be added to the character ウ *u* and a small vowel character to create a [v] sound, as in ヴァ *va*. However, a hiragana version of this character also exists, with somewhat sporadic compatibility across platforms (ゝ). As [v] does not exist in Japanese, this usage applies only to some modern loanwords and remains relatively uncommon, and e.g. “Venus” is typically transliterated as ビーナス (*bīnasu*) instead of ヴィーナス (*vīnasu*). Many Japanese, however, would pronounce both the same, with a [b] sound, or even [β] much as in Spanish, and may or may not recognize them as representing the same sound. An even less common method is to add *dakuten* to the *w*-series, reviving the mostly obsolete characters for [wi] (ヰ) and [we] (ヱ). [vu] is represented by using [u], as above; [wo] becomes [vo] despite its [w] normally being silent. Precomposed characters exist for this method as well ([va] ヱ [vi] ヰ [vu] ヱ [ve] ヱ [vo] ヱ), although most IMEs do not have a convenient way to enter them. Another rare application of *dakuten* is on the *r*-series, to mark them as explicitly *l*: ラ<sup>ゝ</sup> [la], and so forth. This is only done in technical or pedantic contexts, as many Japanese cannot tell the difference between *r* and *l*. In Ainu texts, *handakuten* can be used with the *katakana* セ to make it a [ts] sound, セ<sup>ゝ</sup> *ce* [tse] (which is interchangeable with ツエ), and is used with small *fu* to represent a final *p*, フ<sup>ゝ</sup>. In addition, *handakuten* can be combined with either *katakana* ツ or ト (*tsu* and *to*) to make a [tʃ] sound, ツ<sup>ゝ</sup> or ト<sup>ゝ</sup>. In informal writing, *dakuten* is occasionally used on vowels to indicate a shocked or strangled articulation; for example, on あ<sup>ゝ</sup> or う<sup>ゝ</sup>. *Dakuten* can also be occasionally used with ん (ん<sup>ゝ</sup>) to indicate a guttural hum, growl, or similar sound.

平仮名 are used to write the following situations: inflectional endings for adjectives and verbs—such as る in 食べる (*taberu*, “eat”) and い in 青い (*aoi*, “blue”),

and respectively た and かった in their past tense inflections 食べた (*tabeta*, “ate”) and 青かった (*aokatta*, “was blue”). In such cases, they are called 送り仮名 *okurigana*. They are also used in most grammatical particles, or postpositions (助詞 *joshi*), as in small, usually common words that, for example, mark sentence topics, subjects and objects, or have a purpose similar to English prepositions like “in”, “to”, “from”, “by”, “for”, etc. The use of hiragana also includes a significant lexicon of grammatical types that lack a kanji rendition, or whose kanji is obscure, difficult to typeset, or considered too difficult to understand (as in children's books). For instance, a rabbit 兎 *usagi* is generally written using *kana* alone, as in うさぎ. Last, the other use of hiragana is 振り仮名 *furigana*, literally “sprinkled characters”. These are the phonetic renderings of kanji placed above or beside the kanji character (cf. *infra*). Furigana may aid children or non-native speakers or clarify non-standard, rare, or ambiguous readings, especially for words that use kanji not part of the 常用漢字 *jōyō kanji* list, is a catalogue of the 2,136 kanjis that the government has labeled of daily use in 1946 (see *infra*).

There is also some flexibility for words with more common kanji renditions to be written instead in hiragana, depending on the individual author's preference (all Japanese words *can* be spelled out entirely in hiragana or katakana, even when they are normally written using kanji). Some words are colloquially written in hiragana and writing them in kanji might give them a more formal tone, while hiragana may impart a softer or more emotional feeling (Kess and Miyamoto, 1999). For example, the Japanese word *kawaii*, the Japanese equivalent of “cute”, can be written entirely in hiragana as in かわいい, or as the kanji term 可愛い. Some philological items that are ordinarily written using *kanji* have been turned into grammatical tools in certain contexts, where they are instead written in hiragana. For example, the root of the verb 見る (*miru*, “see”) is customarily written with the kanji 見. However, when used as a suffix meaning “try out”, the whole verb is normally written in *hiragana* as みる, as in 食べてみる (*tabetemiru*, “try eating [it] and see”).

The 片仮名 syllabary is commonly used to write the transliteration of foreign words and names, such as コンピュータ (*konpyūta*, “computer”) and ロンドン (*Rondon*, “London”). (Some foreign borrowings that have become naturalized may not be rendered in *katakana*.) Katakana are also used when referring to the names of animals and plants, such as トカゲ

(*tokage*, “lizard”) and バラ (*bara*, “rose”), and certain other technical and scientific terms, such as mineral names. Occasionally, the names of various other items whose kanji are rare, such as ローソク (*rōsoku*, “candle”). The Japanese language is full of onomatopoeia, such as ワンワン (*wan-wan*, “woof-woof”), and other sound symbolism, that Japanese people are much keen on. These are usually written in katakana to emphasize the sound, since it is the syllabary of emphasis, much like italicisation in European languages (cf. *infra*). Last, katakana can also be used to impart the idea that words are spoken in a foreign or otherwise unusual accent; for example, the speech of a robot.

iv. The readings of kanji

Characters used to represent meaning were pronounced in two ways: the 音読 *onyomi* or “phonetic / sound reading” and the 訓読み *kunyomi* or “explanatory reading”. This phonetic ambivalence of the kanji is fundamental to the nature of the Japanese script.

In the first method, which is often called the “Chinese-derived pronunciation”, also called “Sino-Japanese reading”, the characters represent Chinese-derived words or word elements. This method of reading the characters will be referred to as the *on* reading (for 音 *on*, “sound”). The reading assigned to each character was a rough approximation of the original Chinese intonation. For example, the character 山 “mountain” was given the sound *san* based on its old Chinese pronunciation (its modern Chinese phonation is *shān*). *On* readings are found more frequently in compound words (e.g. 連山 *renzan* “mountain range”) than in independent words (e.g. 天 *ten* “heaven”). Besides, since the Japanese people often had pre-existent words to express the meanings depicted by Chinese characters, they began to associate the *kanji* not only with Chinese words but also with purely Japanese words. 山 “mountain”, for example, was used to represent the native Japanese word *yama* “mountain” with no connection to its Chinese-derived reading *san*. This method of reading the characters will be referred to as the *kun* reading, from 訓 *kun* “read”, but also “teaching”, according to Fischer (2003), the “*gloss*”.

Originally, the *kun* reading was a native Japanese word that was essentially a translation of the concept represented by the Chinese character. Over the years, certain words became so well established as the translation for a given character that they were considered the standard reading or readings attached to that character. In this fashion, 山 assimilated the reading *yama*, which eventually became established as its standard accepted pronunciation along with its *on* reading *san*. A distinctive feature of the way Chinese characters are used in the Japanese language is definitely their multiple readings. Since the characters entered Japan over different historical periods and originated from different geographical regions, many characters have acquired several *on* and/or *kun* readings. In extreme cases, a character may have more than 100 readings (生, for instance, has over 200 of them!). *On* and *kun* readings may be joint in four potential ways: *on-on*, *kun-kun*, *on-kun*, and *kun-on*. Regrettably, there is no consistent rule for determining if a kanji is to be read in the *on* or *kun*, or for deciding which of several possible readings to select in a particular instance. A rough guideline is that *on-on* or *kun-kun* readings are used in compounds, and *kun* readings in independent words, but there are many exceptions. For example, 毎朝 *maiasa* “every morning” is an *on-kun* compound, though 毎 has the *kun* reading *goto* and 朝 the *on* reading *chō*. Generally, the more common a character is, the more numerous are its meanings and the more complex is the relationship between them. An extreme example is 上 *jō* “up”; “go up”. Halpern’s dictionary (2001) lists a total of 114 meanings for 上, subdivided into 16 subentries. It has 27 meanings as an *on* word element, 3 meanings as an independent *on* word, 17 meanings for 5 *kun* word elements and 67 meanings for 9 independent *kun* words. Although 上 is a very long entry and is hardly typical, many characters do have more than ten *on* and *kun* meanings combined.

Traditionally, *on* readings are classified into four types (Verdonschot et al., 2013). The first type of reading is called 漢音 *kan'on* “Han reading”. It is the most frequent and the most prolific *on* reading. It was introduced to Japan during the seventh and eighth centuries. This reading system is based on the pronunciation contemporary to the Tang Dynasty in north-Western China. Example: 行 *kō*. Then, there is 吳音 *goon*, the “Wu reading”, which is usually supposed to originate from the Wu region in the lower Yangtze River area near Shanghai. It was diffused in the Japanese culture and literature up to the sixth and seventh centuries along

with Buddhist writings. It is used mostly in Buddhist terms. Example: 行 *gyō*. The 唐音 *tōon* “Tang reading” was introduced much later, between the XIII<sup>th</sup> century and the Edo period. It is based on the pronunciation current in the Song Dynasty and after, and is used mostly for borrowed words and technological terms. Example: 行 *an*. Last, the 慣用音 *kan’yōon* “popular reading” developed because of erroneous pronunciations that came into popular use and gained general acceptance. Example: 立 *ritsu*. There actually are a few other (rare) *on* readings, but they are not relevant to this study.

In addition to the standard *on* and *kun* readings, there are a few special ways in which kanji characters can be used. The most important of these are 当て字 *ateji* “phonetic substitutes”, which refers to kanji used phonetically to represent native or borrowed words with less regard to the underlying meaning of the characters, in the great tradition of 万葉仮名 *man’yōgana* in ancient Japanese (see *supra*). These are often used to transliterate Sanskrit Buddhist terms, such as 阿修羅 *ashura* ‘*Asura*’ (fighting demon), and other foreign words such as 珈琲 *kōhī* “coffee”. Kanjis are rarely used for those words, and *kanas* (hiragana or katakana, depending on the origin of the word) are usually preferred. The second variation is 熟字訓 *jukujikun* “special reading” refers to a reading of a word consisting of two or more characters assigned to a single word on the basis of its meaning without direct relation to the normal readings of each constituent character. For example, 海老 *ebi* “shrimp” consists of 海 “sea”, normally pronounced *umi* or *kai*, and 老 “old (man, age)”, “to grow old”, normally pronounced *rō*, *o* or *fu*, but together they function as a single unit pronounced *ebi*.

Kanji are used to write the core of the Japanese vocabulary. They have three basic properties: form, sound, and meaning. Each character may be pronounced according to its Chinese derived *on* reading, or one of several native Japanese *kun* readings, and each reading may have numerous meanings associated with it. A running Japanese text consists of a mixture of *kanji* and *kana*, with the latter generally outnumbering the former. Let us consider the example of 漢字を組み合わせることによって多数の熟語が作り出せます。 *kanji o kumiawaseru koto ni yotte tasū no jukugo ga tsukuridasemasu.*, “Numerous compound words

can be formed by combining Chinese characters”. In this sentence, particles such as を *o* (object marker), as well as verb endings (-わせる *-waseru* in 組み合わせる *kumiawaseru* “combine”), are written in hiragana, whereas nouns, such as 熟語 *jukugo* “compound word”, are written in kanji. Hiragana characters serve as natural borderlines that help the reader segment the text into meaningful units. For this reason, a Japanese text is easier to read than a running Chinese text, which consists of Chinese characters only.

Another important characteristic of Chinese characters is their high productivity. By combining a stock of a few thousand characters, countless compound words are generated. 戦 *sen* “war”, for example, is combined with other characters to form numerous compound words related to war, such as 戦友 *sen'yū* “comrade-in-arms” and many others. Chinese characters in Japanese function much the same way as Latin and Greek roots do in English. Each character has one or more distinct meanings, and often functions as a highly productive word-building element. A further characteristic of Chinese characters is their semantic transparency. As each component of a compound word conveys a distinct meaning, the meaning of the resulting word is often self-evident. For example, 好奇心 *kōkishin* “like” + “strangeness” + “heart (mind)” means “curiosity”, 貧血症 *hinketsushō* “little” + “blood” + “illness” means “anemia”, and 閉所恐怖症 *hēshokyōfushō* “closed” + “place” + “fear” “illness” means “claustrophobia”. Once the meanings of the components are known, relatively little effort is needed to learn these words.

Finally, Japanese has many homophones (words that sound the same but are written differently). The morae *kikō*, for instance, represents about a dozen words in common use, and there are many more less frequent ones. Since each character has a distinct form (and meaning), kanji serve to distinguish such words from each other. Thus, 機構 *kikō* “mechanism” is easily distinguished from 帰港 *kikō* “returning to the harbour”.

#### v. Language reforms

Changing the Japanese system is a matter that has been debated for a long time, since the first debates around it started in the 1880s (Robinson, 2007). However, due to Japan’s

tendency to conservatism, no measure was adopted for some time, not even the 1938 proposal to split kanji between textbooks and everyday use, and for special texts. Shortly after World War II, the Japanese government implemented language reforms aimed at limiting the number of characters and simplifying their forms, among other things. This comes from a very practical issue that Japan faced during the war: there had been some dangerous incidents because of soldiers who simply could not read some of the characters written on weaponry parts (Seeley, 1991). To reduce mishaps as much as possible, “by 1940, the army had limited the number of kanji for weapon parts to 1235 and was considering the feasibility of cutting the number in half” (Robinson, 2007). At the same time, *kana* orthography underwent extensive reforms to reflect actual pronunciation. For example, the sound *kyū* was historically written by such combinations as きう and きふ, but is now written きゅう. Large-scale language reforms also took place in China to limit the number of characters and drastically simplify their forms (Takagi, 2014). Thus, many modern Chinese forms are very different from their corresponding traditional and modern Japanese forms. For example, the traditional form of 龜 *guī* “turtle” was simplified to 龟 *kame* in Japanese but to 龟 *guī* in simplified Chinese.

In 1946, a list of characters known as 当用漢字 *Tōyō kanji* was distributed, in which the amount of characters to be learnt was limited to 1850 (Halpern, 2001). Various amendments and added extras followed in the ensuing years. In 1948, for instance, an appendix listing 881 characters to be learned in the first six years of obligatory schooling was published, and the number of readings of many characters was reduced. In 1949, the forms of many characters were greatly simplified, while in 1951 a supplementary list of 92 characters was approved for use in personal names, bringing the total to 1942.

Despite these changes, there was much discontent amongst the community, who wanted the amount of characters augmented. In 1973, 28 more characters for general use were added, while in 1976, 28 name characters were added, followed by a supplementary 54 in 1981 and 118 in 1990. Meanwhile, cultural administrations and the public at large pressed for greater liberty in the use of Chinese characters in general, as a result of which an expanded list of 1945 characters known as 常用漢字 *Jōyō kanji* was published in 1981. This brought the total number of characters that can be used in names to 2229. The general trend to increase the number of characters took place in the schools as well. In 1977, the number of characters to be learned during the six years of compulsory schooling was increased to 996, and in 1989, this number was again increased to 1006 in line with the Ministry of Education's policy to place greater

emphasis on reading and writing. This list was revised in 2010, adding 196 characters, and taking five down, bringing the amount of kanji to 2136. Currently, the most important official lists approved by the Japanese government as part of the postwar language reforms are:

- Jōyō Kanji: The 常用漢字 *Jōyōkanji hyō*, or “List of Characters in Common Use,” is an official list (published in 2010) of 2136 characters widely used in the mass media, government and general publications, and education.
- Education Kanji The 学年別漢字配当表 *gakunenbetsu kanji haitōhyō*, or “List of Characters Classified by School Grade,” is an official list of 1006 characters that must be learned in the first six years of compulsory schooling. The list, which is commonly referred to as 教育漢字 *Kyōiku kanji* (“Education Kanji”), was promulgated on March 15, 1989, and is available on the MEXT (Ministry of Education, Culture, Sports, Science and Technology of Japan) website. The number of characters taught in each grade is as follows:

<b>Grade</b>	<b>1977 List</b>	<b>1989 List</b>
First	76	80
Second	145	160
Third	195	200
Fourth	195	200
Fifth	195	185
Sixth	190	181
<b>Total</b>	<b>996</b>	<b>1006</b>

- Jinmei Kanji: The 人名用漢字 *Jinmeiyō kanji*, or “Name Characters,” is an official list (published in 1981) of 166 characters approved for use in personal names in addition to the Jōyō Kanji list. In 2015 one extra kanji was added to the list, raising the total amount to 843 characters.

The endorsement of the Jōyō/Tōyō Kanji lists as part of the post-war restructurings made it essential to adopt various actions to ensure an execution without problems. One of the issues was that it became impossible to write certain daily words that included characters not in the official list. To solve this problem, the government published a list of simpler characters

and words, called 同音の漢字による書きかえ *dōon no kanji ni yoru kakikae*, literally the “homophone kanji that will be used in replacement”, to substitute the characters not in the list. For example, the character 繫 (phonetically replaced character) in 連繫 *renkei* “connection”, “linking”, “contact” was replaced by 係 (phonetic replacement character), which has the same *on* reading and is similar to it in meaning, so that the word is now written 連係. In addition to the 170 phonetic replacement characters appearing in the list mentioned before, there are many others which are in common use but do not appear in the list. For example, 混 replaces 渾 in the word 渾沌 *konton* “chaos”.

### c. Going back to a hieroglyphic sign system?

#### i. Globalisation and the need for international standards

In nowadays’ globalized world, where international and intercultural exchanges are made constantly and at an ever-growing scale, the need to understand each other has never been this strong. Misinterpretation can be very costly: according to a study conducted in 2007 by the consulting and strategy agency Accenture, American consumers gave back \$13.8 billion worth in electronics in 2007; Europeans returned \$11.5. Altogether, these returns alone amount to over \$25 billion. It also happens that 60 to 85% of the products were working perfectly fine, which evaluates between \$15.2 and \$21.5 billion in perfectly operational equipment returned. Then why were there so many returns? The study shows that due to unclear interfaces, inaccessible features, no to little customer education, and most of all weak documentation, the customers thought better to get rid of the product. To avoid this kind of losses, might they be of money, time, energy, or sometimes even lives, some international communication systems are essential.

A type of signs that was needed very early in history was road signs. Road signs exist since roads exist: as soon as the Roman Empire, there were *milliaria* (singular form: *milliarium*) along the roads. As their name indicate, the distance between two milliaria was a Roman mile, or 1,460 meters (Coulon, 2009). They had multiple function, from indicating the direction of a road, the position of the commuters, but also a political position, for the emperor was the one planting the milliaria. In 1686, King Peter II of Portugal signs the first known Traffic

Regulation Act in Europe. This act demands the placement of priority signs in the narrowest streets of Lisbon, displaying which traffic should back up to give way. One of these signs still exists at Salvador Street, in the neighbourhood of Alfama (cf. appendix 53). In Great Britain, the oldest sign, or *fingerpost*, dates from 1669. Fingerposts are arms (or fingers, hence the name) attached to a pole, each arm indicating a direction and a mileage. The oldest post, represented in appendix 54, is located next to Chipping Campden, in Gloucestershire, and indicates Oxford, Warwick, Gloucester, and Worcester. In 1697, *fingerposts* become a legal obligation. This system became very popular in the kingdom, and by 1766, all toll roads must have fingerposts (Duhamel-Herz and Nouvier, 1998). The first form of modern road signs came from Italy, in 1880 (Cambon de Lavalette, 2009), when a cyclist club decided to create a system of signs using images, to advertise the dangers of the road for people riding bikes, such as steep slopes, tight turns, and so on. In 1905, the government approves the set of signs, mainly displaying arrows. With the development and democratization of the automobile industry, the need for internationally understood signs became increasingly pressing. This new means of transportation provokes very mixed feelings, from the delight of the people thirsty for thrills and speed to rejection of others, looking mainly at the dangers, noise, and smell of the cars (Reverdy, 1995). Since there was no official regulation of cars, nor roads, the shape, colour, and design of signs would change from one city to another, and so would speed limits, making it impossible for drivers to use their cars safely. Associations of drivers found a way to attract interest and funding by organising car races: from Paris to Rouen in 1903, and from Paris to Bordeaux in 1904. To ensure the best racing conditions, the first signs using pictogram were established then (ibid; Cambon de Lavalette, 2009). Realizing the interest and the potential godsend these races could become, companies such as Michelin in France and Dunlop in Great-Britain started to heavily fund the associations and their project (and usually have their sponsorship written on the road sign), and the famous Touring Clubs advertised the races as well (Krampen, 1983). By 1906 there was a set of unofficial pictographic signs set in place (cf. appendix 55), used only in the context of the races at first. A pictogram, or pictograph, is a sign that represents a symbol, a real object, or a figure in a schematic way. With this term, we identify written symbols that belong to logographic writing systems, which were originally based on ideograms. This kind of signs is created in order to draw attention to something using images instead of language or words. Because the aim of the races was to go fast, those signs could not be displaying messages, only icons and images, allowing an instantaneous recognition and understanding. The designer and consultant Sergey Punchev wrote:

*“I always liked the fact that in pictograms with very little you can say so much.  
How with one line you can make something with character. Creation of icons and*

*pictograms is not easy, because it is far more difficult to make something meaningful with few elements, than to make something with a lot of detail. This is a problem that I as a designer have to solve.”*

In 1909, nine European countries agree over the adoption of the four road signs displayed in appendix 56. The fact that all four of these are linked to danger shows how many accidents (especially collisions between cars and trains) there were at the time (Krampen, 1983). In 1900 only 4,129 cars were constructed in the U.S.A. 100 years later, in 2000, the US manufactured 12.77 million automobiles and there were 221.47 million listed cars (Takeyama, 2003), making the XX<sup>th</sup> century truly the era of the automobile. Facing the quick rise of drivers on the American land, the government had to take measures. In 1924 in Washington D.C. opens the first NCSHS (National Conference on Street and Highway Safety), offering a standardization of road signs colours, many of which are still in use nowadays, for instance white letters on a red background for the “STOP” sign (Weingroff, 1996). The same year, the AASHO (American Association of State Highway Officials) issues a standard for colours and shapes of signs. Because these two standards (the NCSHS and AASHO) become confusing, the two organizations work together in the project of publishing the MUCTD (Manual on Uniform Traffic Control Devices), also called the *Manual*, published first in 1935 (ibid.). Europe defines its own standards through various meetings, one of which was held on March 30<sup>th</sup> 1931, when the bases of the current signalization have been defined (Duhamel-Herz & Nouvier, 1998). To this day, both the American and the European system survive, despite many attempts to build a worldwide system, such as the 1949 conference held in Geneva, or the 1968 one in Vienna (ibid.).

One other field that is completely international, and as such is confronted to the issue that multiculturalism and multilingualism may represent is sports, especially in the context of global meetings, such as the Olympic Games. The Olympic Games are occasions of “nation building,” through which nations become aware of their discrete identity values and take chances to keep the rest of the world informed about their status. To ensure understanding from all, from the German games of 1936, a set of symbols, looking like Middle-Age emblems, has been set in place (cf. appendices 57 to 57d). However, mostly due to the inevitable link that is being made to the Third Reich and the Nazi ideology, this set of signs tends to be forgotten in the consideration of the Olympics pictograms (Rich, 2012). One very important date in the Olympics graphic design history are the Tokyo games of 1964. These were introduced in both national and global narratives as events that foreshadowed Japan’s post-war modernization

process in a context of peace and demilitarization. Through the Olympics, the Japanese government pursued the idea to be accepted in an international community from which it has been alienated for eighteen years, due to its part in the Pacific War. Tokyo 1964 demonstrated faith in technology, rationalization and consumerism, and its graphic design developments have been considered representative of this time. Most of these projects were designed by prolific and recognized Japanese designers according to the rules of modern design, and were granted international credit (Traganou, 2009). The design critic Katsumi Masaru, who managed a team of several renowned designers, such as Kamekura Yusaku, Hara Hiromu, Tanaka Ikko and Kōno Tadashi, mainly supervised them. The team considered the Olympics as a chance to establish a design language in Japan following Otto Neurath's concept of the *isotype*, a symbolic way of displaying information via easily understandable icons that work without written language. As specified by Katsumi, the group's main strategy was to create the official logo and secure its constant use, to use and adapt the five colours of the Olympic rings to various design applications, to regulate the Olympic colours (overseen by Kōno Takashi), to design the symbols of the various games and facilities (later known as pictograms), and to ensure a constant assessment of letterform (managed by Hara Hiromu) (Masaru, 1986). This was the first time that a "total design" method was used in the Olympics. The definition of a "design guide sheet" eased the approach, providing an inclusive set of values that the artists had to respect, rather than come from unplanned graphic projects. A key achievement of the team's work was its truly cooperative work. As Katsumi stated, "*it was the first time that young Japanese designers worked so much for an international event since the International Design Conference. ... Design was not done by a 'star system', but by team work*" (ibid.). The creation of the pictogram set was actually being worked on from 1959 onwards, according to Masaru. In a discussion in 1959 the designer Kamekura Yusaku stated the importance and impact of a symbolic language, especially since the Olympics would bring many foreigners unfamiliar with the Japanese language (Maemura, 2004). Traganou (2009) also writes:

*"Since Japan had not adopted the principles of the International Traffic Signs, introduced at the United Nations Geneva conference in 1949 and accepted by most European countries, the Olympics were regarded by graphic designers as an opportunity to establish a more unified and internationally legible symbolic language across the country. It was along these lines, searching for universally understood visual languages, that pictograms ([絵詞] ekotoba, in Japanese, a word used prior to the design of pictograms) were for the first time designed for the Olympic Games [cf. appendix 58], embodying at the same time Baron de*

*Coubertin's aspirations of universalism...A major task of the Japanese design team of the 1960s was to de-traditionalize Japanese visual languages by subscribing to the abstract, non-iconic principles of the modern movement, found also to be more appropriate for expressing the new corporate identities of post-war Japan."*

The set of pictograms received a very warm appraisal after its revealing. Critics such as British Stanley Mason wrote:

*"Symbols such as international traffic signs need to be easily understood, accepted by authorities and civil citizens, and be practical. This was achieved in 1964 at the Tokyo Olympic Game. [...] I hope that these symbols will be used in the next games so that they will be polished to be the perfect universal visual language".*

Both road signs and the sport symbols take inspiration, and inspire an Austrian movement called ISOTYPE, an early and still completely accurate form of infographic symbols. *Isotype* stands for "International System of TYpographic Picture Education", and sprouted from the need to show social, scientific, technological and historical facts and relations between facts in a pictorial form. One of the famous catch phrases of the movement are "*To remember simplified pictures is better than to forget accurate figures*", displayed in the Gesellschafts- und Wirtschaftsmuseum in Wien (Social and economic museum of Vienna) (Neurath, 1991), and the motto of the Otto Neurath, founding director of the museum, was "*Words divide, pictures unite*". Isotype started in 1926 with the association of Neurath and German artist Gerd Arntz, whose homage website, <http://www.gerdarntz.org/>, still displays none less than some 4,000 of the pictograms and isotypes he created. "Visual education" was always the main motivation behind Isotype, which was displayed in exhibitions and books aiming at informing ordinary citizens (including pupils) about their place and the situation in the world. Because of this standardization, generic symbols ('man', for instance) can, by means of small variations or additions (such as a cap or standardized signs for various industries) acquire a specific content ('worker in the steel industry'). This way also, various data become comparable. The ambition to educate was never illustrated as well as in Neurath's *International picture language*, published in 1936 (cf. appendix 59). However, isotype was never intended to replace verbal language; it was meant to be a "helping language" always put together with verbal elements. Neurath realized that it could never be a wholly developed language *per se*, so instead he called it a "*language-like technique*" (2010).

There have been some projects to artificially create languages across borders, also called international auxiliary languages, such as the Esperanto project. However, besides the Esperanto itself, these projects never really took off. According to the 2015 edition of the web-based publication *Ethnologue*, there are about two million speakers of Esperanto in the world. Although remarkable, the project never reached its goal of federating all with a common second language. English on the other hand is definitely the most geographically spread language, to this day, making it a *world language*. A world language is defined not only by the total number of speakers (native and second language speakers), but also by its geographical spreading, as well as use in worldwide organizations and diplomatic relations (Baker & Jones, 1998). With its over 1,500 million primary and secondary users, and learners worldwide (Crystal, 2006). It is also estimated to have as many as 700 million “foreign” learners of the language, including somewhere between 200 and 350 million learners/users in China alone (ibid.), English clearly deserves its title as world language. According to a 2013 publication of the French INED (National Institute for Demographical Studies), English is also progressively becoming the leading language of academic research and papers worldwide, having even overtaken national languages in Western European countries, including France. A closely related, and much older type of language is the *lingua franca* (see *supra*). *Lingua francas* have developed around the world throughout human history, sometimes for commercial reasons (so-called “trade languages”) but also for cultural, religious, diplomatic, and administrative convenience, and as a means of exchanging information between scientists and other scholars of different nationalities. However, because they are tightly linked to and usually comprised within the limits of their industrial, cultural, and/or administrative backgrounds, *lingua francas* cannot be considered completely international languages. To this day, the only “language” that can truly be recognised as international is the International Sign. The use of quotation marks here is important, for the International Sign (also called ISL, standing for *International Sign Language*) is more of a pidgin than a language: it is not quite as conventionalised, nor as composite as vernacular sign languages, and its lexicon is rather limited. In her PhD dissertation, *An Investigation of International Sign: Analyzing Structure and Comprehension* (2004), Rosenstock notes:

*“Over 60% of the signs occurred in the same form in more than eight SLs as well as in IS. This suggests that the majority of IS signs are not signs borrowed from a specific SL, as other studies found, but rather are common to many natural SLs. Only 2% of IS signs were found to be unique to IS. The remaining 38% were borrowed (or “loan”) signs that could be traced back to one SL or a group of related SLs.”*

The existence of an international signing system is not new: deaf people have used a secondary sign system for international communication at sport or cultural events since the beginning of the XIX<sup>th</sup> century (McKee and Napier, 2002). It became more official in 1951, when the World Deaf Congress was formed, and when the matter of a potential standardization of a global system was risen.

As we have seen until now, it is thus impossible to have a fully international language: cultural references and interpersonal relationships are too different from one region of the world to another to make it happen. However, because since the XX<sup>th</sup> century we live in a paradigm of a fully globalised economy, a comprehensive set of mutually understandable standards is essential to ensure security, safety, and healthy relationships. Standards are a key in international trade because incongruent standards can be barriers to trade, giving some organizations advantages in certain areas of the world. Standards provide clear identifiable references that are recognized internationally and encourage fair competition in free-market economies. Standards facilitate trade through enhanced product quality and reliability, greater interoperability and compatibility, greater ease of maintenance and reduced costs (for the cost of bad communication, see *supra*) (Martincic, 1997). Safety through standardisation is the reason the American Engineering Standards Committee (AESC) was created in 1918, for the sole US nation first. The principle spreads and in 1926, the AESC, with the support of British IEC (International Electro-technical Commission) Secretary General Charles Le Maistre, the ISA is born. ISA stands for International Federation of the National Standardizing Associations, or International Standards Association. It gathers mostly standardisation associations from European countries, and the AESC representing the US and Japan. Despite its intense activity during the 1930s, the ISA is put on hold during World War II. The activity resumes with the end of the war. In 1946, the AESC, now known as the ASA (American Standards Association), the AFNOR (its French counterpart) and the BSI (British Standards Institute) gather in London along with the standards organisations of 22 other countries, and together they create the International Standards Organisation, the ISO. It was officially inaugurated on February 23<sup>rd</sup>, 1947 (Latimer, 1997). According to the ISO website, the organisation was primarily meant to be called the IOS (International Organisation for Standardization), yet because the IOS has three official languages (English, French and Russian), it needed to be an acronym that would remain the same in all three (*ISO* would have turned into *OIN* in French, for instance). The same website informs that the acronym ISO has been chosen because it sounds like the Greek word *ἴσος* *isos* which means “equal”. However, as Kuert writes it in ISO’s anthology *Friendship among equals: Recollections from ISO’s first fifty years* (1997):

*“I recently read that the name ISO was chosen because “iso” is a Greek term meaning “equal”. There was no mention of that in London!”*

The name of the company is then not a real acronym; it is however used since it allows it to remain the same no matter which language, official or not, is used. To quote the company’s website: “Whatever the country, whatever the language, we are always ISO”. Indeed, the “real” French version of the ISO acronym is *Organisation Internationale de Normalisation*, therefore OIN, and the Russian version is *Международная организация по стандартизации*, therefore ИСО. ISO as a name remains the same. Besides, in a fair few European languages, the prefix *iso-* is still synonymous of equity, which suits the image of the organization. Appendix 60 (retrieved from the official website) shows an infographic of all activities of the company in 2015. The charts show that there are in total 162 countries members of ISO, out of 206 countries in the world. There are three types of ISO memberships:

- *Member bodies* are national identities considered the most illustrative standards body in each country. These are the only ISO associates that have voting rights.
- *Correspondent members* are countries that do not have their own national standards organization. These members know about ISO's work and norm decrees, but do not join in standards elaboration.
- *Subscriber members* are countries with small economies. They pay reduced membership fees, but can follow the development of standards.

When it comes to pictographic standards, there is a division within ISO named COPOLCO (acronym that stands for Committee on Consumer Policy) that takes care of graphical symbols, especially the ones referring to safety messages, along with a technical committee (abbreviated in TC) called ISO/TC 145. The tasks of the TC 145 are stated as follows on the ISO website:

*“Standardization in the field of graphical symbols as well as of colours and shapes, whenever these elements form part of the message that a symbol is intended to convey, e.g. a safety sign.*

*Establishing principles for preparation, coordination and application of graphical symbols. General responsibility for the review and the coordination of those already existing, those under study, and those to be established. The standardization of new graphical symbols, when requested by a technical committee, or where it does not fall within the activity of an existing technical committee.”*

As for the COPOLCO, their duties are:

*“To study means of helping consumers to benefit from standardization, and means of improving consumer participation in national and international standardization.*

*To provide a forum for the exchange of information on the experience of consumer participation in the development and implementation of standards in the consumer field, and on other questions of interest to consumers in national and international standardization.*

*To advise ISO Council as to the consolidated viewpoints of consumers on matters relevant to ISO's current and potential standardization and conformity assessment work.*

*To advise ISO Council on the need for new or revised policies or actions within ISO as they relate to consumers' needs.”*

Together, they have built in 2013 a pamphlet called *The International language of ISO graphical symbols*, available online. This guide provides an illustrated and rather extensive explanation of ISO signs categories, such as the ones found in appendices 61 and 61b. Every year, new symbols are submitted to ISO by one of its own committees or ISO member organizations, such as the Institute for Electrical and Electronics Engineers (IEEE). Not only must a proposer submit a justification for the symbol, but they must also use downloadable templates for people, hands, arrows, and more, to design the symbol. Once a new design has been turned in, it is up to one of ISO's Technical Committees to determine if a symbol is truly international by using a battery of tests and garnering external opinions from representatives of different countries around the world. Once a symbol passes the ISO test, it becomes available to a worldwide population of industries and product makers and, visually speaking at least, can be said to be *ISO-compliant*. By the past and until now, ISO has been the target of a lot of controversy, because being accredited is (far from) free. For an organization or manufacturer to use these symbols, they must pay a licensing fee, which can add hundreds to development costs. Of course, this extra expense means that some companies will simply forgo these international symbols and develop their own pictograms, which may lead back to the confusion they are supposed to eliminate. However, the visibility provided by the ISO compliance is incomparable. So much that once could completely understand the aim of the advertising displayed in appendix 62 without understanding Russian. The slogan *БЕЗ ПЕМНЯ ЧЕЛОВЕКА НЕ ВЫРАСТИТЬ* stands for “IT TAKES A BELT TO RAISE A CHILD”, and was part of a 2010 Timofey Cordonsky advertising campaign for road safety.

The webpage of the TC 145 notes clearly that it does NOT take care of “*standardization of letters, numerals, punctuation marks, mathematical signs and symbols, and symbols for quantities and units*”. The characters are listed, numbered and named by the ISO/CEI 10646, and the basic characters are listed by the ISO/CEI 8859 norm (André, 2002). However, ISO 8859 does not cover all characters from all languages, since it only works on an 8-bit grid. Besides, although it is sufficient for information exchange, this norm does not include typographic effect, such as optional ligatures (*fi* becomes *fi*), curved quotation marks (writing “” instead of ””). A more inclusive set of standards is named *Unicode*. Unicode is an informatics industry standard for the dependable encoding, illustration, and handling of text used in most of the world's writing systems. Established along with the Universal Coded Character Set (UCS) standard and issued as *The Unicode Standard*, the latest version of Unicode (*Unicode 8.0*, as of June 2015) contains a collection of more than 120,000 characters, making it possible to write more than 129 modern and historic scripts, as well as numerous symbol sets. All the pieces of information below come from this latest issue. Much more inclusive than the mere ISO/CEI 10646 list, the Unicode standard comprises a set of code diagrams for visual reference, an encoding method and set of standard character encodings, a set of reference data files, and several related items, such as character properties, and a set of rules on the use of the character in its linguistic context. A single number is assigned to each code element defined by the Unicode Standard. Each of these numbers is called a *code point* and, when referred to in text, is listed in hexadecimal form following the prefix “U+”. For example, the code point U+0041 is the hexadecimal number 0041 (equal to the decimal number 65). It represents the character “A” in the Unicode Standard. Each character is also assigned a unique name that specifies it and no other. For example, U+0041 is assigned the character name “LATIN CAPITAL LETTER A” (cf. appendix 63 for the representation of the capital letter *F*). These Unicode names are identical to the ISO/IEC 10646 names for the same characters. All graphic, format, and private use characters have a unique and immutable name by which they may be identified. This immutability has been guaranteed since Unicode version 2.0 by the Name Stability policy. In cases where the name is seriously defective and misleading, or has a serious typographical error, a formal alias may be defined, and applications are encouraged to use the formal alias in place of the official character name. For example, U+A015, 𐍵, also understood as “YI SYLLABLE WU”, has the formal alias “YI SYLLABLE ITERATION MARK”.

Computer text handling involves processing and encoding. Consider, for example, a word processor user typing text at a keyboard. The computer’s system software receives a message that the user pressed a key combination for “T”, which it encodes as U+0054. The

word processor stores the number in memory, and passes it on to the display software responsible for putting the character on the screen. The display software, which may be a window manager or part of the word processor itself, uses the number as an index to find an image of a “T”, which it draws on the monitor screen. The process continues as the user types in more characters. The Unicode Standard directly addresses only the encoding and semantics of text. It addresses no other action performed on the text. For example, the word processor may check the typist’s input as it is being entered, and display misspellings with a wavy underline. Alternatively, it may insert line breaks when it counts a certain number of characters entered since the last line break. An important principle of the Unicode Standard is that it does not specify how to carry out these processes as long as the character encoding and decoding is performed properly. The difference between identifying a code point and rendering it on screen or paper is crucial to understanding the Unicode Standard’s role in text processing. The character identified by a Unicode code point is an abstract entity, such as “LATIN CHARACTER CAPITAL A” or “BENGALI DIGIT 5.” The mark made on screen or paper—called a glyph—is a visual representation of the character. However, the Unicode Standard does not define glyph images. The standard defines how characters are interpreted, not how glyphs are rendered. The software or hardware-rendering engine of a computer is responsible for the appearance of the characters on the screen. The Unicode Standard does not specify the size, shape, nor style of on-screen characters, which means that Unicode only processes and encodes the letter-typing command, not the typeface. As the Unicode repertoire has expanded and to classify the glyphs in an orderly manner, some categories of characters have been defined (cf. appendix 64). According to the definition of “glyph” (as in: “a character that is used to write a message in a given script”, or “a symbol”), there are from 17 to hundreds of categories, for some of them are images (emoji (cf. *infra*), arrows, images of domino tiles, etc.).

Let us conclude this brief overview of Unicode with a controversy that rose when the organisation encoded Asian characters. Before we delve into the controversy per se, let us remember that Unicode encodes *characters* rather than *glyphs*, the latter being the visual representations of the basic character that often vary from one language to another. As we have seen before, a grapheme is the minutest abstract unit of sense in a script: for the Latin alphabet, a letter. Every grapheme has many possible glyph renderings, but the users of this particular writing system acknowledge all as the same grapheme. For instance, looking at the two “LATIN SMALL A” in appendix 65, a native reader of any language using the Latin script would recognize these two glyphs as the same grapheme. Nonetheless, to others they might appear to be completely unrelated to a non-user. In the same fashion, aiming at focusing more on grapheme than glyph, Unicode and its desire for unification have joined the so-

called CJK languages (respectively standing for Chinese, Japanese and Korean) into a single set of amalgamated characters. This idea comes from the fact that Han characters are a shared feature of written Chinese *hanzi*, Japanese *kanji*, and Korean *hanja*. However, as we have seen before, kanji and hanzi have evolved very differently, and hanja have even more so. The *Han unification*, or *Unihan*, tends to consider the Chinese, Japanese and Korean variation of the same original Han character a mere glyph, and not a different grapheme. *The secret life of Unicode* article retrieved on IBM DeveloperWorks tries to demonstrate part of the motivation for the Unihan project:

*“The problem stems from the fact that Unicode encodes characters rather than “glyphs”, which are the visual representations of the characters. There are four basic traditions for East Asian character shapes: traditional Chinese, simplified Chinese, Japanese, and Korean. While the Han root character may be the same for CJK languages, the glyphs in common use for the same characters may not be, and new characters were invented in each country.”*

*“For example, the traditional Chinese glyph for “grass” uses four strokes for the “grass” radical 艹, whereas the simplified Chinese, Japanese, and Korean glyphs use three. But there is only one Unicode point for the grass character (U+8349) regardless of writing system.”*

To prevent too striking an amalgam, Unicode has eventually allowed many entries for this specific radical, since there are many ways of writing it. The non-radical form of this sign is 艸, composed of six strokes, and that appears as a radical in a few Chinese characters (艸, 艸, or piled vertically in 𦰇). However, most of the time, the radical top form is used. This top form is usually written for hanzi as two separated crosses, 艹, with four strokes, similar to 十 十. Still, according to the font size, the separation between the two crosses might not be visible. In its modern form, the radical is represented as a single unit of 艹 (or in some character styles 艹), using three strokes. Traditional Chinese characters today use either the traditional or modern radical form, while simplified Chinese characters, Japanese *shinjitai* (the post-1947 simplified kanji form, cf. *supra*), and Korean hanja use the modern radical. Furthermore, in a few characters (苟, 夔, 夔), the radical is often transcribed as two separated parts like sideways “T” shapes, 艹, both in traditional and simplified characters. All this can lead to the grass radical being counted as three, four, or six strokes. The Unicode encodings for the different forms are:

normal character (艸) U+8278 in the CKJ Unified Ideographs block, full radical form (艸) U+2F8B in the Kangxi Radicals block, modern 3-stroke top radical (艹) U+8279 in the CKJ Unified Ideographs block, alternate 3-stroke top radical (𠂇) U+4491 in the CKJ Unified Ideographs block, traditional 4-stroke double-cross top radical (艹) U+FA5E in the CJK Compatibility Ideographs block, and the 4-stroke T-shape top radical (𠂇) U+FA5D in the CJK Compatibility Ideographs block. All have been given different appellations: for instance, 𠂇 (U+4491) is called “UNICODE HAN CHARACTER '(NON-CLASSICAL FORM OF 艸) GRASS; STRAW; HERBS; WEEDS’”, while 艸 (U+8278) is “UNICODE HAN CHARACTER 'GRASS; KANGXI RADICAL 140’”.

The cultural objection that Unihan encounters has been explained by Topping (2001):

*“There is a perception that languages have been merged rather than just characters. This is an understandable confusion given that previous character sets and encoding methods have been language-specific. If the old character sets were merged and unified in Unicode, there is a feeling that the languages are somehow unified as well.”*

Unihan aims at merging the original characters together; and it seems that it is transmitting the message that scripts as different as Chinese, Japanese and Korean can be are in fact mere variations of one another; the way fonts are mere variations of the same letter. Although typeface is much more than just a letter design (see *infra*), it is understandable that this way of thinking may hurt national identities. Chinese users seem to have fewer oppositions to Han unification, mostly because Unicode did not try to combine Simplified Chinese characters (a creation of the People's Republic of China, and in use among Chinese speakers in the PRC, Malaysia, and Singapore), with Traditional Chinese characters, which is still the script in use in Hong Kong, Taiwan, and, with a few dissimilarities, more familiar to Korean and Japanese users. However, this merger of characters is only used in the case of very similar characters. Appendix 66, retrieved from Takagi's *Hanzi Graphy* (2014), shows three stages of transformation of the same character, between the Traditional Chinese character (left), to Simplified Chinese character (centre), to Japanese kanji (right). In such a case, Unicode acknowledges characters so different that they cannot be considered CE glyph declinations. Many other encoding databases exist as alternatives for Unicode to preserve the stylistic

differences between Chinese, Japanese, and Korean characters in opposition to Unicode's policy of Han unification. An example of one is ISO/IEC 2022, which is based on sequence codes, and therefore separates the three languages' scripts. Another one is TRON. Although TRON is not widely adopted in Japan, there are some users who need to handle historical Japanese text and favour it. Yet none of the alternatives have been as adopted as Unicode has been, may it be on the diversity of protocols, operating systems (Apple, Microsoft, Unix), programming languages (Python, C#, Java), or font formats (TrueType and OpenType), etc.

ii. *The language of the internet: « emoji » as a new alphabet*

In 1995 Japan, the sales of pagers sky-rocketed, spreading from a professional customer base to high-school students (Lippit, 1995). Sold under the name of 'pocket bells' (cf. appendix 67), pagers were a new, cheap way to communicate between youngsters, without anyone (especially their parents) knowing about it. High-school girls in particular were targetted by the device, with the possibility to insert a heart symbol in their messages. Back then, the market was mostly controlled by NT&T (also called NTT, standing for Nippon Telegraph & Telephone), with more than half the sales (ibid.). In July 1995, with the launch of the new PHS (Personal Handy-phone System), NTT/Docomo clearly intended on completely taking over the market of personal telecommunication in Japan. Docomo is an NTT subsidiary, created in 1991 to deal with the mobile cellular communication market. Its name is officially an abbreviation of the expression, "*do* communications over the *mobile* network", but is primarily understood as the compound word どこも *dokomo*, meaning "everywhere" in Japanese (Friedman, 2006). NTT was thriving, but their operation of removing the heart symbol from the 'pocket bell' to make it more business-friendly made them lose a significant number of customers (Blagdon, 2013). To gain customers back, NTT/Docomo needed a new feature: the emoji. Shigetaka Kurita is the man who developed the concept of emoji as he was working on *i-mode*. *i-mode* was an assimilated mobile internet service generated by NTT Docomo. Launched in 1999, it provided various services, such as travel and entertainment bookings, weather forecasts, news, and email. *i-mode* was a very prized and defended service, and Docomo charged every company, constructor or operator, using their feature. It was an instant hit in Japan, and by 2004 there were 40 million subscribers to the service (NTT ドコモ, 2004), giving Japan's mobile internet a nearly 10-year lead internationally. Shortly after its launch, rival operators J-Phone (now known under the name Softbank) and DDI Cellular Group (now

called AU KDDI) launched their own services, under the respective names *J-Sky* and *EZweb*, although neither gained the same success (Blagdon, 2013). Using emoji was more than just the answer to an aesthetic need: a feature phone in 1999, the type of phones which could support i-mode, had a very small monochrome LCD screen which could only fit in 48 letters. In an interview with the online journal Ignition (2015), Kurita says he thought it would be hard to deliver enough information on feature phones due to the limited screen space without emoji.

*“Prior to our i-mode, AT&T [the American counterpart of i-mode] was already offering information services for cell phone users. Everything was shown by text. Even the weather forecast was displayed as ‘fine’. When I saw it, I found it difficult to understand.”*

Another reason for emoji to have developed was the way Japanese people communicate. They would traditionally write long letters for communication, and the brevity of more casual email sometimes led to miscommunication. Kurita also noticed that face-to-face and phone conversations also provided cues to assess mood or feelings (Skiba, 2016). He says:

*“If someone says 分かりました you don’t know whether it’s a kind of warm, soft ‘I understand’ or a ‘yeah, I get it’ kind of cool, negative feeling, [...] You don’t know what’s in the writer’s head. [...] So that’s when we thought, if we had something like emoji, we can probably do faces. We already had the experience with the heart symbol, so we thought it was possible.”*

At that time, another kind of expressive designs, emoticons (or 顔文字 *kaomoji*) existed. The first one is said to have been invented in 1982 by Pr. Scott Fahlman, who sent an email on an online electronic bulletin board of the Carnegie Mellon University in Pittsburgh, where he was teaching at that time. This email displays the first proven record of the sideways smiley face: *“I propose the following character sequence for joke markers: :-) Read it sideways”* (Bignell, 2012). However, the emoticons had the flaw of taking up many characters, and therefore being rather tricky and long to type, may they be Western or Japanese style. To explain it shortly, to read the Japanese emoticon style, one does not need to tilt one’s head. This style spread on the computer network ASCII NET of Japan in 1986. These emoticons are usually found in a format similar to (\*\_\*). The asterisks indicate the eyes; the central character, commonly an underscore, the mouth; and the parentheses, the outline of the face. The emphasis on the eyes is reflected in the common usage of emoticons that use only the eyes, i.e. ^^ (Yoshikoshi, 2001). Although both Western and Japanese style are still in use, they are progressively replaced by emoji.

Although he was not a designer, in order to be able to sell his project to big companies, Kurita had to design his emojis himself (along with his team), following a grid of 12x12 pixels. He managed to create a list of none less than 176 emojis, similar to the ones displayed in appendix 68. According to Kurita, these were inspired from his childhood, anime and manga, and some Japanese kanji. To allow users to include these new images in their messages, Kurita used a free space in the Shift JIS character encoding system (Blagdon, 2013), allowing them to appear on the keyboard. Since then, emoji have greatly changed in appearance, and while AU and others tried to make their characters more like images, Kurita always envisioned emoji as symbols — something closer to letters, that would not feel out of place if you slipped them into a sentence. The emoji system officially became standardized with its inclusion in the Unicode 6.0 (2011), with a core of 722 characters. The year 2011 was definitely when emoji took over the world, with the release of Apple iOS 5 in October, the first one to support emoji and include them as a downloadable keyboard (cf. appendix 69). The rest, as the saying goes, is history. According to a March 2015 report of the online mobile photo sharing social network platform Instagram, 40% of the texts, comments and picture definitions contain emoji (Dimson, 2015). It has become so popular that the Oxford Dictionary Word of the Year, also known as the WOTY, is an emoji: called “face with tears of joy” (Unicode U+1F602) 😂. This specific emoji was chosen because it reflected the ethos, mood, and preoccupations of 2015 (Oxford Dictionaries, 2015). The Oxford University Press worked with SwiftKey, a mobile technology firm, to analyze usage figures across the world. This emoji was chosen among several entries because it made up 20 percent of the emoji used in the United Kingdom and 17 percent of those used in the United States (ibid.). As this is the first time that they had selected an emoji, they noted that “*emoji have come to embody a core aspect of living in a digital world that is visually driven, emotionally expressive, and obsessively immediate*”. One interesting thought from Kurita, quoted by Blagdon (2013), is the following:

*“I’d really like to know to what degree they’re used in the same way, and to what degree there’s a local nuance. I think the heart symbol is probably used the same way by everyone, but then there are probably things that only Japanese people would understand, or only Americans would understand... It would be great if we could compare, and have that lead to people starting to use things in the same way.”*

As we have seen before, the fact that emoji are registered by the Unicode standards does not automatically mean that they are all similar: it is the difference between the grapheme and the glyph. There are currently 1,624 emoji listed on the Unicode standard website. As appendix

70 shows, which is a screenshot of the Unicode website, according to the platform, the appearance of the emoji is slightly different. The website Emojipedia lists none less than seventeen different platforms, hence at least seventeen possible designs and renderings. As Miller et al. (2016) note:

*“An emoji conveys its meaning through its graphic resemblance to a physical object (e.g., a smiling face), but it is not well understood how people interpret the meaning of emoji. Words have a dictionary definition, but emoji are nuanced, visually-detailed graphics that may be more open to interpretation. Furthermore, since emoji render differently on different platforms, the emoji graphic that is sent by one person on one device may be quite different than what is seen by the recipient using a different device.”*

The lack of a proper definition common to all, linked to these differences in renderings can lead to what is called *misconstrual* in psycholinguistics. The notions of construals and misconstruals were theorized first by Herbert Clark’s psycholinguistic theory of language use (Clark, 1996). In social psychology, a construal is what an individual perceives, comprehends, and interprets from the world around him or her, predominantly analysing the behaviours or actions of others towards themselves. That is, when a speaker communicates a message, the addressee interprets or construes what s/he believes the speaker to mean. A misconstrual occurs when the addressee’s interpretation differs from the message the speaker intended on giving. In the context of emoji, a speaker is sending emoji (or *emojis*, the plural form of the word is still being debated) to an addressee through a mobile or desktop platform. Likewise, the addressee is receiving the emoji via a mobile or desktop platform. In this exchange, misconstrual can arise from differing interpretations derived from either the same rendering, if they each see the same rendering or different renderings, if they each see a different rendering. If the sender and the receiver are both using the same platform, then they are communicating *within platform* and they see the same emoji rendering. If they are using different platforms, then they are communicating *across platform* and see different renderings of emoji.

Because 顔文字, or emoticons, were built using diacritics, letters and punctuation marks, their meaning is quite consistently recognized as the same. Walther and D’Addario (2001) found high rates of congruity across their sample of interviewees (226 mostly male students) around the interpretation of the feelings conveyed by chosen emoticons, namely :-), :-( and ;-). While the extensive body of research on the role of emoticons in text-based communication has generally not been adapted to the use of emoji, some early work indicates that most emoji do fulfil much the same part. Much like what Kurita wanted, Kelly and Watts (2015) interviewed

a culturally varied group of people and found that they did use emoji in text-based communication to carry and modify the meaning and emotional value of their written messages. Another one confirmed this study, conducted over 1.6 million Tweets by Novak et al., in 2015. Still, this extensive and widely accepted use cannot seem to cover the difference of renderings, and the misconstruals they can imply. The study conducted by Kelly et al. (2016) showed that communicating across platform dramatically increases the risks of misinterpretation. 41% of the emoji they used in their questionnaires provoked sentiment distributions wider than one emotion unit, inducing misconstruals, and potential miscommunication.

It is very interesting to note that, just like spoken and written languages, purely pictorial ones such as emoji are subject to misinterpretation and misconstruals due to their sole renderings. However, emoji are not (yet?) a language. They are considered more like an embryonic language, a cluster of cells that might be a language someday. The closest linguistic analogue might be a pidgin (cf. *supra*), according to Dresner and Herring (2010), two linguists who have been studying the way people talk on the Internet since 1990. Emoji, though, are mostly fun. Moreover, because the users exchanging messages (including emoji or not) are typically from the same linguistic background, the language they use is not quite a pidgin, but some of the linguistic structural constraints might still be relevant. Pidgins are article-deficient, conjunction-deprived, and prepositionally challenged. They are used only in the present tense, and rarely accommodate personal pronouns. Pidgins are hostile to plurals. Emoji have the same limitations: to talk about a crowd of people, the only way to pluralize is by typing a series of little faces or people in a row. Besides, all the little linking words that we take for granted but give English the power to identify, modify, and look at things far away in space and time. Words such as “the,” “in,” “around,” “into,” “apart from,” “beside,” “by,” “as,” and “instead.” Despite all its limitations, emoji has taken a leap forward with the *Emoji Dick* Kickstarter project: translating Melville’s *Moby Dick* in emoji. The project has worked so well that the Library of Congress has bought one of the prints in 2013 (Allen, 2013), and inspired many others, such as the transcription of Hugo’s *Les Misérables* (cf. appendix 71). Another proof of the fame of emoji transcending its mere messaging aid goal is the 2015 Chevrolet advertising campaign (cf. appendix 72), written entirely in emoji. These aspects only come along if a pidgin is passed along to another generation. This is when a pidgin becomes a creole. Creoles have tenses, nuances, and grammars. The fact that creoles develop these tells us two things: languages are emergent and children are the actors of the evolution of languages.

\*

*“Pour s’informer si un peuple est policé ou barbare, l’on peut se réduire à demander : a-t-il usage de l’imprimerie ?”*

(Volney, 1822)

Investigating a history of writing seems to prove right the cliché of historic recurrence Mark Twain depicted in 1903 as “*a favorite theory of mine—to wit, that no occurrence [Twain’s emphasis] is sole and solitary, but is merely a repetition of a thing which has happened before, and perhaps often...*”. As different as they might seem nowadays, both the Latin and Japanese scripts emerged from pictographic systems. Through abstraction, simplification and conceptualisation, both have managed to grow quite far apart from their logographic roots... to eventually go back to them, in the name of standardisation and globalization. Now that we have explained where the characters developed from, let us focus on the apparition and evolution of typography, and the long journey both scripts went through to adapt from handwriting to typing.

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## **II. Print, typography, and advertising**

### **a. From calligraphy to movable types**

#### *i. The evolution of the Latin script: from the quill to humanist typefaces*

The act of printing words or symbols on a surface is not a new invention. In fact, the act of printing symbols and characters on a surface can be traced back to Uruk, and the late cuneiform era, around 3500 BCE (Porada, 1993). These first ones took the shape of cylinder seals (cf. appendix 73), made out of various materials, such as gems, glass or ceramics. Cylinder seals served both administrative and aesthetic roles: they were used to sign clay tablets, but were also worn as jewellery, which explains why most of them are hollow in their middle part: so they could be mounted on necklaces. Sealing is a tradition that survived through the history of humankind, with ring seals (such as the very famous Ring of Solomon, the Biblical king), to stamp seal, which are still in use for administrative purposes in countries such as Japan. These are referred to as 印鑑 *inkan* or 判子 *hanko*. According to Masuda’s *Kenkyusha’s New*

*Japanese-English dictionary* (2003), *inkan* is the more inclusive term, while *hanko* tends to refer to seals used in less important documents.

However, all of the seals in Mesopotamia, ancient Rome and Middle-Age Europe were using soft material as a base, and the seal in itself would carve, or emboss in a soft material to leave a print. Printing *per se* needs ink, and ink sealing came to Europe around 1300 CE, but the identity of who exactly brought it to Europe, be it the Byzantines or the Egyptians, is still debated (Griffiths, 1996). The first European prints come from Italy, towards the end of the XIII<sup>th</sup> century, then Germany and Burgundy at the end of the XIV<sup>th</sup> century. The technique of printing however definitely originated from China (see *infra*), as Hsü (1970) writes: “*In the 13th century the Chinese technique of blockprinting was transmitted to Europe*”. Most of the early printed work in Europe used cloth and tapestries as a base, draped over walls, altars, or lecterns. Religious icons and images were also printed on bandages in an effort to speed and enhance healing (Hind, 1979). Along with the printing technique (also referred to as *xylography*, with the Ancient Greek roots ξύλον *xylon*, “wood”, and the suffix γράφειν, *graphein*, “to write”), paper arrived in Europe through the Muslim countries, starting with Egypt, spreading to Spain and finally reaching the neighbouring countries. Sacred images and playing cards are recognised as being fabricated on paper, possibly printed, by a German in Bologna as early as 1395 (Field, 1965). It is difficult to trace back who carved the blocks, and who actually printed and later enhanced the print with colours (usually using watercolours), since artists tend not to sign their artwork until the end of the XV<sup>th</sup> century (Laudau and Parshall, 1994). Besides, the rapid and exponential development of the paper industry, making it a cheap and easily acquired support, contributed to the rapid growth of the printing industry, with impressions pressed by thousands. Although most of the prints that have been retrieved from that time are pictures, one of the earliest type of printing involving texts is called the book block, and emerged during the second half of the XV<sup>th</sup> century. Book blocks were short, popular books, mainly focused on religious matters, which gave them their nickname *Biblia pauperum*, “the Bible of the poor”. One of the most famous block books was the *Ars Moriendi*, (“The Art of Dying”), which offer advice on the conventions and processes of a *good* death, explaining how to “die well” according to Christian guidelines of the late Middle Ages (cf. appendix 74). It enjoyed enough fame at that time to be printed extensively, making it one of the very rare block books to still exist entirely (Campbell, 1995), and is even available in PDF versions online! There are three types of book blocks: *xylographica*, where both the texts and the illustrations are printed using woodblocks (cf. appendix 75), *chiroxylographica* (from the Greek χείρ *cheir*, “hand”), where the illustrations only were prints, and the text was handwritten, and another category where images were woodblocks, and the text was printed using movable metal type. All books were

only printed on one side of the sheets, and are considered *incunabula*, which is the appellation given to all books printed – not handwritten – before 1501. Incunabula is a Latin word meaning “wrapping clothes” or “cradle” which can be linked to “*the earliest stages or first traces in the development of anything*”, according to the *Oxford English Dictionary*. The first documented use of *incunabula* as a term linked to press and the printing industry can be found in the Latin booklet *De ortu et progressu artis typographicae* (“Of the rise and progress of the typographic art” (Köln, 1639) published by bibliophile von Mallinckrodt. It contains the phrase “*prima typographicae incunabula*” that could be translated as “the first infancy of printing”, a term to which he arbitrarily set an end of 1500, a convention that is still in use (Glomski, 2001).

The Chinese invention that is going to change the course of European text printing, and will enable the beginning of typography is movable type (He, 1994). The idea will be adapted and modified by none other than goldsmith Johannes Gutenberg around 1440-50 CE. His machine was a printing press, itself inspired from a screw press, used since Rome for a broad range of uses, such as press-printing patterns on cloth (Poe, 2011; Schneider, 2007). As a goldsmith, Gutenberg was familiar with the technique of cutting punches, used for instance to mark small, circular pieces of metal to turn them into coins. He perfected the technique of punching for fourteen years, from 1436 to 1450, to find a way to create letters from metal matrices using a device he created, called a hand mould. When using this technique, the type (meaning the characters, or letter) was made by stamping a letter-shaped cavity in a surface made of some soft metal (usually copper). Then this matrix would be seized in the lower part of the mould, the upper part would close on it, and molten type metal, traditionally a lead-based alloy (usually balanced between 50 to 86% of lead, 11 to 30% of antimony, and some 3 to 20% of tin), would be poured into the cavity (cf. appendix 76). Using the hand mould, the printer could quickly make any supplementary characters he might need (Meggs, 1998). Gutenberg was a very prolific inventor, yet the design of the movable type from a matrix is considered by many as his most ingenious one, so much actually that it is still in use in nowadays’ presses (*Encyclopædia Britannica*, 2016). It dramatically increased the printing speed, a duo of printers (one setting the types and one printing the paper) becoming able to print none less than 3,600 pages in one day (Man, 2002; Wolf, 1974). Because of a lawsuit against Gutenberg in Strasboug in 1439, an extensive collection of information about Gutenberg’s press creation and all related invention was kept. Gutenberg teamed up with three men: Andreas Dritzehn, whom he had already paired up with Andreas when working with gems as a goldsmith, and Andreas and Anton Heilmann, the owners of a paper mill (ibid.). As Andreas Dritzehn passed away in 1439, his two brothers sued Gutenberg, mostly in the hope to become part of his project, but also to ask for the money he has borrowed from their deceased sibling (*Encyclopædia Britannica*,

1911). Gutenberg and Dritzehn had borrowed a significant amount of money for a development venture.

Gutenberg's printing press (cf. appendices 77 and 79) is a blend of many technological processes, the main one being the screw press (cf. *supra*). Gutenberg adopted the basic design, thereby mechanizing the printing process. Printing, however, puts a demand on the machine that can be quite dissimilar to pressing. Gutenberg adapted the machinery so that the pressure power applied by the platen on the sheet of paper, parchment or *vellum* (high quality parchment) was now applied both evenly and with the required sudden elasticity. A *platen*, or *platten*, is the flat surface that is pressed against the printable support to induce the impression (cf. appendix 78). To speed up the printing process, Gutenberg imagined a detachable undertable with a flat surface on which the sheets could be swiftly changed (Wolf, 1974). In Gutenberg's press, the printing process is divided in two main steps: typesetting, and the actual printing time. Typesetting is the composition and arrangement of text supervised by the positioning of types. To keep the types straight and orderly, they were aligned on a composing stick (cf. appendix 80). During the process of typesetting, individual types are picked from a type case using the right hand, and placed into the stick held in the left hand from left to right, upside down for the setter. The problem was that, because of the direction of letters (as seen in appendix 80, displaying the message "PRACTICAL PRINT"), a lower case *q* might very likely look like a *d*, a lower case *b* looks like a *p*, and vice versa. The trickiness of type choosing is thought to be the origin of the saying "*mind your p's and q's*". It could very well have also been "*mind your b's and d's*"!

The printing process and the use of metal type forced Gutenberg and his fellow printers (called the "Mainz trio": Gutenberg, Fust and Schöffer) to find a new kind of ink to use. When writing on parchment, made mostly from sheep and calfskins, water-based ink was suitable, but because most of the printed work were pressed on paper, another blend was necessary, for water-based ink would simply drip off the metal types (Needham, 1985). Experimentation led to the creation of an oil-based ink, composed of a liquid varnish (a blend of linseed oil, amber and soot), and solid pigments. The British Library head of collections, Dr Jensen, described it as follows:

*"If you look [at the pages of The Gutenberg Bible] closely you will see this is a very shiny surface. When you write you use a water based ink, you put your pen into it and it runs off. Now if you print that's exactly what you don't want. One of Gutenberg's inventions was an ink which wasn't ink, it's a varnish. So what we call printer's ink is actually a varnish, and that means it sticks to its surface."*

Black ink pigment was made from purified soot, making it a completely black powder by removing any tar or oil (Howard, 2005), however some studies conducted mainly by Schwab et al. in 1985 show the presence of metal in the ink (such as copper, lead, or even titanium) in the ink, giving it a glossy, shimmery aspect. Gutenberg's most famous work is his Bible, and it was not only printed in colour, it was also illustrated. While rubrications and illustrations were done by hand, chapter titles and some excerpts are printed in colour: either red or blue. Blue ink pigment was made using lapis-lazuli powder, and red ink using cinnabar, which is mercuric sulphide. The extremely high quality of these pigments made the inks very expensive (which in turn made the book itself particularly pricey), but allowed the colours to stay vivid and intense up until now (cf. appendix 81).

One of the reasons of the rapid success of the printing invention in Europe is completely independent from Gutenberg's inventions, as clever as they might be. Although the idea of movable type comes from Asia (cf. *infra*), the printing evolution was very slow due to the logographic nature of the Chinese script, and the vast abundance of characters, making it a very tedious process to create the types. The alphabetic nature of the Latin-derived scripts, on the other hand, proved to be a considerable benefit for the type creators and setters (Hellinga, 2007). Gutenberg's invention of moulding the movable types from a punched shape (cf. *supra*) made the type designers work much easier and much faster: cutting a single letter by hand could take an artisan a day of work. One single page of a book of the format of Gutenberg's Bible taking around 2500 letters, handmade type would have been a most impractical solution.

Gutenberg printed his books (and his Bible) in a letter style called *texture*, or *textualis* (cf. appendix 82) designed in the spirit of *blackletter*. Blackletter comes from a handwriting style called *Gothic script* or *Gothic minuscule*. The emergence of the Gothic style is linked to the increasing level of literacy of the XIII<sup>th</sup> century, outside of the sole Church sphere (Eisenstein, 1980), which meant that there was an increasing demand of books, that the Caroline minuscule hand (cf. *supra*), although pretty and legible, took too much time and effort to create. Besides, because it was a very wide script, it took a lot of parchment to write the books, making them heftier and more expensive. The new script would need to be slender, and redesigned to save space (Marcos, 2014). The final effect of this slender letters crammed together gave the hand its "blackletter" name. Because of this desire to save space, one of the flaws of this script is the lack of connection between minims. This makes it very hard to differentiate *i*, *u*, *m*, and *n*, as appendix 83 shows. A good example of this is the phrase built in the XIV<sup>th</sup> century *mimi numinum niuium minimi munium nimium uini muniminum imminui uiui minimum uolunt*, "the smallest mimes of the gods of snow do not wish at all in their life that the great duty of the

defences of the wine be diminished”. In black letter this would look like a series of single strokes. Dotted *i* and the letter *j* developed because of this (Marcos, 2014). The term “Gothic” was used by the Italian Humanists during the XV<sup>th</sup> century Renaissance, as a depreciative way to characterize everything that was happening North of the Alps, conveying both the meaning of “Germanic”, but also “barbaric”. “Gothic” however is a very broad appellation, since the hand was born in the Germanic lands around 1150 CE, and lasted until 1500. It then extended to the Schwabacher hand, from 1480 to 1530, and finally to the Fraktur one, from 1500 all the way until 1941, the latter being so lengthy that the whole type group is sometimes called “Fraktur” (Derolez, 2003). As appendix 82 shows, Gutenberg not only carved and moulded letters, he also created ligatures, upper and lower cases, narrower letters (cf. appendix 84) for justification purposes (cf. *infra*), and a set of punctuation, bringing the whole set of master types to 290 items (Man, 2002).

The printed type setting is also based on justification, the fact that the text is aligned on both the left and the right sides of the columns, and not indented on the left, as it usually is when it is handwritten. Nowadays, it can simply be done by a keyboard shortcut on a computer (ctrl + J on a PC, ⌘ + J on an Apple computer), whereas at the time, it required a rigorous notion of space management. There were a few techniques to “cheat” one’s way around perfect justification, such as the inclusion of characters of narrower widths, the addition of extra spaces around punctuation, and the variation of the widths of spaces around words (Fry, 2009). Besides, one could subsequently let punctuation marks go beyond the vertical limits of justification. This technique is called hanging punctuation, thereby using the dense mass of black characters to make, by contrast, the justification stronger to the eye (cf. appendix 85, the work of designer Richard Turgeon (2015), alluding to Gutenberg’s hung punctuation).

The invention of mechanical movable type printing enabled a huge increase of printing happenings across Europe within only a few years (cf. appendix 86). From a single printing press in Mainz, Germany, the printing technique had spread to no less than some 270 cities in Western, Central and Eastern Europe by the end of the XV<sup>th</sup> century (the British Library Board, 2016). As early as 1480, there were printers active in 110 different places in Western Europe alone (Febvre & Martin, 1997), which is why the researchers consider that “*the printed book was in universal use in Europe*” (ibid.). Italy was a powerful printing centre, with print shops open in none less than 77 locations throughout the country by the year 1500. Although thousands of printing centres opened (and closed) during the following century, definite centres emerged, such as Venice, which produces one third of the work printed in Italy (Borsa, 1977).

By 1500, the Western European active printing presses had already produced more than twenty million copies (Febvre & Martin, 1997).

As the printing technique spread, the typefaces started to evolve as well. Because the Gothic typeface was much imprinted with the Germanic image, the next printing presses, especially the ones in Italy, proceeded to elaborate variations around *textur*, the type used by Gutenberg (cf. *supra*). Some four additional aesthetics emerged, named *bastarda*, *fraktur* (which we have already mentioned before), *rotunda* and *Schwabacher* abovementioned. Bastarda is a typeface that was issued in France, and its name comes from the French *lettre bastarde*, or *lettre bâtarde*, which means “bastard letter”. Bastarda (cf. appendix 87), as many local typefaces was used to print texts in vernacular languages, in opposition for the more classic original types used for Latin texts. Gutenberg himself actually produced the first try-outs of bastarda, around 1454-1455. This typeface was mainly used in Rhine Europe. The *lettre bâtarde* eventually faded out by the mid-XVI<sup>th</sup> century but the German version of it developed into the nationwide *Fraktur* type which stayed in use until 1941 (Johnson, 1966). Fraktur was developed on the orders of the Holy Roman Emperor Maximilian I, in the hopes of developing a typeface as powerful as Charlemagne’s Caroline was a few hundred years before his reign. Fraktur features the 26 letters of the Latin alphabet, but also includes characteristics that are typical to the German language, such as the ß (*Eszett*, pronounced [ɛs'tset]), vowels superposed with umlauts, and the f (*long, medial, or descending s*). Some of the many Fraktur typefaces variants also include a different form of the letter r known as the *r rotunda*, written ʀ (see *infra*), and quite a broad variety of ligatures which are remains from cursive handwriting and have guidelines for their specific use (cf. appendix 88). Most of the older Fraktur typeface versions do not make any distinction between the capital *I* and *J* (where the common shape is more evocative of a “J”), although the small *i* and *j* are distinguished. One difference between Fraktur and other scripts derived from the blackletter typeface is that in the minuscule *o*, the left part of the bow is broken, but the right part is not (cf. appendix 89). When Fraktur was used in Danish texts, the letter ø was preferred to the German and Swedish ö in the 16th century. *Rotunda*, designed by Erhard Ratdolt circa 1486 was a type that stretched quite far from the blackletter script to suit Venetian taste, and is often considered a style on its own (Carter, 2002; Updike, 2001). It was more inspired by the Caroline minuscule, and originated from Italy – the contempt Italian humanists had for any invention coming from anywhere north of the Alps most probably fuelled its design. The *r rotunda* (ʀ), which also goes by the name “rounded r” is an old letter alternative form, frequently used in rotunda scripts and some other blackletter typefaces (see *supra*). It is thought that this alternate form of that letter was initially created either to save space while printing on vellum, or for aesthetic reasons. The *long s* (ſ) is a form of

the minuscule letter *s* formerly used where *s* occurred in the middle or at the beginning of a word, for example *finfulnefs* (sinfulness). The contemporary typeface design was named *terminal*, *round*, or *short s*. The *rotunda* script, especially its Italian version, is also categorised by distinctive abbreviations, such as *q* with a line underneath the bow meaning “qui”, and some odd spellings, such as *x* for *s*: for instance, “milex” rather than its correct form “miles” (Febvre & Martin, 1997; Glomski, 2001). Last, Johann Bälmer designed Schwabacher (pronounced [ˈʃvaːˌbaxɐ]) in Italy during the XV<sup>th</sup> century, probably around 1474 (Luidl, 2003). Schwabacher type was the most popular typeface in Germany, until it was superseded by Fraktur (see *supra*) from the mid-XVI<sup>th</sup> century onwards. Comparable to *rotunda*, the curved Schwabacher type appeared to be closer to handwriting than its original *textur* style, although it also displays some sharp lines and angles. The letters that stand out the most in this hand are the lower case *g* and the upper case *H* (see appendix 89). In the context of Germanic texts, this type was considered a vibrant and popular letterform.

Humanism in Italy and the enthusiastic interest dedicated to Antiquity, and to the Ancient Rome pushed further the will of scribes and scholars to define a new kind of script for handwriting. Their inspiration was the *capitalis monumentalis*, displayed on Rome’s Trajan’s column (cf. appendix 25), and the Caroline. According to Nesbitt’s *Lettering; the history and technique of lettering as design* (1950), because the available manuscripts of classical authors had been copied by monks during the Carolingian Renaissance (under the reign of Charlemagne), and because the Caroline (or Carolingian minuscule, cf. *supra*) had been established so long ago, the humanist scribes mistakenly thought it was the script of Ancient Rome. They called it *lettera antica*, and started to create their own set of letters, combining Caroline minuscule for the minuscule form, and the Roman capitals for majuscule style. So as to grant a perfect design, the scribes redesigned the Caroline minuscule, by increasing the height of both ascenders and descenders, and including serifs. The result script is called humanist script, or humanist minuscule. During the 1470’s, a lot of typesetters and printers got attracted to Italy, mainly to Rome and Venice. This gathering of artisanship and talent inspired some very new forms of typefaces. At the very beginning of that decade, in Venice, the two brothers Giovanni and Vendelino da Spira (also known under their German names “Johann and Wendelin de Speier”) printed some texts using a half-Gothic-half-roman type, recognised as *Gotico-antiqua* (cf. appendix 90). This design combined simplified Gothic capitals with an updated humanistic script-inspired minuscule set of letters, in a one step forward, half step back unification of designs (Robinson, 1979).

French printer Nicholas Jenson in Venice (Bullen, 1926) created the type that is remembered as the first completely humanist typeface, called roman typeface. He is considered as the pivot in the consideration of Venice as a powerful centre of the printing industry (Lowry, 1991). He studied printing under Gutenberg in Mainz first, sent there by King Charles VII. He then moved to Venice in 1468, where he opened a printing shop in 1470, perfecting his letterform as he was printing (Bullen, 1926). The Jenson roman was a letterform explicitly designed for typography, and not trying to recreate the appearance of a handwritten text (cf. appendix 91). Its effect is one of an integrated, consistent whole, a seamless blend of style and structure, but also the successful synthesis of all preceding type and hand designs (Meggs and Purvis, 2006). Jenson adapted the essential unity and component-based modular integration of the square capital Roman style to humanistic minuscule letters by skilful abstraction. He adapted the Roman principle of serifs to his letterform, allowing them to be asymmetrical to blend in the design. By extending the ascenders and descenders of the letters, he designed a very balanced, harmonious type. Jenson's type is also the first to take the white space around the letters into consideration, designing a type that is both condensed and still feels very light. *Roman* is a rather dark type, but not quite as dark as *textur* and its derivatives were. Darkness and lightness in typography do not refer to the colour of the type, but rather to the overall lightness or darkness of the page (Burns, 1961).

One last invention that had an important impact on the XV<sup>th</sup> century printing revolution was the creation of *italics*. This style is derived from the Renaissance humanistic hand, known under the name *cursiva humanistica* (cf. appendix 92). This style was defined by slant, swiftly written letters, and remained popular throughout the Renaissance period. The popularisation of the style created a demand from the readers, and pushed printer Aldus Manutius to create a new type. The "Aldino" italic type was custom-built by Manutius and cut by typesetter Francesco Griffo in 1499. The Aldine Press first released a text in italics in 1500, in the frontispiece of a new version of Catherine of Siena's letters (cf. appendix 93), where St. Catherine is shown holding an open book containing a short text set in italic type. The first book to be entirely printed in italic was a collection of some of Virgil's works, dedicated to Italy, published in 1501. According to Truss (2004), Manutius simply invented the italic typeface. Created from the humanist cursive script style of Niccolò de' Niccoli (cf. appendix 94), it served as a condensed type, which called for thinner, smaller books (Updike, 2001). In a 1501 letter to his friend Scipio, Aldus wrote:

*“We have printed, and are now publishing, the Satires of Juvenal and Persius in a very small format, so that they may more conveniently be held in the hand and learned by heart (not to speak of being read) by everyone.”*

Griffo’s types are a delicate transcription of the Italian cursive hand (cf. appendix 95), featuring letters of irregular inclinations and uneven height and vertical position, with some 65 different ligatures. One different aspect between modern italics and Aldino’s one is that the capital letters were upright square capitals, shorter than the height of the lower case *t*. The fame of Aldus Manutius and of his prints using the types cut by Griffo attracted a lot of counterfeit, despite a patent given to him by the Venetian Senate (Updike, 2001). However, the glory of this type got tarnished in 1527 by the emergence of a new italics style, designed by the chancellery scribe Arrighi, and cut by Lauticio di Bartolomeo dei Rotelli. The type looked a bit less like a handwritten script thanks to more upright letters and fewer ligatures, and its capital letters taller than the Aldino one made it look more elegant. A wider leading (the line spacing) and higher ascenders enhanced the notion of grace (cf. appendix 96).

ii. *Printing in Japan: adapting a multi-script language to the press*

Printing in Eastern Asia originated long before it developed in Europe. Printing is considered to be one of China’s “Four Great Inventions” (四大發明, *sì dà fā míng*), along with gunpowder, paper, and the compass (Deng, 2005). The concept of 四大發明 is actually a European one, when in the XVI<sup>th</sup> century, Europeans wanted to stand out from ancient Rome and ancient Greece, and claimed they had (“they” standing mainly for Germans) invented tools that ancient civilizations did not have, such as gunpowder and the printing press. At that time, the Three Greatest Inventions were the printing press, the gunpowder, and the navigating compass (Boruchoff, 2012), as French author Francis Bacon noted in his 1620’s *Instauratio magna*:

*“Printing, gunpowder, and the nautical compass [...] have altered the face and state of the world: first, in literary matters; second, in warfare; third, in navigation”*

Unfortunately, by the time of Bacon’s book and thanks to the Spanish and Portuguese explorations, coming back to Europe during the 1530’s, there was an understanding that all these inventions had been around a long time before Europeans took a grasp on them (Boruchoff, 2012; Flood and Bray, 1887).

Traditionally, papermaking (as opposed to papyrus, which is a canvas of dried plants, while paper is made from fibres and pulps blended together and broken down thanks to various processes, such as maceration (Tsien, 1985)) or is traced back to 105 CE, during the Han dynasty in China. It is said to have been invented by official and eunuch Cai Lun (蔡倫), using mulberry and other phloem fibres along with fishnets, old rags, and hemp waste (*Encyclopædia Britannica*, 2016). A recent discovery has changed the timeline of the papermaking history. It is said that Cai Lun was inspired by bees and wasps to produce his mixture. A 2006 article from London's society of Antiquaries stated that archaeologists had found evidence of paper fragments, made from linen fibres. The discovery was located in the Yumen Pass, and is dated from the year 8 BCE, more than a century before Cai Lun (Catling, 2006). The article writes:

*“Fu Licheng, the curator of the Dunhuang Museum, said: “This is definitely paper and the skill to make it seem quite mature.” Mr Fu said that more than twenty written characters had been identified and that it was believed to have come from a letter, although there were too few words to make out the meaning. The find showed that China had been experimenting with papermaking long before Cai Lun’s invention.”*

Printing in Asia followed the same steps as the one we have seen in the previous chapter about our brief overview of the European printing history. The technique that was first invented is the one of woodblocks: letters, symbols, illustration and anything that needs to be printed is carved in a wooden board, covered with ink, and pressed onto a sheet of paper. Printing on sheets of paper was in fact an adaptation of silk woodblock printing, evidences of which can be traced to flowers printed on silk (in three different colours!) as early as 220 CE (Whitfield et al., 1990). Findings in 1974 in inland China city 西安 Xi'an ended the long quarrel between Korea and China to find which country was the one detaining the first evidence of xylography. As A. H. Mayor, former curator of the Metropolitan Museum of Art in New-York stated in his *Prints & People* (1971):

*“It was the Chinese who really discovered the means of communication that was to dominate until our age.”*

The archaeologists found a printed sutra dated from 650 to 670 CE, which corresponds to the Tang dynasty (618-907 CE) (Pan, 1997). The sutra is a *dhāraṇī*, which is a Sanskrit term for a specific kind of ritual speech found in Buddhism, as a mantra could be. The difference

between the two, according to Pine (2004), is that although mantra and dhāraṇī were initially similar, at some point dhāraṇī came to be used for expressive, understandable phrases, while mantra stood for more syllabic formulae which are not uttered to be understood. The dhāraṇī found in Xi'an was printed on a hemp-based paper (Pan, 2004). The oldest printed documents found in Asia are all sutras (the Saddharmapunṇḍarīka sutra, also called Lotus sutra, or 妙法蓮華經 in Chinese, whose first printed evidence dates to 690 (Pan, 2004), or the Pure Light Dharani Sutra, 무구정광대다라니경 *Mugu jeonggwang dae darani-gyeong*, depicted in appendix 97 and discovered in South Korea in 1966, and dated from 704 CE, according to Tsien (1985)), proving that printing was used as a support for the diffusion of Buddhism throughout Asia. Buddhism even teaches that mass production of its sutras is a way to receive blessing from the Buddha. According to Tsien (1985), the Buddha is said to have stated that “Whoever wishes to gain power from the dharani must write seventy-seven copies and place them in a pagoda .... This dharani is spoken by the ninety-nine thousand katia of Buddhas and he who repeats it with all his heart shall have his sins forgiven.”, which would be motivation enough for any scribe to seriously consider printing in a larger scale. The earliest book found to date is the Diamond Sutra, 金剛般若波羅蜜多經 *Jingang Banruopoluomiduo Jing* in Chinese. It was found in the Mogao caves of Dunhuang, among the many manuscripts revealed by the Daoist monk Wang Yuanlu in 1900, and sold to Aurel Stein (Duan & Tan, 1994), and has been very precisely dated to May 11<sup>th</sup>, 868 CE, as Mu explain in his 2000-commented version of the sutra. The date has been understood thanks to a colophon that writes the date as “13<sup>th</sup> of the 4<sup>th</sup> moon of the 9<sup>th</sup> year of Xiantong”. It is, to quote the British Library, “the earliest complete survival of a dated printed book” (2003). Pr. Whitfield, the director of the Dunhuang Project at the British Library confirms the dating in a recording of December 2007:

*“The Diamond Sutra is a case in point. This was made as a copy by Wang Jie and at the end of the manuscript if you scroll down and look right at the end there's a little note saying ‘Made by Wang Jie in May 868 on behalf of his parents and for the merit of all sentient beings in the world’.”*

Of course, because it is a copy, this means that it is not the first exemplary of the Diamond sutra: the respected and fruitful translator Kumārajīva in 401 CE (Lancaster, 2004) transcribed the first manuscript proof of its existence. The 868 version (a copy of Kumārajīva's version) is however the earliest printed version we have to date, and the first proof of the birth of print culture in Asia (some 800 years before Europe caught up to it!). The Diamond sutra was divided in seven different sections, each of them printed from a single carved block of

wood. It opens on a very intricate frontispiece (cf. appendix 98), displaying a lot of details, and is a five metres-long scroll.

Because of the nature of the Chinese script and the vast variety of characters, woodblock printing was better suited to print this language, rather than movable blocks. Woodblock printing gathered a lot of different techniques, starting with the careful: selection of the wood used to carve in: most of the varieties were deciduous, fruit bearing trees, such as pear and apples, but also jujube or catalpa. Other trees, such as ginkgo, a local locust variety or boxwood were also used; all boards were preferable cut with the grain of the tree (Tsien, 1985). Preparing the block was a long and tedious process, from a month-long soak in water, to polishing using oil and 茛草 *jǐngcǎo*, the polishing grass. Woodblocks could be cared on either one or both sides (cf. appendix 99), allowing the printing of two pages at once. Once the block has been prepared, it is time for a scribe to write the manuscript that will be used as a stencil. First, the sheet of paper that will be written on is separated into columns and spaces, to get a balanced writing. Then, the paper is levelled and smoothed out, using a thin layer of wax and a stone burnisher, to guarantee the best surface possible to write on. Once the scribe has finished writing his piece, the paper is flipped over onto the block, onto which a thin layer of rice paste has been spread (cf. appendix 100, part *a*). The humidity of the paste will help for the lower layer of the paper (the one in contact with the paste, and the one which had just been inked) to stick to the paste, creating a clear stencil, all the while acting like a glue, making sure the sheet stays in place during the transfer process. Once the paper has dried, the upper layer of the paper is scraped off, to have the clearest vision of the (now reversed) outline possible. At that moment, the block is ready for carving (Tsien, 1985). The principle of woodblock is to carve out the background, and leave the parts one wants inked in relief. The first step is the 發刀 *fā dāo* (cf. appendix 100, part *b*), which is the shaping of all the black lines, to ensure balance in design. The blanks are then carved out, and special attention is given to trim the black lines, in order to make them as thin as possible. Four proof-readings are generally mandatory during the engraving process: one when the scribe handwrites the transcript, another after potential mistakes have been corrected from the final transcript, the third one after the first impression, and the fourth one after potential alterations have been done to the woodblock. When a mistake is found, or when a line has been chiselled off, a block can be mended; a small error can be excised with the edge of a chisel (釘鑿 *dīng záo*) by making an indentation into which a wedge-shaped piece of wood is pounded, but in the case of an error that takes more space, an appropriate piece of wood is inlaid. In either case, the new surface is levelled and carved as if it were the original (*ibid.*). The block, once corrected,

would be brushed with a water-based ink, onto which a sheet of paper would be applied, then peeled out to dry. Drafts would sometimes be printed in blue or in red, but final sheets of paper were always printed on black ink. According to the sources, an experimented printer could produce from 1,500 to 8,000 double-pages a day (Davis, 1836; Ricci, 1953)!

Because woodblock printing was very burdensome, and quite tedious, a new technique was designed in the XIth century: movable type. The idea of printing separate elements was not a new idea, as we have seen before, and the system of seals was already used from around the VIII<sup>th</sup> century BCE in China, with the example of the hanzi 副 printed on some document to signify they were a duplicate, left at the government office, while the originals were in the imperial ancestral hall (Kuo, 1940), not to mention all the metal and ceramic seals used to sign documents. Movable type as a mode of printing is said to have been invented by a commoner, named 畢昇 *Bì Shēng*. His discovery has been transcribed by 沈括 Shěn Kuò's 夢溪筆談 (*Mèng Xī Bǐ Tán*, the *Dream Pool Essays*) in the following terms (translated by Tsien, 1985):

*“During the reign of Chingli [慶曆, 1041–1048], Bì Shēng, a man of unofficial position, made movable type. His method was as follows: he took sticky clay and cut in it characters as thin as the edge of a coin. Each character formed, as it were, a single type. He baked them in the fire to make them hard. He had previously prepared an iron plate and he had covered his plate with a mixture of pine resin, wax, and paper ashes. When he wished to print, he took an iron frame and set it on the iron plate. In this he placed the types, set close together. When the frame was full, the whole made one solid block of type. He then placed it near the fire to warm it. When the paste [at the back] was slightly melted, he took a smooth board and pressed it over the surface, so that the block of type became as even as a whetstone. [...]*

*For each character there were several types, and for certain common characters there were twenty or more types each, in order to be prepared for the repetition of characters on the same page. When the characters were not in use he had them arranged with paper labels, one label for each rhyme-group, and kept them in wooden cases.”*

This report, although quite brief, contains quite an extensive technical description of type making and setting, the actual printing, and an evaluation of this new method. Sadly, this

is the only account on Bì Shēng's wonderful invention, which has lead researchers to think that he might have died a few years after his discovery was accounted for, without passing his knowledge on. After his invention, there is a very scarce, close to inexistent record of earthenware-based movable type use, except in 1193, during the late Song Dynasty, when officer Zhou Bida made a set of movable-type from clay, inspired by the method related by Shěn Kuò, to print his book 玉堂杂记 (*Yùtáng zájì*), *Notes of the Jade Hall*. The use of clay movable type was not revived before the XVIII<sup>th</sup> century, under the form of enamelware. In 1718, 徐志定 *Xú Zhì-Dìng*, a scholar in 泰安 *Tai'an*, in the Shandong province, developed a printing process using enamelware type (磁版, *cí bǎn*), and printed, as far as we know today, two books: 周易說略 (*Zhōuyì Shuō È*), which is a commentary on the *Book of Changes*, which he printed in 1719 (cf. appendix 101), as well as a compilation of miscellanea from 張爾岐 (*Zhāng 'Ēr-Qí*), reproduced in 1730 (Chu, 1952).

Another movable type technique, which found its glory during the XIII<sup>th</sup>-XIV<sup>th</sup> century was wooden movable type, disregarding the pieces of advice written in Shěn Kuò's 夢溪筆談 when he justifies Bì Shēng's preference for clay over wood:

*“The reason whv he did not use wood is because the tissue of wood is sometimes coarse and sometimes fine, and wood also absorbs moisture, so that the forme when set up would be uneven. Also the wood would have stuck in the paste and could not readily have been pulled out. So it was better to use burnt earthenware.”*

In 1298 during the Yuan dynasty, 王禎 *Wáng Zhēn*, a governmental official of 旌德县 (*Jīngdé Xiàn*) in the eastern province of Anhui, re-invented a method of making movable wooden types. He produced more than 30,000 wooden movable types and printed 100 copies within a month of his 旌德县志 (*Jīng Dé Xiànzhì*), the *Records of Jingde County*, a treatise on agriculture of more than 60,000 Chinese characters. Soon afterwards, he accounted for his invention in his book *A method of making moveable wooden types for printing books*. This system was later enhanced by pressing wooden blocks into sand and casting metal types from the depression in copper, bronze, iron or tin. This new method overcame many of the shortcomings of woodblock printing mentioned by Shěn Kuò. Rather than manually carving an individual block to print a single page, movable type printing allowed for the quick assembly of a page of text. Furthermore, these new, more compact type fonts could be reused and stored (Man, 2002). The set of wafer-like metal stamp types could be assembled to form pages, inked,

and page impressions taken from rubbings on cloth or paper (*ibid.*). Despite the rise of the metal-based invention, wooden movable types carried on in China. According to Tsien (1985), a set of printing blocks could even become a gift, more than a printing device. As late as 173, 金簡 *Jīn Jiǎnm*, an official in charge of printing at the Wu-ying Palace, suggested to the Yongzheng emperor the colossal project of 武英殿聚珍版叢書 (*Wǔyīng diàn jùzhēn bǎn cóngshū*), the *Wuying Palace Collected Gems Edition*, a 2300-volumes, 253,500 wooden blocks project, all completed in one year. Following this success and using the types that had been created, the same year Jīn Jiǎnm wrote a manual, called the 武英殿聚珍版程式 (*Wǔyīng diàn jùzhēn bǎn chéngshì*), the *Imperial Printing Office Manual for Movable Type*, an illustrated manual, completed with commentaries and impressions of his printing experience (cf. appendix 102, with (a) Making the type blanks, (b) Carving the types, (c) Making the sorting trays, and (d) Setting the types).

The last movable type invention was metal movable type, the one that Gutenberg will use later for his machine (cf. *supra*). Bronze movable type printing was created in China as soon as the XII<sup>th</sup> century, according to at least thirteen material finds in China (Lan, 2014). The findings reveal large bronze plates, used for the print of paper money and other formal documents, dated as far back as the Jin and the Southern Song dynasties (XII<sup>th</sup> century). Besides, according to Pan (2001), the bronze plate technique, and the inserted bronze metal types for anti-counterfeit purposes to create paper money comes from the Northern Song dynasty (960 – 1127) and their 交子 (*jiāo zi*) paper money (cf. appendix 103). Using copperplates to make paper money is a practice that carried on, but the system was also used for book printing. Metal type was not widely spread in China before the XV<sup>th</sup> century, when the project of printing texts using metal movable type was privately financed by wealthy families Hua and An (Tisen, 1985). 華燧 (*Huá Suì*), who did not become a scholar before he turned fifty, started picking an interest in printing, and delved in it. In 1490 (by then aged 51), he printed the first book that used bronze movable type, 諸臣奏議 (*Zhū Chén zòu yì*), *Zhu Chen memoires*. He printed them in two editions, using big, then small characters (cf. the left side of appendix 103 for the smaller version, and the right side for the bigger version). As the technique spread, bigger and bigger enterprises were conceived, such as the 1574 太平禦覽 (*Tàipíng yù lǎn*), also known as the *Imperial Readings of the Taiping Era*. It is a massive 1000 volume 類書 (*leishu*) a “category book”. *Leishu* are usually made of sometimes extensive quotations from other works, or even

entire copies or others' texts, not simply excerpts. Although these characteristics make them quite different from modern encyclopaedias, they are still considered as the first Chinese ones (Zurndorfer, 2013). In 1725, the Qing Dynasty government ordered a 250,000 bronze movable-type characters and printed 66 sets of the grand encyclopaedic 古今圖書集成 (*Gǔjīn túshū jíchéng*) project, the *Complete Collection of Illustrations and Writings from the Earliest to Current Times*. Each set contained 5020 volumes, making a total of 322,560 volumes printed using movable type (Chang, 1962).

Of course, talking about type, we need to talk about typeface. Most books in China display variations of the standard script (楷書, *kǎishū*). Since the script has changed over time and over places, it has become a means to date and locate the origin of the documents (Tsien, 1985). The Chinese calligraphy styles originate from some famous writers, and change with periods, but the standard script, developed from the clerical script (隸書, *lìshū*) in or around the Later Han (947-951), has been used for printing ever since its original invention. Of course, according to the kind of text (title, body, etc.), the style changes (cf. appendix 105, with (a) square style used for headings, (b) Imitated Sung style, (c) Old Sung or printing style, and (d) Standard or regular style) (Zhang and Han, 2009). Last, it often happened that the preface of a book would be handwritten in an extraordinary fine calligraphy, either by the author of the preface or by a noted calligrapher on his behalf (cf. appendix 101, the right-hand side page). In a pictorial sense, these calligraphic samplings not only serve as examples of Chinese art, but also often characterise the most aesthetic part of the book (Tsien, 1985).

The expansion of the Chinese technique and expertise was rather quick. Korea not only was the fastest nation to borrow many things Chinese for her own, it was also the cultural connection between Japan and China, before they made direct contact, during the VII<sup>th</sup> century. When exactly paper, and the papermaking savoir-faire entered Korea is uncertain, but both the geographical vicinity and the political power the Han dynasty had over northern Korea indicates that it could have been as early as the III<sup>rd</sup> century CE, when paper began to be popular and spread beyond the Chinese border in both the northwest and southeast (Tsien, 1985). Because the art of making brushes, paper and ink in Japan started around the VI<sup>th</sup> century (learnt from Koreans, who themselves had learnt from Chinese scribes), papermaking is said to have been introduced to Japan around the VI<sup>th</sup> century by the Korean monk 曇徵 pronounced *Damjing* in Korean, and *Donchō*, in Japanese) (Aston, 2011). There is a record of him in the third volume of the 日本書紀 *Nihon Shoki*, also called 日本紀 *Nihongi*, both of which meaning *Chronicles*

of Japan, written in 720 CE, and translated in Aston's *Nihongi: Chronicles of Japan from the earliest times to A.D. 697* in 1896, reprinted in 2011:

*“In the Spring, March, the 19th year [of Empress Suiko, i.e. 610 CE], the king of Koma offered up [the] priest[s] Donchō and Hōjō as tribute [to Japan]. Donchō was familiar with the Five Classics. He produced colours, paper and ink well, moreover made watermill. Has making watermill presumably started ever since?”*

More than just the Donchō delegation and visit, the Chinese were sending books to Japan, to spread the Buddhist religion (cf. *supra*; Jugaku, 1959). Very soon, Japan started making their own paper, and the earliest Japanese-made paper, preserved in the 正倉院 *Shōsōin*, the Imperial Repository in Nara, are fragments of household registers from three provinces, and are dated from 701 CE. The Japanese papers were produced by the same method as that used in China, called 溜漉 *tamezuki*, the accumulation papermaking method, still in use for some papers. Another method, 流漉 *nagashizuki*, or discharge papermaking, was established during the VIII<sup>th</sup> or IX<sup>th</sup> centuries, and has been used to produce most Japanese paper in later times (Jugaku, 1959). The 紙漉重寶記 *Kamisuki Chōhōki*, a manual of papermaking printed in 1798, explains how to create paper using the 流漉 method (cf. appendix 106, with (a) Cutting paper mulberry trees, (b) stripping the bark from the tree, (c) washing said bark, (d) boiling the fibres into pulp, (e) dipping the moulds into the vat, and (f) drying the sheets on a wooden board).

The first record of printed work in Japan comes from the famous 百万塔陀羅尼 *Hyakumantō Darani*, the one million dhāraṇī. Those were ordered by the Empress Kōken in 764. They took the form of one million little wooden pagodas (the 百万塔, *hyakumantō*) (cf. appendix 107), each containing a little scroll of paper (6 x 45 cm) onto which 71 to over 200 characters-long excerpts of the 無垢淨光大陀羅尼經 *Mukujōkō daidarani kyō*, a Buddhist sutra that teaches mainly nondualism (Carter, 1955). These were distributed to ten temples: seven of them in Nara, the rest around the country as blessing for the defeat of the Emi Rebellion of 764. Most experts agree that the text was printed using woodblocks, except for one renowned scholar, Kawase (1973), who thinks they might have been copper plates. Besides this early event, printing in Japan was close to inexistent until the XI<sup>th</sup> century, when started an abundant printing of copies of the *Lotus sutra*: one thousand copies of it were issued in 1009, and another thousand in 1014 (Kawase, 1973). Because most of them were printed more for the religious benefits linked to spreading sutras (cf. *supra*) than to be read, they are often

characterised by a very weak ink, and are often illegible. The first document to be printed with the aim to be read was the Chinese sutra 成唯識論 *Chéng Wéishì Lùn*, the *Discourse of the Perfection of Consciousness-only*, printed in Nara in the Kofukuji (ibid.). From then onwards (until the end of the Kamakura era in 1333), the vast majority of sutra printing will be concentrated in the big temples of Kyoto and Nara. The typeface at that time is interesting because, even though those prints are actually rereleases of Chinese sutras, instead of using the Chinese block-style 隸書, most of the prints display a much more calligraphic style (Kawase, 1967; Kawase, 1979). The Heian period was a period of change, with the spread of Neo-Confucianism and Zen Buddhism in Japan: the printing became more formal and closer to the Chinese square style, and this new kind of books took the name 五山版 *Gozanban* (Kawase, 1967). For the first time, secular books such as poetry (寒山 *Hánshān* in 1325), or medicine books, are published. During this same period, woodblock is also used for underdrawings, as research from Paine and Soper (1981) show. Besides, the second half of the XIV<sup>th</sup> century also reveals the first prints using *kana*, showed in calendars in 1321, 1387, and later in 1589 (Kawase, 1973).

Although the first movable type printing press was brought in Nagasaki by the Jesuits in 1590, but because Christianity was proscribed in Japan, the influence of this new method was very minute at first (Braudel, 1982), and by 1614 the machine was shipped to Macao. From 1592 to 1595, a couple of years after the European machine came to Japan, the Japanese general 豊臣秀吉 *Toyotomi Hideyoshi* fruitlessly attempted to defeat Korea. He did however bring among the booty some apparatus to create a movable-type printing machine, which ended up having a far greater influence on the development of the medium (Chibbet, 1977). The Korean machine was used until around 1650, and its issues were mostly dedicated to the court and temples, but also to some individuals. The particularity of this machine is that it was adapted to print a very new kind of characters, mostly used through the genre of 嗟峨本 *Sagabon*. The *Sagabon*, studied by Kawase in his 古活字版之研究 (1967), is an edition of classical Japanese works, most of them published by 角倉素庵 *Suminokura Soan*, a prosperous merchant and art enthusiast. The series was published at his printing press in 嗟峨 *Saga* village, not far from Kyoto, giving the genre its name. Soan, in association with his friend, the painter-calligrapher 本阿弥光悦 *Honami Kōetsu*, wanted to bring back the refined sophistication of the Heian era

through these books. Sagabon were designed to be sold to the wealthy merchant people of Kyoto, the 町衆 *machishū*. They were branded by good quality, dyed and decorated paper, and often printed using 雲母粉 *kirara*, mica. The calligraphy, built with wooden types, was elegant and very typical. and graceful calligraphy usually printed with movable wooden type (cf. appendix 108). Because kana letters were used in the text, sagabon are said to be the first Japanese style printed books. As appendix 108 shows, not only kanas are present in these books, the style of writing itself is very characteristic: all characters are designed in linked type, contributing to a very new, Japanese impression. The earliest extant example is the 1606 publication of 伊勢物語 *Ise Monogatari*, *The Tales of Ise*, which contains one of the earliest non-Buddhist illustrations.

Even though woodblock was much more expensive, tedious, and time-consuming than movable type, it is definitely the technique that stuck the most in Japan, specifically after the development and rise of 浮世絵 *ukiyo-e* (the “pictures of a floating world”), the skill of using woodblocks for artistic purposes, inspired from the Chinese books printed during the Ming dynasty (Tsien, 1985). Associated with the fact that the Japanese language had the two Kana alphabets and the Chinese-derived sets of kanji, carving in blocks of wood seemed to be a better option. Besides, despite the appeal of moveable type, it was soon decided that the running script style of Japanese writings (the one displayed in the *Ise Monogatari* for instance) would be better transcribed using woodblocks, and so woodblocks were once more adopted (Sansom, 1961). Some of the earlier examples of *ukiyo-e* come from 菱川師宣 *Hishikawa Moronobu*, the artist who will introduce woodblock art to Japan from China. Moronobu not only worked on Chinese prints but also replicated Chinese art books, and a black and white album of erotic colour prints, 風流絶暢圖 *Fēngliú jué chàng tú* printed in China in 1606, was copied and published in Japan during the late XVII<sup>th</sup> century by him or his apprentices under the same title; coloured prints followed later (Fujikake, 1931). During the Edo period, from 1603 to 1867, as the Japanese market thrived, more and more books were printed to satisfy the demands of the growingly urbane townspeople. Illustrated stories were particularly prized, for though book containing drawings had been used to some degree in earlier times, it was at this period that they began to reflect the contemporary culture (such as the 1897 publication of the popular magazine 風俗画報 *Fūzoku Gahō*, showed in appendix 109, displaying woodblock cutters and type setters at work). Publishing became increasingly the domain of profitmaking centres in the

large cities; Tokyo replaced Kyoto as the major publishing centre, even though the latter continued to be significant, and Osaka became dynamic in printing at this time.

Movable type (and especially metallic movable type) was then more or less forgotten in Japan for a couple of centuries. As China moved forward with its version of this technology, it created new typefaces derived from the traditional Song dynasty letterform (cf. *supra*), and during the Ming dynasty was created a slender, balanced style that we now know as *Ming* (traditionally 宋體 or 明體 *Sóngtǐ* or *Míngtǐ*), but also lately recognised as *SimSun* in mainland China, and 明朝 *Minchō*, or 明朝体 *Minchōtai* in Japan). Ming is characterized by its very classic structure, inherited from regular script, thick vertical strokes distinguished with thin horizontal strokes, reminding of the various pressures applied on the brush when doing calligraphy, and triangular shapes at the end of single horizontal strokes, called 鱗 (*uroko*), “fish scales” in Japanese, which are considered an equivalent to Western serifs. The *uroko* represent the slightly heavier imprint caused by pausing one's brush 頓 (*dùn* in Chinese), the “pause technique”, used to strengthen the start or ending of a stroke, which is typical of regular script (楷書, *kaisho*). To this day, *Minchō* (cf. appendix 110) remains one of the classic, and most used typefaces in Asia (Weisenfled, 2011). When metal-based movable type came back to Japan, in the middle of the XIX<sup>th</sup> century, in 1848 to be specific, it was not considered to be a reinforcement of a past typographic tradition, but more of an import from Europe through the Dutch East India Company, based in 出島 *Dejima* in Nagasaki (Kornicki, 1998), the only place Japan did business with the West at the time. The Dutch came to Japan with a printing press, and sets of types aboard. The machine was bought by 本木昌造 *Motoki Shōzō*, a Bafuku interpreter. By 1850, he had casted some katakana types (Reed, 2004), and a couple of years later, using the type he had available, he printed 蘭和通弁 *Ranwa Tsūben* (the *Dutch-Japanese Interpreter*), a basic dictionary. From 1855 onwards, *Shōzō* got commissioned by the city of Nagasaki to print books, and between 1856 and 1859 he printed what are considered to be Japan's first ‘modern books’, since they were bound using the Western method (Kornicki, 1998). As the movable type started to develop once again in Japan, the seeming incompatibility between the Japanese script and the letterpress printing arose once more. To quote the famous designer 原 弘 *Hara Hiromu*, as he is transcribed in Mastuoka and Tanaka's 日本のタイポグ

ラフィックデザイン：文字は黙っていない (*Nihonnotaipogurafikkudezain: Mojiwa damatte inai, Japanese Typographic Design: Letters Are Not Silent*), 1999:

“*Before the problem of scripts, the problem of national letters [国字 – kokuji, cf. supra] is an enormous wall that stands in our way*”

The multiple scripts of Japan, especially the kanji, are at the heart of the debate for potential language reforms. Matsuo and Tanaka (1999) consider that the multiple facets of the writing system are a reflection of Japan’s attempt to transculturation, and therefore a strong asset of the country. As the country gets out of the 鎖国 *Sakoku* period, enacted by the Tokugawa shogunate and abolished on the strong incentive of Matthew Perry in 1853, Japan opens itself again to world trade, and to optimise business, script alterations are deliberated. Trusting themselves fervent nationalists, all parties defended their ideas for the good of the country. For instance, defending a complete and democratic access to media, influencing editors such as 原敬 *Hara Takashi*, who then became Japan’s tenth Prime Minister in 1918, advocated for a strong reduction of the basic set of kanji, a simplification of orthography, and the abandonment of the words using the Chinese pronunciation as a matter of politeness, only to be left with the Japanese readings (Seeley, 1984). This suggestion received a lot of support from linguists, typesetters and politicians, hoping this project would alleviate the work charge weighing upon the typesetters, who had to deal with thousands and thousands of types for every publication they were making. Going further in the idea of simplification, 前島密 *Maejima Hisoka*, the founder of the modern Japanese mailing service, proposed that kanji should be simply removed, and that the Japanese language should only be transcribed using kana (Weisenfeld, 2011). Banishing kanji was definitely an idea that found a lot of followers, and on November 1<sup>st</sup>, 1920 the 仮名文字協会 *Kanamojikyōkai*, the Phonetic Syllabary Script Association (which became the カナモジカイ *Kanamojikai* in 1923) was created by famous editors and influential people such as 山下芳太郎 *Yamashita Yoshitarō*, or 森下博 *Morishita Hiroshi*. As businesspersons, they believed that kanji was an impediment to the internationalisation of Japanese companies, and to the modernisation of Japan. This might seem too extreme a measure, but these measures happen in a context where Japan’s neighbour, Korea is promoting its 한글 *Hangul* alphabet, used to the detriment of Chinese characters, using it both in schools and in official documents, following the Gabo Reformists’ push (Silva, 2008). In some other groups,

at times federated in associations such as the ローマ字協会 *Rōmaji Kyōkai*, which then became the ローマ字論 *Rōmaji Ron*, the “Theory of Roman Letters”, where leading novelists and poets such as 夏目漱石 *Natsume Sōseki*, or 北原白秋 *Kitahara Hakushū* advocated dropping both kana and kanji, and write Japanese using roman letters only (Weisenfeld, 2011). Their main issue was the difference between spoken and written Japanese, when they were aspiring for the “unity of spoken and written language movement”, the 言文一致運動 *Genbunitchi Undō*. This movement helped spread vernacular Japanese to the print media, and literature (ibid.). Last but not least, Japan’s very first minister of education, 森有礼 *Mori Arinori*, proposed that English become Japan’s national language – a simplified version of it at least (Smith, 1997). Kanji preservationists overcame; obstructing what even the most restrained thinkers felt was an imperative for some degree of script restructuring. Their efforts were lifted by the gradually warmongering tendency of the 1930s government, and postulates that kanji were essential to the image of the Japanese polity (国体 *kokutai*). Some defenders even suggested that the linguistic proposals would require altering the imperial rescripts, which would not only be an offense to the emperor but would destroy the Japanese spirit (Seeley, 1984).

## b. The development of computerized typography

### i. Typography in Europe: towards the abstraction of characters

Typography spread all the way to France thanks to the help of German printers Martin Crantz, Michael Freyburger and Ulrich Gering, who opened a printing press in Paris in 1470, where they printed with an inferior copy of the Lactantius type (cf. *supra*). Gothic types were the most used in France until the end of the XV<sup>th</sup> century, before roman designs took over. The Belgian printer Josse Bade (also known as Jodocus van Asche Badius), in partnership with Henri Estienne established a press in Paris in 1503 (Renouard, 1969). Printing with rudimentary Roman and half-Gothic types, the duo was too busy trying to meet the high demand for Humanistic and classical texts to take the time to try to design any original types of their own. French books nonetheless began to follow the format established by Italian printers, and Lyon and Paris became the new centres of production. Eventually, as Diderot (1765) writes in the eighth volume of his famous *Encyclopédie*, the French government set a standard height

for all type, to guarantee that different batches could be mixed and used together without aesthetic nor mechanical problems. The spread of roman script in France is part of the strong impression the Italian Renaissance did on its invader after the 1494 conquest. This new influence induced phonetic and orthographic changes to the French language, which in turn delayed the evolution of type design in France until the late 1520s (Eisenstein, 1980). From the beginning of the 1510s, the roman types presented by type designers and typesetters such as Robert Estienne, Simon de Colines and Antoine Augereau underwent a series of changes, in order to try to define a typeface with a distinctly French image to it. The de Colines roman type cut in 1531 bears a resemblance to Griffo's 1499 roman (cf. *supra*) but is not exactly similar to it (cf. appendix 111, p. 22 of Amert's *The Scythe and the Rabbit: Simon de Colines and the Culture of the Book in Renaissance Paris* (2012), with 0.1 being Griffo's italics and 0.5 de Coline's ones). De Coline's typefaces display narrower shapes and an overall tighter letter fit; the small cap *a* shows a low angled bowl; *i, j, m, n* and *r* are given elevated triangular stem serifs; flattened baseline serifs, carefully displayed ascender serifs and elegant, fluid lines illustrate the French style. Robert Estienne's roman typeface of 1532 was similar to the de Colines face, and so was Augereau's cut the same year. Lower case letters from the Estienne and Augereau types became the source of various post-Renaissance old style letterform, and were adopted by French typographers for the following 150 years.

The slender French style reached a peak in the work of the most famous French typographer: Claude Garamont, also known as Garamond, because of his Latin name, *Garamondus*. In 1540, Pierre Duchâtel, who was king François the First's chaplain and counsellor, asked Garamond, with the help of Robert Estienne, for three sets of Greek typefaces, later known as the *Greco du Roi*, the King's Greeks. These tapes displayed a vast variety of accents and ligatures (cf. appendix 112), making them very aesthetically pleasing and easy to read, but extremely hard to cut (Loubet del Bayle, 1999). Cambridge scholar Arthur Tilley defined them in 1900 as "*among the most finished specimens of typography that exist*". More than his Greek alphabets, the types that will bring fame to Claude Garamond are his roman types. If Aldus Manutius was recognized for his italics (cf. *supra*), Garamond's romans definitely changed the way European books were printed. Most of roman typefaces used in Garamond's printing activities are credited to his type cutting and punching talents. Because of their fame, and the fact that famous and/or official printers such as Estienne, Plantijn or Wechel, used very similar characters, the types known as *Canon de Garamond* and *Petit Canon de Garamond*, displayed on a specimen sheet issued by the Egenolff-Berner foundry in 1592 (cf. appendix 113) are generally accepted as *Claude Garamond's final roman types* (Nesbitt, 1957). In 1989, the type designer Robert Slimbach designed a computerized version of Garamond for

Adobe (Brady et al., 1989), in competition with another company who released its own version of the same letterform, ITC (cf. appendix 114 for a comparison between the two fonts). Declinations and updates of this typeface exist, offering ligatures, special characters and declinations of letters.

Roman types kept on gradually evolving, may it be from official commissions, such as the aforementioned *Greco du Roi*, designed by Garamond, or the *Romains du Roi* (the “King’s Romans”), designed in 1692 by printers Grandjean and Simonneau for the French king Louis XIV (Meggs & Purvis, 2006). With each version of the type, new ideas and visions of letters balance and aesthetics are displayed, with for instance Joan Michaël Fleischmann’s capitals letters, considered of a new kind. He cut punches displaying an even-width arrangement, reduced rounds, all-vertical stressing, and triangular beak ends of *E*, *F*, *L*, *T*, and *Z*, foreboding the modern types (cf. appendix 115 for a computerized version of the type). A significant amount of roman letterforms created in the XVIII<sup>th</sup> century in fact still exist in our computers. For instance, the roman and italic types created by John Baskerville in 1772, displaying lower contrast, a balanced transaxial modelling, finely shaped linked serifs, and long stems, are one of them. The superb design and details of Baskerville’s roman, combining elegance and strength, is a balance between rococo influences and modern aspirations, and had great influence of European printers (Gaskell, 1973). One key aspect of the type is that the lower part of his lowercase *g* does not fully close. Offshoots of Baskerville are often identified thanks to this trait. A modern revival of Baskerville, a font called *Mrs Eaves*, is named after Baskerville’s wife who was the widow of Richard Eaves (Penney, 1998).

The last evolution stage of the romans is called “modern romans”. The style emerged with two punch-cutters and type designers, the Italian Giambattista Bodoni, and the French François Ambroise Didot. Following the change of mind-set that occurred from the very end of the XVIII<sup>th</sup> century propelled by government initiatives such as Napoleon’s “enlightenment” in post-revolution France, and academic works such as the resurgence of Descartes’s practical and logical approach to philosophy, and Newton’s discoveries in physics, letterform switched from a very chirographically inspired design to a more symmetrical, geometrical one. The denomination “classical” comes from the return of typefaces to longer ascenders and descenders set on widely set apart lines, which in turn gives a light page effect, suggestive of old-style—occurring at a time of classical revival (see appendix 116 for a comparison between the two typefaces). Bodoni was leading in progressing from rococo to the classical style. The Didot’s roman types closely resemble the work of Bodoni, and opinion is divided over whether the Didots or Bodoni originated the first modern romans (Dodd, 2006). Didot also designed

*maigre* (“lean”) and *gras* (“fat”) types, later understood as condensed and expanded font formats.

With the XIX<sup>th</sup> century came about fewer modifications. We can count in the evolution of serifs, with the development of slab serifs (cf. *infra*), but until the 1860s, texts were mostly printed using romans and italics. What mostly changed during this century is the technical and technological context. Mechanisation and automation of printing processes have emerged, many of them stemmed from lithography. Lithography was invented in 1796 by the Bavarian author and actor Alois Senefelder. The system is designed based on the principle of immiscibility of oil and water. Using a limestone as a base (which gives lithography its name: *λίθος lithos* means “stone” in Ancient Greek), the image would be painted or drawn using oil-based media, and then covered with a hydrophilic layer of gum arabic solution. When time comes to print, the stone is kept wet, and oil-based ink (traditionally linseed oil and pigments) is applied on the stone. Because the wet areas will repel the oily mix, the ink will naturally gather in the areas where the drawing was made. A sheet of paper is applied on the stone and run through a press, creating an image that can be reprinted at will (Gascoigne, 1986). The invention evolved with the apparition of chromolithography, allowing multi-coloured prints (cf. appendix 117). Chromolithography was first mentioned as a project in Senefelder’s 1818 *Vollstaendiges Lehrbuch der Steindruckerey* (A Complete Course of Lithography), where the printer explained plans and desires to manage prints in many colours (Ferry, 2003). Arguably, the French lithographer Engelmann from the city of Muhlouse (or Mühlhausen at that time, for it was a free Germanic republic) first used chromolithography in July 1837. The principle spread very quickly, and the first American chromolithographs can be found as early as 1840, in William Sharp’s portrait of Reverend Greenwood (Meggs & Purvis, 2006). Chromolithography is based on the same principle as lithography, using either limestone or a zinc plate as a base. Each colour had to be drawn on a separate stone (or zinc plate), and the sheet of paper was pressed against one plate at a time. One chromolithograph could need “*as many as twenty stones*” (White, 1999), allowing layers of colours to blend and render an image as faithful as possible. Lithography and its derivatives did not keep their “artistic” reputations for very long though, since people considered chain copying as inauthentic work, thus called “bad art” (Clapper, 2002), and this technique turned more into a business than an art. The XIX<sup>th</sup> century is also the time for photography to develop, and its printing counterpart, halftoning, to be created. Halftones, or halftoning, is a printing process based on an optical illusion that simulates gradients and continuous tones using dots (cf. appendix 118) (Campbell, 2000). The development and democratisation of those technical and technological inventions changed the expectations of the public, making it more and keener on printed matters, and more demanding.

This of course had an impact on typography: what was until now a craft had now to change to become more industrialised, and redesign itself for mass production.

The years between 1890 and 1980 are the ones shaping typography as we know now it. What used to be the art of printing entered the world of industry, and brought typography along. The end of the XIX<sup>th</sup> and the XX<sup>th</sup> centuries were very intense eras, on a technological, aesthetical, and ideological point of view. Because of those continuous evolutions, both the printing and type industries changed considerably. Printing went from hand typesetting to a more industrialized version of it with the creation of hot type machines such as the Linotype (1886) and the Monotype (1887), where instead of hand setting, types were arranged following orders an operator was typing on a keyboard. The idea evolved in 1949 to become a phototypesetting machine, which in turn became obsolete with the development of computers (Phillips, 1968). Keyboard-operated typesetting was not only a way to make printing safer, it was also a much faster and sustainable way to issue content, in an age more and more hungry for print (newspapers, advertisements, posters, etc.). The massive volume of printing also enabled creativity with type, and the XX<sup>th</sup> century's digital typesetting era produced the vast majority of the typefaces were still used, such as *Times*, *Futura*, *Helvetica* (cf. *infra*), or the computerized version of previously mentioned types, such as Garamond or Bodoni. Such an interest for type developed an industry of large type foundries and manufacturers, some of them still active (such as Adobe Type) some others now extinct (such as the ATF, the American Type Founders) (Howard, 2005; Nagan, 2009). The successful types managed to become trademarks, and were used for packaging and branding, with the famous example of the soup brand Campbell's (cf. appendix 119), whose logo has so to speak not changed since 1898 (Campbell's Soup, 2016). This era also marks the birth of graphic design as an art branch by itself, separated from book typography. Book art and its celebration found a spokesperson in publisher William Morris and his co-created *Arts and Crafts Movement*, as soon as 1887. This association reflected the dilemma faced by the galloping industrialisation of Europe, for it aimed at reviving all traditional British arts and crafts, such as furnishing or canvassing. Although the organisation was essentially against machinery, Morris assumed a more neutral position, saying "*We do not reject the machine, we welcome it. But we would desire to see it mastered*" (Pevsner, 2005). As far as book design is concerned, the movement advocates three different rules:

- Going back to the Antiqua models designed during the Renaissance.
- Making book design and illustrations simpler.
- Managing more humane and craft-based ways of issuing prints.

The last rule promoted the development of private presses, which are printing presses operated more for creative, artistic and personal project, rather than industrialized and commercial ones. The Arts and Crafts Movement has had a great influence over type designers and printers, enabling for instance the New Book Art, which emerges with World War I. At a time when the Art Nouveau and heavily ornamented typefaces such as Eckmann (created in 1900 by the designer Otto Eckmann, cf. appendix 120) were all the rage, the New Book Art movement advocated a new ideal, far from the ambient refinements and from the previous classicism. Developed in a pre-war context by designers such as Fritz H. Ehmcke, or Friedrich W. Kleukens, the New Book Art movement (*Buchkunstbewegung* in German) aimed at creating a much cleaner, tidier, and upfront design. This image was carried on by famous German designers, such as Rudolf Koch, who designed (among many others) types such as Kabel in 1927 (cf. appendix 121), in the current spirit of the Bauhaus.

Fonts such as Kabel are called *sans serif* (cf. *infra*), and they are one of the main traits of the early XX<sup>th</sup> century in graphic design. Although the letter design in itself comes from the XVIII<sup>th</sup> century, it was the mass production of advertisements and posters in the late XIX<sup>th</sup> century that sans serifs really started to take off. The first sans serif fonts were usually called Grotesque, as the oversight of serifs was a substantial departure from hundreds of years of tradition in printed text (Tam, 2002). The first official commercial orders for sans serif fonts were done to the Berlin Berthold foundry, for a font called *Akzidenz Grotesk* in 1904 (cf. appendix 122), and in the US, *Franklin Gothic*, designed by Morris F. Benton (cf. appendix 123). Sans serif fonts can be separated in three groups: classical, humanistic and geometric. Classical fonts, such as *Helvetica* (for some, paramount of type, cf. Hutwit's movie *Helvetica*, 2007), were designed in a movement dominated by Swiss and German designers. Humanistic fonts, such as *Johnston Sans* (designed by Edmund Johnston, the creator of the London Underground system), appeared in the late 1920s, and displayed slight weight variations. Last, the geometric, or constructivist movement, inspired by the Bauhaus artistic movement, designed types such as *Futura*, heavily based on mathematics. Sans serifs are, with serifs and slab serifs (cf. *infra*), the three big categories of type.

With the 1920s, another category of type emerged: the *New Typography*, also called *Elementary Typography*. Inspired by artistic currents such as the Bauhaus, Dadaism, Expressionism and the Russian Constructivism, the New Typography was found in book design, and taught in Art schools such as the Offenbach Arts and Crafts School, by Rudolf Koch. Dadaism and Constructivism mostly influenced the design of posters (cf. appendix 124). Most of the rules, visions and concepts linked to the New Typography movement have been

gathered in a book, Tschichold's *Die neue Typographie*, first published in 1928. The 1930s were much more conservative, and although the New Book Art became a standard as far as book printing was concerned, the influence of Art Deco became increasingly important in posters and advertising (Friedl et al., 1998). Blending the influences, between Art Deco and constructivism, the posters from the 30s develop a new aesthetic, between sophistication and modernity. Some fonts created then, such as *Broadway* (created by Benton in 1927, cf. appendix 125), are still in use nowadays. The 1930s are also the decade of more traditional fonts, such as *Times*, commissioned in 1931 by the British newspaper (and the typeface used to write this paper) (Loxley, 2006). Last, it is for Germany the return to blackletter scripts (*Zweischriftigkeit*), the official kind of fonts used by the Reichstag.

In Switzerland, during the 1950s, a strongly Bauhaus-inspired movement took place, seeking to design a typeface adapted to its industrial contemporaneity. There were near-scientific demands for a lighter, more geometrical type, that would allow generous empty spaces around the letters, and accept all sorts of layouts, and create absolute optical harmony (Hoffmann, 2007). Hence was born *Helvetica* (cf. appendix 126). Developed by the type designer Max Miedinger in 1957, in collaboration with Eduard Hoffmann, the type was first called *Neue Haas Grotesk*, it was rapidly registered by Linotype and renamed *Helvetica*, being similar to the Latin adjective for Switzerland, *Helvetia*. In the 2007 documentary dedicated to the font, *Helvetica*, the German typographer and designer says:

*“It's air, you know. It's just there. There's no choice. You have to breathe, so you have to use Helvetica.”*

Its readability, flexibility and ease of use have made *Helvetica* one of the most used fonts around the world, may it be on street signs (for instance, all MTA signs in New-York use *Helvetica*), or logos (cf. appendix 127).

Typography was faced with a brand new set of challenges with the development of computers. Computer data has to be translated into binary codes (a succession of 0 and 1), but it would greatly disturb the end user experience, not to mention make it significantly much harder, if one had to only input content using zeroes and ones. There was then a need for a character encoding standard (and process). The US Army Signal Corps, to gather and transmit battlefield information (Mackenzie, 1980), developed a very pioneering encoding project in the 1950s: *Fielddata*, based on a six-, sometimes seven-bit code. However, the lack of a standard and frequent miscommunication terminated the project in 1962. Computer company IBM went one step further in 1959 with its *BCD*, the *Binary Coded Decimal*. The BCD functioned on a six-bit matrix, and used alphanumeric codes to represent characters: capital letters, numbers,

and some special characters. All of these inventions lead to the 1963 *ASCII*, the *American Standard Code for Information Interchange*, still in use to represent text in telecommunication devices, such as computers for instance (ibid.). Developed from the telegraph code, ASCII was originally a seven-bit code, which means that ASCII could encode up to 128 characters, which is enough when one uses the English alphabet (Shirley, 2007). The first ASCII looked like the one displayed in appendix 128, extract from a 1972 guide book, and appendix 129 gives an insight on how those alphanumeric characters are actually encoded, using the binary system. Even if the 7-bit system worked for the English alphabet, it soon turned out to be insufficient for other languages, which might need some accents, or other letters (for instance German with its ß, or French with é, è, à...), not to mention Asian scripts. In the 1980s, the system was expanded to an 8-bit system. First, the eighth bit was used as a *parity bit* that is a value used for checking whether or not data have been transmitted properly. As it grew, ASCII became a “true” 8-bit, or one-byte (8 bits = 1 byte), character code. A true 8-bit character code allows for up to 256 items to be encoded ( $2^8 = 256$  code points) (ibid.; Sawyer & Krantz, 1995). Modern computers operate most efficiently when they process data in bytes. This is because their core electrical structure is usually designed with data pathways that are 8, 16, 32, or even 64 bits wide. For that reason, a 10-bit or a 15-bit character code is clumsy and inefficient to handle inside a personal computer. On the other hand, if too many bytes are used for encoding characters, computers likewise process data inefficiently. For example, a three-byte character code could encode almost 17 million characters ( $2^{24} = 16,777,216$  code points), which would cover all known historical and currently used character sets throughout the world, but the majority of the world's languages only need a one-byte code for character encoding, since they are alphabetical scripts. Processing another two unneeded bytes to store an ‘A’ on a storage device such as a USB key for instance would lead to a tremendous reduction of disk space that could be used for storing data. Even if the ASCII is still in use, the global encoding system standard is now the Unicode (cf. *supra*).

The next big change for type, writing, and our lives in general starts during the 1980s (but is mostly developed during the 1990s), with the beginning of the DTP era. *DTP* stands for *DeskTop Publishing*, which is essentially the result of an agreement among four companies: Apple Computer, Adobe, Aldus, and Hewlett-Packard, to allow professionals first, then regular consumers, to bring the whole process of printing inside their houses. While Canon built the first laser printers, it was Hewlett-Packard's *LaserJet* desktop laser printer, developed in 1984, used with the Apple Macintosh computer and Adobe's PostScript page description language and Aldus's PageMaker software, which is generally recognised as the bases of DTP (Howard, 2005). The first fonts are either raster fonts or vectorial fonts. A *raster font*, or raster graphics,

means that the image you are watching, or the characters you are writing with are in fact a dot matrix data structure, whereas the vectorial fonts' outlines are defined by Bezier curves, and are scalable. The issue with raster fonts is that they are very hard to make bigger. Because the raster graphics are based on a bit map, a scaled-up small character will appear as a blur of bits, invisible when small (cf. appendix 130), referred by some such as Stamm (2009) as the “*raster tragedy*”. Apple's first font, Chicago (cf. appendix 131, the font displayed in the graphics of the time, using the famous English pangram “The quick brown fox jumps over a lazy dog”). A third, much more stable option was later found in Adobe's *PostScript*. Apple and Microsoft developed another universal font format in the late 1980s, the *TrueType* format, which is now predominantly used by Windows and home office environments, because the fonts are infinitely scalable and, unlike the PostScript fonts, only need one file (PostScript will require many discrete files, may it be for light, bold, italics, bold italics, etc. versions of the same font) (Stamm, 2009).

The new PostScript and TrueType formats completely changed the game of the printing industry. Companies such as Adobe quickly built their font libraries, and some new ones swiftly mushroomed, such as Bitstream in the US, or FontShop in Germany, founded in Berlin in 1989 by aforementioned Erik Spiekermann and his wife. According to their corporate website, they were the first font reseller in the history of digital type. Only big enough print presses managed to maintain their activity; for the other ones, such as H. Berthold Type Foundry, the change in activity forced them to close down.

The 1990s were a decade when postmodern design and techno culture were great inputs on type design. More and more, typography became a design element by itself, rather than a means to display text meaning. This is one of the consequences of the great diversification of font styles, and the democratisation of computer access (Bierut et al., 1994). One example of this newfound meaning of typography is the work of the British graphic and type designer Neville Brody (cf. his Nike campaign poster, appendix 132), who first gave typography a new meaning in renowned advertising campaigns. He also designed heavily image-impregnated fonts, such as *Arcadia* in 1990, or *FF Blur* in 1992 (appendix 133). A much more “deconstructivist” designer, whose work is famous for going against all rules of typography (cf. *infra*), is David Carson. Alternative, transgressive, provocative for some, his artwork definitely stood out, making him one of the lead figures of the “*grunge typography*” era (Carson, 2014), or as Pr. Edmund Fella calls him, the “*father of deconstruction design*”. He is famous for some edge-cutting publications, such as a 1994 interview with Bryan Ferry, that he considered boring, so he chose to publish it in the magazine *Ray Gun* using *Dingbat*, a font that only contains

symbols (cf. appendix 134). California, and more specifically the *Emigre* magazine, digital type foundry and publisher, was one of the centre of postmodern design issues.

Another influence for contemporary typography is the youth culture, especially since the development of the internet. The possibility to download online types has allowed smaller, independent foundries and labels to develop, selling *shareware*, or offering *freeware* fonts to anyone – professionals or private users. Software such as *Fontographer* also exist since 1986, and allow anyone to design their own fonts (the first versions allowed only raster designs, then came the vectorial types). In the collective imagery, thanks to designers like Carson and the easy access to type design, the use of unconventional fonts has become more and more accepted (Urdike, 2001), since they were found everywhere: CD and LP covers, posters, flyers and street art. This art promotes that type is meant to be felt, not read.

ii. *Kanji in 7 bits: the hard transition from the press to the screen in Japanese script*

Just as the Reichstag did with the blackletter script (cf. *supra*), there has been strong political support to make *Minchō* the only national script in Japan. This movement, according to the design historian 川畑直道 *Kawahata Naomichi* (1999), has helped define the idea of what is and what is not “German”, and gathered people under the National Socialist banner. However, as Weisenfeld (2011) notes, there was more than “just” *Minchō* used as a typeface:

*“Several Japanese typefaces based on Minchō retain vestigial elements of handwriting and calligraphy in an attempt to reproduce familiar traces of the brush. The standard Japanese typeface for school textbooks developed in the Meiji period known as Kyōkashotai [教科書体, literally “schoolbook writing style”, cf. appendix 135], for example, is a variation of Minchō based on the model of regular script handwriting that was taught to children in school.”*

The multitude of characters present in the Japanese writing system made it however very difficult for type designers to create new fonts, and *Minchō* prevailed in the printing industry. In a discussion with typography master 平野甲賀 *Hirano Kōga* published in 2005, *Kawahata* acknowledges that one of the flaws of printing, especially movable type, is that it fails to render the image, and dynamism that handwriting and calligraphy can provide, which is why hand-designed prints have prevailed over punch cut types, until the arrival of digital

typography. These letters are what he called 描き文字 *kakimoji*, “drawn letters” (which could actually be considered a pun with 書き文字 *kakimoji* “written letters”). During the 1920s, before World War II, lettering and type design was a very dynamic field, and there were many handwritten styles, used in different fields: 装飾文字 *sōshoku moji*, which were heavily ornamented letters, 意匠文字 *ishō moji*, designed letters as shown by appendix 136, the cover of the 2000 book by 呂勝中 *Lǚshèng Zhōng*, 図案文字 *zuan moji*, which are design declinations of characters, such as the ones drawn by 矢島周一 *Yajima Shūichi*, displayed in appendix 137, or the 広告文字 *kōkoku moji*, the lettering dedicated to advertising, to name only a few. Letters declinations such as 図案文字 put the emphasis on emotions and expressions conveyed through the appearance of the letter, proving the point made by Kawahata, that punch-cut type cannot convey as many feelings as handwritten design can. The expressive impact of typography becomes an evidence very early in Japan, and in the introduction part of Yajima’s 1926 図案文字大観 *Zuan moji daikan*, the *General Survey of Letterform* (a double page of which is displayed in appendix 137), 武田吾一 *Takeda Goichi*, who was an architect and a Tokyo Imperial University professor asks for “*new letterforms to fit modern communities*”, and writes (as quoted by Fraser et al., 1996):

*“beautiful typography is the most effective way of promoting the worth of a commodity”*

The importance of letter appearance, design and emotional impact started becoming a concern as early as the Edo era, and based on those concerns, pre-war designers looked to develop consumption through beautiful letter design (Weisenfeld, 2011). One of the compendia that really acknowledge the need to take care of letterform and typesetting is 浜田増治 *Hamada Masuji*’s 1928-1930 現代商業美術全集 *Gendai shōgyō bijutsu zenshū* (literally *The Complete Works of Contemporary Commercial Art*, but published in English under the title *The Complete Commercial Art*). A whole section of his compilation is dedicated to letterform, especially the Edo letters. Some of the most famous ones are still very much alive. 髭文字 *Higemoji*, for instance, considered as part of the German *Fraktur* font family (cf. *supra*), means “whiskers letters”, because of the stylized brush strokes, designed to look like whiskers. These characters are very present, especially in the context of traditional festivals: food stall such as the shaved

ice ones (搔氷 *kakigōri*), as well as the coats (法被 *happi*) worn by the stall keepers, usually display these letters. The use of higemoji comes from its simple association to the Edo era, and therefore, to tradition. Items “stamped” with higemoji are then seen as traditional. Because of its link to tradition, the higemoji type is also used for sake labels – what could be more synonymous to Japanese tradition than sake? Much like French wines, sake companies, such as 東の麓 *Azuma no Fumoto* (The Foot of the Eastern Mountain), do not feel the need for a modernized version of their labels, and stick to traditional displays, using higemoji and printing on paper that strongly resembles 和紙 *washi*, traditional Japanese paper (cf. appendix 138). Unlike beverages that arrived in Japan more recently, such as beer or wine, the image of sake was improved by linking it to ancestral techniques, even though it has now turned into a very modern industry to meet demands. Marking a product as “traditional” through types reinforced consumer trust in the excellence of the company. One other very famous occurrence of higemoji is the logo of the shopping malls chain Mitsukoshi: 越, whose *nanori* (cf. *supra*) can be read *echi*, for Mitsui Echigoya (spelt 越後屋), the first name of the shop, but also *koshi*, for Mitsukoshi (cf. appendix 139). The founder of the Echigoya kimono shop, 三井高利 *Mitsui Takatoshi*, had a strong sense of business, and managed to have famous people endorse his goods (Turpin, 1995). Throughout its history, the chain has managed to be very advanced as far as technical and marketing strategies are concerned (they were the first department store to let their costumers keep their shoes inside the shop), yet always maintaining a very traditional, Edo-based appearance through its letterform. 相撲文字 *Sumōmoji*, was and still is a letterform used in advertising promoting sumo wrestlers tournaments. Often confused with rather similar letterforms, such as 勘亭流 *kantēryū* (left column of appendix 140), used mainly to promote art and used in Kabuki and Rakugo programmes, or 寄席文字 *yosemoji* (right-hand column of appendix 140), which were mainly used for posters and advertising (Richie, 1992), the *sumōmoji* are still in use to promote Sumō wrestlers’ tournaments (cf. appendix 141). *Sumōmoji* displays thick, round letters, giving an image of strength, power, and masculinity, so much in fact that this script’s other name is 力文字 *chikaramoji*, the “letters of strength”. Two other letterforms that are very typical to the Edo era are the 角字 *Kakuji*, the “square characters”, and the 牡丹文字 *Botanmoji*, the “peony characters”, sometimes also called 薔薇

文字 *Baramoji*, the “rose characters”. The *kakuji* letterform is inspired from the 楷書体, the square style (cf. *infra*), and creatively abstracted to create a very angular design, aiming at making the letter fit in (and give the overall impression of a) square (cf. appendix 142). They were used for seal stamps, for the 家紋 *kamon*, the house family crests, and to monogram clothing. *Botanmoji* are very round, puffy letters enclosed in a circular shape (cf. appendix 143), designed to look like flower buds as seen from above. They are usually used at the back of the *happi* coats (Richie, 1992; Weisenfeld, 2011).

The regain of interest for Edo-inspired letterform and design caused a soar of anthologies dedicated to lettering sent to print. These were supposedly trade publications dedicated to businesses, both in retail and design, to use as sourcebooks, an offspring of the long-lived institution of pattern-books in Japan. These volumes (and their numerous reprints) explained and showed how to design the letters, and also showed results as far as popularity and efficiency were concerned (Kawahata and Hirano, 2005). Yajima developed the principle even further in 1928 in his 図案文字の解剖 *Zuanmoji no kaibō* (Anatomy of Design Letters), where he completely deconstructs, abstracts and geometrises letters, both *kanji* (cf. appendix 144) and *kana*. Appendix 145 shows different variations around the sound [a], rendered by both *hiragana* (left page) and *katakana* (right page). Some scripts developed in those compilations, such as the ones issued by Yajima or his peers, aim at defining the limits of design, its implications and the frames of legibility, especially when building very lyric designs, part of what would be acknowledged as “*Taishō* romanticism”. This movement is the Japanese answer to the European *Art Nouveau*. The Western movement was deeply influenced and showed a strong interest in Japan and its aesthetics, creating the sub movement called “*Japonisme*” (cf. the cover of the French magazine *Le Paris Illustré*, appendix 146). This attraction in return developed the curiosity of designers for *Art Nouveau*, for a somewhat familiar environment surrounded them, although of course biased by a Western prism. Passion for *Art Nouveau* produced floral, embellished typefaces, and following Takeda’s quote, these typefaces conveyed an image of elegance, sophistication and refinement. One brand that epitomises the *Taichō* romanticism is the cosmetics company *Shiseido*. Appendix 147 shows the wrapping paper of the brand, designed in 1916 by the graphic designers 山六郎 *Yama Rokurō* and 山名文夫 *Yamana Ayao*. They were commissioned by 福原信三 *Fukuhara Shinzō*, photographer and son of the company founder who even when the company was still a single-ranged business at the time, had understood the impact of design in sales (Osterer and Stamm, 2009). Yama was

then already quite famous a designer for creating feminine designs for characters, due to his experience creating typefaces for journals such as 演劇映画 *Engeki Eiga* “Theatre and Film”, 女性 *Josē*, “Women” and 苦楽 *Kuraku*, “Pain and pleasure” (cf. appendix 148) (Weisenfeld, 2011). The wrapping paper from Shiseido shows very delicate, floral patterns, clearly targeting a female audience. Contrary to the company’s current image of promoting Japanese beauty culture, at that time Shiseido was marketing a much more European vision of women, and advocating a luxury lifestyle. Wrapping papers in Japan are an essential part of the selling process: they are even called the “*silent salesman*” (Nakada, 1993). If their design was beautiful enough, the wrapping papers were kept by the customers and eventually reused as a gift wrap, allowing free advertising to the company – the very same way brands now design elegant (and resistant) shopping bags for customers to use them as actual handbags. Shiseido’s wrapping paper was a great success, and has been printed voluminously over the years. All of them display the brand name in rōmaji, with the very slanted Ss, elegant and somewhat nonchalant, as a reminder of the androgynous feminine silhouettes indolently laying on some chaises longues, as displayed in the advertising campaigns. As appendix 149 evokes, no one really knows who first created the whole Shiseido typeface, but it was Adrian Frutiger who designed a whole alphabet for the brand. It has now been handed over to the company CastleType to develop different weights for the font, according to the company website. The combination of the floral designs, the elegant rōmaji, the very feminine kanji (not to mention the meaning of 資生堂: “*praise the virtues of the earth which nurtures new life and brings forth significant values*”, per Shiseido’s website) manage to express an image of international grace and refined complexity.

The other big font family in the Japanese typography typology is ゴシック *Gothic*, which is the equivalent of the Western sans serif (cf. *infra*). Evidences as to when exactly the typeface originated are scarce, and conflicted. According to the research from Ishikawa et al. (2009), the first official mention of a Gothic typeface in a Japanese book comes from the 1877 活版製造所平野富二 (*Book of Specimens Motogi & Hirato*), written by 平野富二 *Hirano Tomiji*. Throughout Hirano’s book, the font is referred to as “*Gothic*” using the Roman alphabet, and it was decided by the Meiji administration that, so as to match the English pronunciation, the type would be pronounced ゴチック *Gotchikku*. The slide from the katakana チ to シ is still very mysterious, as to when, how or why it happened. It is believed that Gothic was first mainly used to create seal stamps, and newspaper headlines, such as the one displayed in

appendix 150. For Imada (2002), the inspiration necessary to build the Gothic typeface is definitely in the expansion of the American Gothic style (cf. *supra*), blended with another local one used for seal stamps, the 隸書体 *rēshotai*, the “clerical script” (cf. appendix 151). He writes:

“ゴシック体の漢字の筆法のルールは隸書体だと思われます。東京築地活版製造所の活字見本帳にそれを裏付ける書体があります。ゴシック体は隸書体から発展してきたものだと考えられます。”

*“The letterform used in the Gothic script for kanjis makes me think it comes from the clerical script; an idea supported by the style displayed in the Tokyo Tsukiji Printing Studio’s movable types sample books. This makes me think that the Gothic style is a development of the clerical one.”*

The new style remained limited to headlines and stamps until the 1920s-1930s, with the strong interest for sans serif (cf. *supra*). One main actor and promotor of this new letterform was the previously mentioned Hara Hiromu, who became famous thanks to his unique Kaō soap packaging (Weisenfeld, 2004). Hara lead a research group in the field of typography, and translated in 1932 Tschichold’s *Die neue Typografie* into Japanese, adding a note pushing the Japanese designers to rethink their approach to type, and the communicative power of letterform. Just like his Western counterparts, Hara promoted a new vision of typefaces, with geometric, simple lines (cf. appendix 152, his poster for a photography competition), so as to make letters as readable as possible. Advocating legibility and letter simplification in the interest of total transparency and functionalism is a way to avoid the ethical values surrounding the process of standardization. The moral questions that simplification rises are mostly linked to loss: what might disappear, or be excluded in the effort to gain clarity? Moreover, what principles does the concept of clarity itself mean? As Katie Salen (2001) wrote in her study of an influential 1932 essay by Beatrice Ward considering typography as a “*crystal goblet*”, the proclamation of practical transparency disproves the fact that types are never impartial nor see-through, thus never free of ideological values. Weisenfeld (2011) writes about Ward’s paper:

*“The advocacy of the moral virtue of functionality, machine aesthetics, and rationalism by Ward and other new typography proponents excluded other visible linguistic dialects. Standardization and normalization created so-called default settings, and in the process marginalized and pathologized alternative modes,*

*whether these be subjective handwritten decorative letterforms or consciously historicizing script forms.”*

Gothic scripts have now developed to be the alternative to Minchō styles, the way sans serif scripts are the substitute of serif ones, for its legibility. Gothic now mostly exists in two types, 角ゴシック *kaku goshikku*, “square sans”, which is the first one that comes to mind when thinking about this font family (cf. appendix 153), and 丸ゴシック *maru goshikku* “round sans” (cf. appendix 154), which displays rounded ends and corners to the lines of the characters. In some cases, short protruding stroke ends at intersections are eliminated to make glyphs look rounder. It is also nicknamed 新ゴ *shingo*, which means “new gothic”, for it was developed later, during 1986-1990 by Morisawa, Inc., one of the largest font foundries for printing and publications Japan (Fan, 2009). This is the style of typeface used for Japanese road signs, but very little for print.

With its broad range of characters – particularly because of kanji – the Japanese language was quite the conundrum to computerize. This new technology arrives at a time when reforms of the Japanese scripts are seriously considered (cf. supra) (Robinson, 2007), and to make it easier to sort out which kanjis to keep and which to set aside, lists of frequencies are built by the government. The year 1978 is a turning point for the elaboration of those lists, with the booming of the computer industry, and the need to convert kanas and kanjis into code. To be part of the movement, Japan had to find a way around the “*impossibility of squeezing [its writing system] into the 7-bit character codes that make up the American Standard Code for Information interchange (ASCII)*” (cf. supra) (Heisig and Sienko, 2008). The only way was to build a new encoding standard specific to the Japanese language: the *Japan Industrial Standard*, or *JIS*. The first form of JIS was an 8-bit character code designed to process Japanese in “rudimentary form”. Named JIS C 6220 (and then retitled JIS X 0201-1976 in 1987), its left half consisted of a Japanese national variant of ISO 646 (a yen symbol replaced the backslash, and an over line replaced the tilde), and its right half consisted of Japanese punctuation marks and the katakana syllabary. This allowed the transfer of data between early Japanese computer systems. JIS X 0201-1976 consists of the following: 10 numeral characters, 52 Latin alphabet characters (upper and lower case), 32 symbols, 34 non-printing characters, and 63 half-width katakana. Of course, since Japan's first character code for data processing did not even include the hiragana syllabary, anyone who wanted to make easy money could have bet that JISC would soon create a Japanese equivalent of ISO 2022 for switching between 8-bit character sets. They did, and they called it JIS X 0202, which was published in both Japanese and English. By then,

JIS became a 16-bit, or two-byte, character code. A two-byte character code allows for up to 65,536 items to be encoded ( $2^{16} = 65,536$  code points), but the standard character code used in Japanese personal computers at present, i.e., Japan Industrial Standard (JIS) X 0208-1990, lists only 6,879 characters. Kanji are designed over a 94 x 94 dots table. In JIS standards, kanji are divided into “levels”, although there are also what are referred to as “JIS auxiliary or supplementary kanji” that have been defined. The JIS X 0208-1990 standards define character sets as follows (Īzuka and Shima, 2005):

- punctuation, symbols (93, 53)
- ISO 646 alphanumerics (10 numerals, 52 characters)
- hiragana (83)
- katakana (86)
- Greek alphabet (48)
- Cyrillic (Russian) alphabet (66)
- line drawing elements (32)
- kanji level 1 (2,965 characters, ordered by Chinese style reading)
- kanji level 2 (3,390 characters, order by Chinese character radical)
- miscellaneous kanji (6 characters)

This is adequate for most word processing tasks in daily life, but insufficient for writing people’s names, place names, historical data, and some other specific words, such as scientific denominations. The “level 2” of kanji posed a particularly difficult problem at the beginning of the computer era, because of their complexity (see appendix 155 for the alterations of the kanji 曇 *kumo*, “cloudy” on a 16x16 pixel grid, and a 24x24 grid). These are one of the reasons handwriting was long – and still is – preferred to computer-types documents, which is expressed by the heavy use of fax machines in Japan compared to Western countries (Robinson, 2007). As can be seen from the above, JIS X 0208-1990 is in fact a “multiscript character set”. In its original form, JIS is meant to use escape sequences – which can be complex – to switch between the 7-bit characters of ISO 646 and the 16-bit kanji characters. However, because these demanded extra processing time and took a lot of disk storage space, JIS in its first form was deemed to be unsuitable for use on small computer systems, such as early 16-bit personal computers. To avoid the problem, Microsoft Corporation invented an “encoding method” for the JIS character set called *Shift-JIS*, which eliminates the escape sequences, and thus the need to switch between character sets. It does this by “specifying value ranges” for 8-bit (one-byte, or alphabetic characters) and the first byte of 16-bit (two-byte, or kanji) characters. Depending on the value it meets in character data, the computer determines whether it has encountered a

one-byte alphabetic character or the first byte of a two-byte kanji character, and then displays characters accordingly. There are two problems with this scheme though. The first is that by establishing ranges in which only certain characters can fall, the possible coding space for characters is reduced. Thus, Shift-JIS-based personal computers can only use JIS X 0208-1990 character set; they cannot utilize JIS X 0212-1990 supplemental kanji as part of their fixed character set. The second is that without special software a Shift-JIS computer can only handle character data encoded with 8 bits or 16 bits. However, on a communications medium such as the Internet, character data encoded with only 7 bits can also exist, which can lead to character corruption after the downloading of data (Lunde, 1993 and 1999), causing infamous sequences of characters known as 文字化け *mojibake* which is the garbled text that results from encoding misunderstanding (cf. appendix 156, a rare case of intentional mojibake: the artist Angela Genusa has translated in 2013 the intricate poem of Getrude Stein *Tender Buttons* (1914) in illegible characters). Errors, memory overload and miscodes have greatly diminished since the incorporation of the Japanese scripts in the Unicode standard (cf. *supra*).

### iii. Terminology and rules of contemporary letterform

With such a long history, the art of typography has developed an extensive lexicon, related to letter anatomy and design, and type setting. The following part will go over the essential terminology and rules, for both Western and Japanese typography.

- Character anatomy:

All characters, may they be Western or Asian, are “sitting” on the same line, called *baseline* (cf. appendix 157), 並び線 *narabisen* in Japanese. As appendix shows, Western characters with a “flat” lower part tend to really sit on the line. The ones with rounded lower bases (such as *o*, *3*, *6*, *8*, *c*, *C*, *G*, *J*, *o*, *O* and *Q*) go slightly under the baseline, which is called an *overshoot*. The overshoot actually helps giving the illusion that the glyphs sit on the line. The upper limit for most lowercase is called the *mean line*, or *midline* (cf. appendix 157b), and the space between the mean line and the base line is called *x-height*. Traditionally, the midline is half the distance from the baseline to the *cap height* (cf. appendix 157). This may or may not be the x-height, depending on the design of the lower case letters (Cheng, 2005). A very high or very low x-height may mean that the midline is above or below the x-height. The *cap height* is the height until which capital letters stretch. All rounded characters will tend to overshoot the aforementioned lines (and the ones mentioned thereafter when mentioning the *extenders*), to

keep the impression that the glyphs are actually of the same size. As for Japanese characters, the concept of horizontal baseline is more flexible, and to enhance overall aesthetics, or so as to make intricate characters (especially kanjis) more legible, Japanese characters tend to slightly go under this line. As Japanese characters are all meant to sit in a square frame (外枠 *sotowaku*) (cf. appendix 158), some typographers such as George Williams (2003), typographer and head of the company FontForge, consider that there is also a vertical baseline around which they are designed, to keep balance in the different parts of the characters. However, Takagi advises a word of caution to this view:

*“As Hanzi/Kanji fits into a square grid, people tend to think the outer shape of the character is also quadratic. A closer look at the contours of a set of characters reveals a variety of shapes: square, rectangular, triangular, diamond (lozenge), trapezoidal, convex and circular.”*

Because of this square out shape, kanjis and kanas have the same average height. Western minuscule however have some of their parts going below the baseline: the *descenders* (cf. appendix 157b). The parts that go down stretch to a limit called the *beard line*, or *descent line*. For instance, in the letter *y*, the descender is the “tail”, or that part of the diagonal line, which extends below the *v* created by the two lines converging. In most typefaces, descenders are reserved for lowercase characters such as *g, j, q, p, y*, and occasionally *f* (especially in italics). Nevertheless, some letterings also use descenders for some numerals (classically 3, 4, 5, 7, and 9). Such numerals are called *old-style numerals* (Bringhurst, 2004). Some other fonts also use descenders for the tails on a few uppercase letters such as *J* and *Q*. Together with the descenders, the *ascenders* increase the legibility through recognisability of the glyphs. Where descenders go below, ascenders stretch up to the *ascent line* (or *top line*), which is some typefaces, such as Garamond or the one used in appendix 157b, *Galaxie Corpernicus*, is slightly higher than the cap line.

During our overview of the evolution of type, we saw the development of serifs (cf. appendices 27 and 157b). We now know that they come from the roman scripts, especially the capital scripts: *capitalis monumentalis* was one of them (cf. appendix 25). The origin of the word *serif* itself is still debated, but it would seem that it was almost as recent as the letterform style. In his *British Standard of the Capital Letters contained in the Roman Alphabet, forming a complete code of systematic rules for a mathematical construction and accurate formation of the same* (1813), William Hollins defined *surrrips*, generally voiced “surrrips”, as “*projections which appear at the tops and bottoms of some letters, the O and Q excepted, at the beginning or end, and sometimes at each, of all.*” There also are hypotheses that *surripsis* might

find its origins in the Greek language, through words such as *συν* *syn* “with” and *ριψις* *ripsis* “projection”. The printer Thomas Curson Hansard referred to them as ‘ceriphs’ in his 1825 *Typographia*. The *Oxford English Dictionary* made an entry for the word “serif” in 1830. Considering the exponentially expanding universe of type design, serifs come nowadays in all shapes and forms. However, there are traditionally two types of serif: they are either *abrupt* or they are *adnate* (cf. appendix 159). Abrupt serifs (the left *l* on appendix 159) break from the stem suddenly at an angle. Adnate serifs (the right *l*) drift smoothly into or out of the stem. In the previous typographic works, adnate serifs are usually described as *bracketed* (Bringhurst, 2004). The serif family font is the alternative of the sans serif (or sans serif), also simply called *sans* font family. The French word *sans* means “without”, and therefore the sans serif font family does not have any of the projective features that are serifs (cf. the far left *F* in appendix 27), which we have also mentioned before. Thanks to their high legibility due to their simpler lines and clearer design, sans-serif fonts have become the most predominant for display of text on computer screens. This is partly because interlaced screen technology has a record of showing twittering on the fine details of the horizontal serifs. Moreover, on lower-resolution digital displays, fine details like serifs may simply disappear or appear too large. The last type of font is called *slab serif*. Slab serifs, also called *Egyptienne* fonts, are an invention of the XIX<sup>th</sup> century, and display strengthened serifs (Fan, 2009) (cf. appendix 160). Their name probably comes from the passion with which the Napoleonic era considered Asia Minor and the current Near East, which in turn was started by Napoleon's invasion in Egypt. In fact, slab-serif fonts were initially newspaper fonts, whose serifs were thickened in order to prevent erosion due to the printing process (Tam, 2002). As far as design is concerned, the *Egyptienne* fonts from the XIX<sup>th</sup> century appeared very robust and otherwise had a rather neo-classical appearance, which evolved with time. By the application of the slab serif design feature and by appending serifs to more and more typefaces, an independent intermediate group of heterogeneous fonts emerged during the XX<sup>th</sup> century.

*Counters* are an important part of both Western and Japanese letterings. Counters are parts of the letters that are either partially or entirely enclosed (respectively, the numbers 11 and 12 of appendix 157b, and the green and red counters of appendix 160). The enclosing part is called the *bowl* (cf. appendix 157b, number 9). In case the counter is the upper part of a lowercase *e*, it is also called an *eye* (cf. appendix 157b, number 17), due to its shape. When a counter is only partially closed, the opening is called the *aperture*. Smeijers (1996) dedicates a whole part of his book *Counterpunch* to counters in typography. In Japanese letterform, counters are called ふところ *futokoro*, which also means the “inner part”, and the “bust”.

Futokoro is mainly used when dealing with the kana syllabaries, rather than kanji (Takagi, 2014). Because kanas are designed using less than four strokes, the amount and shape of counters is regular. However, kanji, or even the hanzi when dealing with Chinese typography are usually built using several radicals (cf. *supra*), and such a fragmentation is traditionally ground for a separation. Besides, *kernings* (cf. *infra*) might influence the amount of counters present in a single Han character. Different typeface styles have diverse propensities to use open or more narrow apertures. This design choice is mostly significant for sans-serif typefaces, which can have very wide strokes, turning the apertures into very fine spaces. Fonts designed for legibility often have very open apertures, maintaining the strokes widely detached from one another to decrease ambiguity (Smeijers, 1996). This may be especially important in situations such as signs to be viewed at a distance, materials intended to be viewed by people with vision problems, or small print, especially on poor-quality paper. This design trend has become increasingly common with the spread of humanist sans-serif designs since the 1980s and the 1990s and the use of computers requiring new fonts, which are legible on-screen.

Letters are composed of many different parts, which all have names. We will go here over the essentials. An *apex* (number 2 in appendix 157b) is the point at the top of a character, such as the uppercase A, where the left and right strokes meet. It may be a sharp point, blunt, or rounded and is an identifying feature for some typefaces. The *arm* of a letter, which can also be a *crossbar*, or *cross stroke* (numbers 4 and 13 in appendix 157b), is the horizontal stroke on some letters that does not connect to a stroke or stem at one or both ends. The top of the capital T and the horizontal strokes of the F and E are examples of arms. Additionally, the diagonal upward stroke on a K is its arm. Sometimes arm is used interchangeably with bar or crossbar or cross stroke. An *axis* (or a *stress*, an *angle of stress*, or a *design axis*, number 6 in appendix 157b) is an imaginary line drawn from top to bottom of a glyph dividing the upper and lower strokes is the axis. For typefaces that exhibit changes in the thickness of curved strokes, the inclination of the axis of the lowercase *o* is used to measure the angle of stress. A completely vertical axis indicates a design with an angle of 0 or vertical stress. When the axis leans to the left or right the design has angled (positive or negative) stress. Early styles of typefaces generally shared similar axis or stress angles. Adjusting the design axis results in variations in the weight, width, size, and other features of the typeface. The *ball*, *beak* and *teardrop terminals* concern the shapes that are at the end of letters such as *f*, *c*, *r*, *a*, *y*, etc. In appendix 161 comparing the typefaces Footlight MT Light (upper line) and Bodoni (middle line), and Baskervill Old Face (lower line) the ball terminals are highlighted in green, the beak (or *spur*) terminals are in red, and the teardrop (or *lachrymal*) terminals are in blue. A terminal in itself is the end of an arm, or of a stroke, that does not end with a serif. In the case of the last stroke

of a lowercase *e*, it is called a *finial* (number 18). *Bilateral serifs* (number 8) extend symmetrically on both sides in a stem. The *crotch* (number 14) of a letter is an acute, inside angle of a letter where two strokes meet. An *ear* (number 16) is typically found on the lower case *g*. It is a decorative flourish usually on the upper right side of the bowl. Similar to a serif, the ear can be a distinctive, identifying element of some typefaces. The *ligatures*, which we have mentioned before, is the junction of two or more characters together to form one only glyph. There are many kinds of ligatures: some can change the sound of the word, such as *æ*. Some others, such as *ffi*, simply “melt” the letters together, while others, called *quints* (cf. number 24) by adding strokes, represent an antiquated sort or glyph, used to recreate the typographic flavour of a former age. A *shoulder* (number 29) is a curved stroke aiming downward from a stem. It can also be the curve at the beginning of a leg of a character, such as in an *m*. Main strokes can be curvy, as they are for the *S*: these are *spines* (number 30), or completely straight and vertical; then they are *stems* (number 32). Last, the *tittle*, or *dot* (number 35), is a small mark, usually used a diacritic on lowercase *i* or *j*. It can also be used in punctuation as an *Interpunkt* (·), or used on top, next to, or under some other letters, found in the Central European or Vietnamese scripts (*l, ó, ş*).

Japanese Han characters are also built on different parts, following the principles of the 永字八法 *ējihappō*, the Eight Principles of Yong (cf. appendix 162). These principles use the character 永 *ē* (which means “long”, “eternity”, and read *yǒng* in Chinese, which gave the method its name) as a reference point to learn how to write the eight main types of strokes found in kanji. According to Komiyama (2010), the Eight Principles system was developed by the Chinese scholar 蔡邕 *Cài Yōng*, who lived during the II<sup>nd</sup> century CE. The first stroke of the 永 is 側 (点 *ten* in Japanese). 点 is the Asian equivalent of the *dot* (cf. *supra*). The difference between the two is the shape. While the Western dot is rather consistent in its shape, 点 comes in multiple aspects, dynamics and positions. Foreign researchers such as Fazzioli (1987) call it “dot”, but the Toronto Mandarin School prefers the term “point”. According to Takagi (2014), there are five variations of 点: three will go from left to right, and two end on the left. The height of where the stroke starts and ends also matters: for instance, the 点 in the kanji 丸 *maru* starts on the top left and ends at the bottom right. The author 廖潔連 *Liào Jiélián* (2009) goes further in the considerations about this stroke, and considers there are families of dots, may they be for the ‘water’ radical 冫, the ‘fire’ one 火, or the ‘goat horns-like ones’ “羊角點”

*yángjiǎo diǎn*, referring to the two dots on the top part of the kanji for “sheep” 羊 *hitsuji*. 勒 *lè* is a horizontal stroke, called 横線 *yokosen* in Japanese. It is close to the Western crossbar, or cross stroke. Here again, compared to their Western counterparts, Japanese horizontal strokes are slightly more flexible, as far as length and orientation are concerned. Takagi (2014) writes:

“A more defined differentiation can be made, similar to the Latin typography, by naming a stroke that is enclosed by two vertical strokes as crossbar; a stroke that is attached to a stroke only at one end (left or right) an arm; and a stroke that is crossed by a vertical stroke at the middle axis as horizontal stroke.”

The next principle is 弩 *nǚ*, the *vertical stroke*, or *stem* (縦線 *tatesen*, or 豎 *tate* in Japanese). They can be long or short, completely vertical, or slightly slanted (Liào, 2009), and are generally written from top to bottom. A vertical stroke can end up with a hook-shaped stroke that goes to the left, the 趯 *tí*, or はね *hane* in Japanese. Contrary to the Western hook, that marks the beginning of a stroke (for instance, the lower cap *f*), the Asian hook marks the end of a vertical one. It can have many shapes: 同, 危, 馬, 子, or 都, etc. Sometimes 斜 *xié*, its mirrored counterpart, is added to the category. Called たすき *tasuki* in Japanese by Kudo (1998), it can also be referred to in English as a *sash*. The right hook ends strokes such as 風, 乙, 心, or 見. The 策 *cè* stroke, known in Japanese as 上払い *ue harai* is referred to as a “*tick*” by Frazzioli (1987), but the Japanese name, literally *upstroke* (generally followed by ‘to the right’) makes it more explanatory. Its mirrored counterpart is the 撇, *piē* in Chinese, and 啄 *taku* in Japanese, the *short peck to the left*. The Japanese kanji 啄 is actually very evocative, since it is also used in 啄木 *takuboku*, the woodpecker. This stroke is a swift, light stroke to the left, used in kanjis such as 水, 良, or 休. When a vertical stroke is lightly curved to the left and fades out, it becomes a *downstroke to the left* (掠 *lüè*, or 左払い *hidari harai* in Japanese). There are no real comparisons possible with anatomical parts of Western letters, notwithstanding the left stroke of an uppercase *A*, which observes the same inclination, but ends very differently (with a double serif). Downstrokes to the left can vary greatly in angles and length (in kanjis such as 人, 和, or 年), but the overall movement is always the same. The alternative to the downstroke to the left, is the *downstroke to the right* (磔 *zhé*, 右払い *migi*

*harai* in Japanese). It starts at the top left and ends at the bottom right, where the stress is usually applied. It mirrors the *tail*, the often-decorative stroke that ends up the uppercase *R*, *Q*, or *K*.

As historical as they can be, the Eight Principles of Yong do not cover all the strokes there are in the Han characters. Different researchers have come up with different stroke studies, making up characters: Kudō (1998), Torinōmi (2007), and Komiyama (2010) are good examples of these made-up characters, offering a broader range of stroke studies, going up to 13 principles (cf. appendix 164, respectively the left-hand, middle and right-hand model). Some of the parts that are ignored by the traditional system include the *angles* (or 曲げ *mage*, “bending”). There actually are many kinds of angles, and Kudō (1998) offers a rich typology of names for them, depending on whether the angles are square (such as in the kanjis 刀, or 方), acute (之, or 字), double (級 or 凸), etc. Another part that both Han and Western characters share is the *shoulder* (肩 *kata* in Japanese, which means the same). A Western shoulder, as we have seen before, corresponds to the number 29 of appendix 157. In Japanese writing, a shoulder is a rather gentle, round angle, that can be found in kanjis such as 乳, 七, or 股.

Last, one particularity of Han characters is the stroke order (筆順 *hitsu jun* in Japanese), less flexible than the Western one. When taught how to write, Western children do have to follow a way of writing, but very soon, they are set rather free in their interpretation of characters, and of their way of writing. Because of the complexity of characters, and so as to ensure an overall balance and aesthetic, kanjis stroke orders have to be learnt. 𠄎, pronounced *biáng* in Chinese, is one of the most intricate hanzi in the script system, with none less than 57 strokes! It is then essential to know where to start, and how to build the character. Besides, according to a study done by Zaizen Ken in 2010, people who have no previous experience with writing kanji cannot obtain a good balance without knowing the correct stroke order. He came to this conclusion after observing five Australian people trying to write the kanji for “big”, 大 *dai*, without indications on where and how to start. The results were very strange, and unbalanced to the eyes of Zaizen, arising the conclusion that stroke order helps provide aesthetically well-adjusted kanji.

- A family business: font families and superfamilies:

When professional typographers mention typefaces and fonts, they mean something different, even if the two words have erroneously merged. A font is a set of glyphs, whereas a typeface is a family of fonts. The various fonts of a typical Western typeface can have different *weights*, different *styles*, *width*, *condensation*, *italicisation* or *slant*, *ornamentation* or designer / foundry. For example, “ITC Garamond Bold Condensed Italic” means the bold, condensed-width, italic version of ITC Garamond. It is a different font from “ITC Garamond Condensed Italic” and “ITC Garamond Bold Condensed”, but all are fonts within the same typeface, “ITC Garamond.” ITC Garamond is a different typeface from “Adobe Garamond” or “Monotype Garamond”, even though all originate from the same XVI<sup>th</sup>-century letterform (cf. *supra*). The principle of a “font family” or a “typeface” *per se* is the union of fonts where the glyphs share the same anatomy (cf. *supra*): same x-height, same extenders, etc. The changes will happen mostly in declinations of styles. A typical nuclear font family for Western types consists in five fonts: regular, *italics*, **bold**, **bold italics** and SMALL CAPITAL LETTERS. Small capital letters are a design device to stress a word where full-size caps would bring too much attention. They are slightly taller than the aforementioned x-height, and avoid different weight intricacies that could arise by using full-sized capital letters, and downsizing them (the strokes would appear too thin in comparison). Typographers such as Felici (2011) recommend using a font that actually offers a small caps option, instead of having it made automatically by your computer. Selecting small caps from the style menus usually end up meaning that the computer reduces the overall size of the type by 80%. This changes the stroke weight and the feel of the font. Expert sets in the Adobe Type Library have small caps options. Italics, as we have seen earlier, arose around the XV<sup>th</sup> century in Europe. They are not only slanted characters, but also display some differences in style: the extenders of a lowercase “f” for instance are very different in its italics version “*f*”, and so is the bowl of a lowercase “a”: “*a*”. These so-called “true italics” should not be confused with *oblique type* (cf. appendix 165). Oblique types are simply slanted characters (with minor corrections made to the letter design to keep a harmonious overall design). Also called *slanted* or *sloped roman* types, they serve the same purpose as italics: stress some words or excerpts, or to write foreign words (Tracy, 2003). The difference is that there is no influence of handwritten characters in oblique type, not to mention that italics are usually slenderer, narrower glyphs. Sans serif fonts usually use oblique designs instead of italics, to keep their original aesthetics (Lo Celso, 2000). Italics (and oblique types) are a Western invention that does not exist in Japanese typefaces, not the Chinese ones. Along with extended or condensed fonts (cf. *infra*), they deform the glyphs. Takagi (2014) vehemently writes:

“*Skewing Chinese characters, creating false italics [...] would badly distort the balance and proportion of strokes.*”

The weight of characters is typically measured in terms of boldness. Bold characters can be traced all the way back to Gutenberg's XV<sup>th</sup> century printing press (Bringhurst, 2004), yet boldface roman characters are a XIX<sup>th</sup> century invention, and bold italics did not exist before the 1950s. Various weights have been added to extend font families to the types created before the XIX<sup>th</sup> century. The most common weights are "light", "roman" (which is the standard weight), "bold" and "black". As families expanded, the repartition of weight followed, and the nomenclature is now quite vast, ranging from "hairline" to "ultra-black", or "ultra" (cf. appendix 166).

The width of characters can also be modified, using fonts labelled "compressed", "narrow" or "condensed" on one side of the spectrum, and "wide", "expanded" or "extended" on the other. Width can be changed to aesthetics ends, but there are width characteristics that are inherent to the design of the font itself: either a typeface can display *proportional* or *monospaced* fonts, also called *proportional* or *fixed pitch* (cf. appendix 167). These terms are rather self-explanatory: proportional fonts have glyphs of varying width, whereas fixed pitches are parts of a font that all fit in the same single standard width. For Latin typefaces, proportional fonts are generally preferred, for they increase readability. Monospace fonts are generally used for manual typewriters, or for text-only computing programs, such as encoding for programmers. Because Japanese characters are all enclosed in the same square-shaped frame, monospaced fonts are more aesthetically pleasing for Japanese fonts (cf. the illustration given by Japanese designer and typographer 早瀧雅治 *Hayataki Masaharu* in appendix 168). However, in order to keep the balance of strokes within the characters, and following the same principle of non-distortion of the glyphs that disregards italics as a viable option in Japanese typefaces, compressed or extended version of characters are rare in Japanese fonts, especially when they display kanjis.

With the development of computerised fonts and the expansion and ease of access of letter creation tools, font families have rapidly grown into *font superfamilies*. The font *Univers* was released in Paris in 1957 by Adrian Frutiger, and changed the notion of font family (cf. appendix 169, with variations from thin to black from top to bottom, and extended to compressed from left to right) (Meggs and Purvis, 2006). What was completely new with Frutiger's version is that prior to *Univers*, font families were extended as needs grew: need for bold types, italics, extended, etc. Yet, when the Deberny & Peignot Foundry released *Univers*, it was already a comprehensive family of the 21 declinations shown in appendix 169, and designed to be understood as such. As appendix shows, Frutiger also designed a numbering system to qualify the variation of font that is, or should be in use: all examples are written under

double digit numbers ranging from 39 to 83. These numbers characterise the width, weight and extension of characters, according to a numbering system that goes as follows:

Number	Suffix									
	1	2	3	4	5	6	7	8	9	10
Weight	-	Ultra Light	Thin	Light	Normal, Roman, or	Medium	Bold	Heavy	Black	Ultra or Extra Black
Width and position	Ultra Extended	Ultra Extended Oblique	Extended	Extended Oblique	Normal	Oblique	Condensed	Condensed Oblique	Ultra Condensed	-

The numbering system itself was designed to avoid confusion when choosing among the various fonts. It was such a success at first that it was adapted to other fonts after Univers, such as Neue Helvetica, or Avenir. The number used in a font is merger of two series of numbers. The first digit defines weight (here, from “ultra light” to “ultra or extra black”), while the second defines width and whether it is oblique or not. The system turned out to be confusing for some manufacturers however, and was not consistently applied. For example, “Univers 55 Roman Oblique” has both Windows menu names and PostScript full names as “*Univers LT 55 Oblique*” and “*Univers 56 Oblique*”, but only for the Windows PostScript version of the font; however, in “Univers 85 Extra Black Oblique”, there is no font named “Univers 86” in any format. Nevertheless, oblique Univers fonts always have even-numbered second value.

With the quick gain of interest for letterform that occurred in the 1970s, some requirements became more and more pressing, such as the necessary harmony between two fonts in the same document (typically a serif and a sans serif). To match the demand, type designers expanded font families, to create *font superfamilies*. The idea is arguably not new at all: according to the Linotype website, the first superfamily was created when Morris Fuller Benton cut *Clearface Gothic* for ATF in 1910, a sans serif companion to the existing (serifed) Clearface. As the possibilities for detailed designs expanded with technology, so did the superfamilies. Let us take the example of *Thesis*, whose name fits adequately to this paper. Lucas de Groot designed the font Thesis between 1994 and 1999. Thesis goes further than the simple serif/ sans serif dichotomy, and has four levels of variation of characters (cf. appendix 170, with from top to bottom: *TheSans*, the sans serif version, *TheSerif*, a semi-sans serif, which displays some serif-like marks, *TheMix*, a semi-serif font, and *TheAntiqua*, the serif version).

Of course, each version of the Thesis font exists in the variety of weight, widths and slants mentioned before. To those standards declinations are added some special alphabets, such as dingbats (which are symbols only, such as arrows, or pictures), alternate glyphs, such as swashes or ligatures, or mathematical signs. Therefore, the declination of possibilities looks much like appendix 171, which only displays various weights and slants. In his *Serial Type Families. From Romulus to Thesis* (2000), Lo Celso writes that the comprehensive Thesis font superfamily adds up to 144 alphabets.

Japanese font families are usually not that developed, mainly for reasons we have already discussed. Slant and width variation is not a trait that is positive in CJK characters writing. Besides, the use of various fonts on the same website would multiply the download size of the website (for rendering), which is why most Japanese websites, even the ones with important trafficking such as Yahoo Japan or Amazon have very restricted stylesheets, such as this one (for Yahoo, retrieved in June 2016):

**font-family: “メイリオ”, “Hiragino Kaku Gothic Pro”, Meiryo, “ヒラギノ角ゴ Pro W 3”, “MS PGothic”, “MS UI Gothic”, Helvetica, Arial, sans-serif;**

A typical Japanese font family will have a serif and sans serif version, and weight variation. Let us take the example of 游 *Yū*. There are two main variations of Yu: the sans serif, called Yu Gothic (游ゴシック), and the serif, called Yu Minchō (游明朝) (cf. appendices 172 and 173). Most Japanese font families are designed just like Yu: a serif (Minchō), a sans serif (Gothic), and various weights.

- The spacing:

Before mentioning spacing in itself, it is best to talk about the typographic scale first. When talking about font size, spacing and other measurements, typographers traditionally use two types of measurements: the *point*, and the *pica*. The French Sébastien Truchet, around 1694, first created the notion of point. The *Truchet point* is based on the *king foot* measurement: 32.48 cm (slightly bigger than the current imperial foot, which is 30.48 cm). One point was the equivalent of 1/1728 foot, or around 0.188 mm (André, 2006). It was replaced in 1737 (Ronner and Kamp, 1914) by the *Fournier point*, created by Pierre Simon Fournier, and first published in his two-volume 1766 *Manuel typographique*. His point was about 11/864 French inches or 0.345 mm. This is very similar to the present international point, but Fournier's point did not achieve any long-lasting fame despite an attempt in 1927 from the Monotype Corporation to

revive it. It became standard in Belgium. The last French point, still in use, is the *Didot point*. Created in 1770 by François-Ambroise Didot (the same person who created the aforementioned and eponymous typeface), it has a slightly variable size, but the one that is the most widely accepted in European printing presses is 0.376065 mm. In round numbers, there are 26.5 Didot points per centimetre, or 67.5 per inch. Twelve Didot points create a *cicero*. With the development of computerized typography, Warnock and Geschke have created a new point, now accepted as an international measurement, for Adobe (Tucker, 1988): the *DTP (Desktop Publishing Point)*. One DTP point is the equivalent of 1/72 of an international inch, which is roughly 0.353 mm. In round numbers, there are 72 points per inch, or 28.5 points per centimetre (Bringhurst, 2004).

Twelve points make a *pica*, which in turn is one sixth of an *inch*. The aforementioned cicero is considered to be the French pica, because it is made of 12 Didot points. In the rest of the world, there are two measurements for the pica: the American pica, used in traditional printers, is 4.218 mm (or 0.166 inches): close to, but not exactly, one sixth of an inch. This is the customary British and American unit for measuring the length of the line and the depth of the text block. The contemporary computer pica or PostScript pica is 1/72 foot, or 1/6 of an inch: 4.233 mm. The difference between these units is roughly 0.03%.

Type is normally measured in picas and points, but horizontal spacing is measured in *ems*, and the em is a sliding measure (they are usually referred to as 全角アキ *zenkaku aki* in Japanese typography (Chiba et al., 2012)). Bringhurst (2004) explains:

*“One em is a distance equal to the type size. In 6-point type, an em is 6 points; in 12 pt type it is 12 points [for instance, this document is written in Times New Roman, 12 pt.], and in 60 pt type it is 60 points. Thus a one-em space is proportionately the same in any size.”*

In metal type, the point size (and hence the em) was equal to the line height of the metal body from which the letter rises. In metal type, the physical size of a letter could not normally exceed the em (cf. appendix 76). In digital type, the em is a grid of arbitrary resolution that is used as the design space of a digital font. Imaging systems, whether for screen or for print, work by scaling the em to a specified point size. In digital type, the typeface designer arbitrarily sets the relationship of the height of particular letters to the em. However, as a very rough guideline, an "average" font might have a cap height of 70% of the em, and an x-height of 48% of the em. Typesetting machines generally divide the em into units, Ems of 8, 36 or 54 units, for example, are commonly found in the older machines. In newer devices, the em is generally a thousand

units. Typographers are more likely to divide the em into simple fractions: half an em, a third of an em, and so on, knowing that the unit value of these fractions will vary from one machine to the next. Half an em is called an *en*, 二分アキ *nibu aki* in Japanese. Although the size of the em ultimately depends on the point size, or height of the metal body of a letter, it is also used as a measure of horizontal spacing relative to the type size, with vertical spacing being measured in picas or points (ibid.). One em was traditionally defined as the width of the capital *M* in the current typeface and point size, because the *M* was commonly cast the full-width of the square *blocks*, or *em-quads* (also *mutton-quads*), which are used in printing presses. In modern typefaces, the character *M* is usually somewhat less than one em wide. Moreover, as type includes a wider variety of languages and character sets than just those based on Latin, and needs a consistent way to refer to size, its meaning evolved long ago. This allowed it to include fonts, typefaces, and character sets which do not include a capital, *M*, such as Japanese. Because of how digital type works, the em now always means the point size of the font in question.

Let us now mention the spacing between characters. Appendix 157 mentions *sidebearings* (or *sidebearings*). According to Felici's *The Complete Manual of Typography*, 2<sup>nd</sup> edition (2011), sidebearings are:

*“The space between the outer edge of a character and the edge of its bounding box (digital type) or type block (metal type). The side bearings of two adjoining characters combine to create the letter space between them.”*

The sidebearings evoked in appendix 157 are called *positive*, because they extend outside of the glyph space. They can also be *negative*, and go over the glyph in itself (cf. appendix 163). In the case of Japanese typography, sidebearings are always positive, so as to allow typesetting in both 横組 *yokogumi* and 縦組 *tategumi*, which respectively are the horizontal writing mode, and the vertical writing mode, that are both in use in the Japanese script. Therefore, each character frame 外枠 represents the accumulation of 字面 *jidzura*, the *body width* in English, and the sidebearings, altogether named *character width* (cf. appendix 157).

The spacing between a selected pair of characters in a proportional font (cf. *supra*) can be adjusted, for aesthetic purposes. This alteration is called *kerning* (Bringinghurst, 2004), or seldom *mortising*. When a font is well kerned, the blank spaces standing between the characters visually seem to be more balanced (cf. appendix 174: the spacing between the first *A* and *W* has no kerning, and looks too wide, thus isolating the *A*. Kerning resolved the problem). Kerning

exists since metal type, but has fully developed with digital type. As appendix 174 shows, kerning values exist. Most fonts will go with a value of 1000 units/em, or for some cases, 2048 units/em. As we saw before, one em corresponds to the font size. For instance, the kerning between the *A* and the *W* is -43. This means that the kerning is a decrease of the spacing of 0.043 of the current type size. Negative kerning is the most common kind, and is generally used with capital letters, such as *T*, or *V*, to bring them closer to the following lowercase letter. More and more software and programs offer automatic kerning, which are divided in two types: *metric kerning* and *optical kerning* (Slattery and Rayner, 2013). Using the former, the program automatically uses values found in the kerning tables comprised in the font file, which most systems feature nowadays. Optical kerning is a more selective method, existing only in the more advanced systems. This method forces the program to use an algorithm to calculate, from their shapes, the ideal spacing for each pair of successive glyphs. A professional can also do manual kerning, in case the automatic options were not satisfying enough. Bad kerning, sometimes referred to as *keming* (implying that a person has badly kerned the word “kerning” and has merged the *r* and the *n*) has become a well-known pet peeve of graphic designer, so much so that the entertainment social network Reddit has dedicated a whole part of its website (called “subreddit”) to it, fed every day by pictures from members, featuring bad kerning. Contemporary pop and street art have also taken *keming* as a topic, such as the artist Shahir Zag in 2012, (cf. appendix 175). Japanese kerning is slightly more intricate than its Western counterpart is, because it can start within the very character. In order to respect overall balance of the kanji, radicals sometimes have to overlap (cf. appendix 176). This kind of kerning depends on the shape of the strokes, as the upper and middle lines of characters show (ranging from a very thin overlap in 掌 *tenohira* “palm”, to a much more important one in 形 *katachi* “shape”). Besides, in order to show a coherent link between radicals, they can sometimes simply be linked (cf. the lower line of characters in appendix 176). Inter-character kerning also exists in Japanese typography, known as 詰組, sometimes written 詰め組, *tsumegumi*, which can also stand for *tracking* (cf. infra). There can be two types of kerning in Japanese typography: the first one, 均等詰 *kintō tsume*, or “even kerning”, is the constant reduction of space between characters. The other one, called 字面詰 *jidzura tsume*, or “face kerning”, is a much more ‘made to measure’ approach, that consists in changing the spacing between letters according to their shape (cf. appendix 177: the top line is the sentence without kerning. The second one displays even kerning, and the last one face kerning). Kerning in Japanese books is quite rare,

and it is agreed that solid setting (ベタ組 *beta gumi*, cf. *supra*) is still the most ‘reader-friendly’ way (Chiba et al., 2012).

Another important notion linked to letter spacing in typography is *tracking*, which is a consistent increase (or decrease) or space between characters. The difference between kerning and tracking is that kerning works with pairs of glyphs, and that one can only kern characters one pair at a time. Bringhurst, in his 2004 *Elements of Typographic Style*, brings up letter spacing as a clue element of type setting:

*“An ancient metaphor: thought is a thread, and the raconteur is a spinner of yarns - but the true storyteller, the poet, is a weaver. The scribes made this old and audible abstraction into a new and visible fact. After long practice, their work took on such an even, flexible texture that they called the written page a textus, which means cloth. The typesetting device, whether it happens to be a computer or a composing stick, functions like a loom. And the typographer, like the scribe, normally aims to weave the text as evenly as possible. Good letterforms are designed to give a lively, even texture, but careless spacing of letters, lines and words can tear this fabric apart.”*

Letter spacing is often used in news design, in an attempt to fill the news columns to their full extent. It is also a way to avoid *widows* and *orphans* (cf. *infra*). There are many ways to alter letter spacing, some of which we have mentioned before: kerning of course, but also *expansion*, which is the use of slightly deformed glyphs (extended or compressed). However, Bringhurst (2004) strongly advises caution and restraint in using too much expansion:

*“[A]rbitrarily condensing or expanding letterforms is the poorest of all methods for fitting uneditable copy into unalterable space.”*

Other methods include *protusion*, also called *hanging punctuation*, or *margin kerning*. These methods consist in creating the illusion of a more even right side of the column (in case of a justified text) by allowing round glyphs (such as an *o*), or small marks, such as a comma or a period, to extend slightly over the right side of the column, which is a method that was already used by Gutenberg (cf. *supra*). When horizontal writing mode is used in Japanese, character spacing can be very important. For instance, when used in table headings, Japanese entries, no matter how many characters it comprises, tends to be *flushed left and right* (FL&R), which is close to the Western notion of *justification* (cf. *infra*), following the principle of 字取  
り *jidori*, which according to the JIS is “A method of aligning a run of text to both edges which

is specified by a position to start and the length calculated by a specified number of a given size of characters”. The Japanese language will use 均等割り, or 均等割 *kintō wari*, “even inter-character spacing”, to have all the entries evenly aligned between the line head 行頭 *gyōtō*, following the principle of 行頭そろえ *gyōtō soroe* (the alignment along the line head, the Japanese equivalent of *flushed left*) and the 行末 *gyōmatsu*, the line end (cf. appendix 178).

The last intra-line spacing technique that is worth mentioning is *justification*. There are typically four types of alignments available in any word processor software: flush left (and ragged right, FL/RR), flush right (and ragged left FR/RL), centred (and ragged on both sides) and justified (flush left and right FL&R). The three first methods do not really need to alter letter spacing, so let us focus only on the last alignment. Justification (or, as we have seen, 字取り in Japanese) has been around for centuries now (Tschichold, 1928), and many techniques have been developed to manage having text flush left and right in both an even and aesthetic fashion: word spacing alteration, letter spacing alteration, glyph reshaping, or a combination of all of these (cf. appendix 179). A tricky justification can be arranged by hyphenation (Gove, 1993). Good justification is designed paragraph by paragraph, not line by line. In addition, the best computer justification now relies on microscopic adjustments to the space *between and within the letters* as well as the space between the words.

One trait of the Japanese language that has to be mentioned, and that necessitates its own set of rules are the ruby characters. In Japanese, these characters are called ルビ, *rubi*, or 振り仮名 *furigana* when they are written in hiragana (Chiba et al., 2012) which is the usual case. Furigana are small, usually superscripted characters indicating pronunciation or meaning of a kanji, or base character (親文字 *oyamoji*). For instance, the kanjis for the city Fukuoka are the following: 福岡. The furigana can be <sup>ふくおか</sup>福岡, <sup>フクオカ</sup>福岡 using katakana, or <sup>fukuoka</sup>福岡 using Latin characters. In vertical writing mode (縦組 *tategumi*), rubi characters are attached to the base character on the right, and in horizontal writing mode (横組 *yokogumi*), they are written on top of the base character (cf. appendix 180). Ruby characters can be モノルビ *monorubi*, meaning the reading of each base character is written separately. In the case of 熟語 *jukugo*, which are words made out of a compound of kanji, the rules are slightly different. The first solution is to

treat each 親文字 separately, using the monorubi system (cf. appendix 181). This can be difficult at times, especially when the readings of some compounds are very long. In appendix 181, there is a space added between the two kanjis 凝<sup>ぎょう</sup> and 視<sup>し</sup>, simply because the readings were too long. When such a case happens, in the middle of a paragraph for instance, line adjustment (行の調整処理 *gyō no chōsē shori*) is usually used: it is the addition or removal of space between characters to allow furigana while preserving the justification. To avoid such predicaments, the 熟語ルビ *jukugo rubi* method is used (cf. appendix 182), where the readings are designed apprehending the whole word as one object to be defined. Rubi characters, when written in katakana, can also transcribe a foreign reading (Chiba et al., 2012). For example, the word “tobacco” is generally transcribed phonetically in Japanese using the Portuguese pronunciation transcribed in katakana, タバコ *tabako*. However, there is a *jukugo* that means tobacco: 煙草, which can be read in many different ways: *kemurigusa*, or *ensō* being two of them, whether one is using the on or the kun reading (cf. *supra*). Yet, the reading *tabako* is so popular that usually, when this *jukugo* is presented with furigana, it reads as such: 煙草<sup>タバコ</sup>. This method has gone even further with the use of Latin characters, which could give an international feel to a business card for instance (cf. appendix 183).

Ruby characters pose some problems to designers, as to where to place them, what size they should be, etc. Character size is usually defined as half the size of the base character: for instance, because this paper is written using 12-points character size, the furigana are automatically written in 6-point size. As for emplacement and spacing, let us first assume that the ruby characters will follow the general rules: on the right side of the base character for vertical reading, and on top of the character for horizontal reading. Monorubi characters are set solid, which means there is no spacing between the characters. If mono-ruby characters have their own character widths such as Western characters or European numerals, they are set according to their own widths and then the ruby text is placed so that its centre matches that of its base character (cf. appendix 184), which is easily defined if there are two furigana. When there is just one, two possibilities exist: 中付き *nakatsuki*, or 肩付き *katatsuki*. *Nakatsuki* is a method that aligns the ruby character along the centre of the base character: 地<sup>ち</sup>. On the other hand, *katatsuki* corresponds to the alignment of the ruby character on the top of the character: the left-hand side of the character in horizontal writing, and the top side of the character in

vertical writing: 地<sup>ち</sup>. Chiba et al. (2012) do not recommend the use of katatsuki in horizontal writing, which to them results in loss of balance. As for spacing between characters, if the readings are much longer than the base character, the base character interspace can be extended to fit everything in a sensible manner. Similarly, if the base characters take much more space than the ruby, some extra interspace can be added (ibid).

The last notion of spacing we will mention here is *leading*, also called *line height*. Leading is the vertical distance existing between the baselines of two consecutive lines. Word processors such as Microsoft Office Word usually refer to leading as “line spacing”, or “interline spacing”. The word “leading” comes from the movable type industry, where typesetters would put strips of lead between the lines of type, hence the current [ˈlɛdɪŋ] pronunciation. Standard leading (or single spacing) is the equivalent of the selected font type +20% (Bringhurst, 2004). For instance, if the font size is of 10 points, then the leading is 12 points, thus creating a 10/12 ratio. In his interactive book *Practical typography* (2016), the type designer Matthew Butterick recommends using a leading of around 135%. Too wide a leading (for instance “double spacing”) is, according to him “*looser than optimal*” and can cause problems as far as the continuity of reading is concerned, because the eye of the reader has to travel further to go from one line to another (Campbell, 2000). In Japanese compositions, the 基本版面 *kihon hanmen* is a type of default type of document whose dimensions of the main area of a typeset page specified by text direction (vertical or horizontal), which in turn outlines the number of columns, character size, number of characters in a line, number of lines in a column, inter-line spacing and inter-column spacing. The leading is called 行間 *gyōkan*, and is set, even when ruby characters, or 割注 *warichū*, some inline cutting notes, are inserted (cf. appendix 185). Same goes with 縦中横 *tatechūyoko*, the insertion of a few characters (usually figures) written horizontally in a vertical text. The leading for the *kihon hanmen* is traditionally set to a value between a half-em space and the one em space of the character frame used for the *kihon hanmen*. A half em space can be chosen in cases where the line length is short, but a one em space or close to it is more appropriate when the line length is longer than 35 characters (Chiba et al., 2012).

Spacing management leads to control of what is called *colour* in typography. Of course, colour of glyphs can mean that they are printed using red or blue ink, but when typographers mention the colour of a page, they generally refer to the density and heaviness of a text

(Butterick, 2016; Felici, 2011). An easily readable text is a good balance between the colour of type, and the blank space around it, which according to Butterick can be hard to obtain:

*“[T]he word [type colour] encapsulates a set of hard-to-quantify characteristics like darkness, contrast, rhythm, and texture. [...] In a page of text, nothing draws the eye more powerfully than a contrast between light and dark colors. This is why a **bold font** creates more emphasis than an italic font.”*

For Bringhurst (2004), colour of type relies on four interdependent elements: the design of the type (which means the font that is used), the kerning, the spacing between the words, and the leading. All sources agree that colour should be kept as consistent as possible throughout a document to increase readability.

- The rules of typography in the West and in Japan

This overview of the elements of type gave us a few elements of the dos and don'ts of letterform. Let us delve further, and go over the essential rules of typography. Of course, typographic rules are identical to all other rules: sometimes, they are to be bent. For Bringhurst (2004), the first rule of typography is to acknowledge the fact that text is meant to be read, and that *“typography exists to honor content”*. Although type can be used as a device to catch the eye of the reader, especially in a society that is so prone on constant stimuli, letterform should give way to content as soon as the reading process begins. We mentioned before the works of Salen (2001), comparing typography to a *“crystal goblet”*, saying that complete transparency of typography (meaning the font in itself doesn't really matter, it only exists as a means to convey content, that evaporates as soon as the reader goes through the text) is impossible. The idea of transparency is nonetheless the one advocated by Bringhurst, who considers that:

*“Typography with anything to say therefore aspires to a kind of statuesque transparency.”*

Of course, for designers and typographers for whom type is more than just a medium, type is more than see-through: it has emotion and impact, which we will study further later in this paper. David Carson said in the 2007 movie *Helvetica*:

*“Don't confuse legibility with communication. Just because something is legible doesn't mean it communicates and, more importantly, doesn't mean it communicates the right thing.”*

These rules however apply to more advanced use of typography. In order to prime legibility, there are rules that users must respect. One rule starts with the width of a body of type (the page, column, or any space that the text will be written in), or *line length*, is also known as the *measure*. In order to ascertain a pleasant reading experience, the measure must change according to the content of the text. For instance, in a content-heavy design, it would be ill advised to make the lines of copy too long; it can tire eye and make the reader lose interest. An estimate that usually works is to limit lines of copy to around 65 characters per line, including space and punctuation (cf. appendix 186). Butterick (2016) gives a more generous bracket of 45 to 90 characters per line. Following this rule, the size of characters could be increased to meet this estimate. Another good rule of thumb is to increase your leading in proportion to the measure.

Punctuation is another widely debated topic, because even though punctuation is theoretically subject to a significant amount of rules, these are often ignored. Let us try here to review a few of them. Punctuation marks are an intricate topic, because they tend to change from language to language. For instance, English quotation marks are those: "...". There is no space between the first quotation mark and the first letter of the first word, nor one between the last letter of the last word, and the closing quotation mark. In French, things are slightly different: quotes, or rather *guillemets* look like this « ... », and are written between spaces, unless there is another punctuation symbol after the closing quotation mark, in which case there is no space between those two. Guillemets are also used in other languages such as Spanish, or Russian, but without spacing. Besides, quotation and single quotation marks (respectively "...'" and '...') are sometimes confused with feet and inches marks, called *primes* respectively ' and ". Last, quotation marks, on most fonts, tend to appear in two shapes: curly ('...' and "...") and straight ('...' and "..."). The curly marks are the ones preferred by most designers (Felici, 2011; Truss, 2004), while the straight ones are called *dumb*, which is the name given for typographic approximate symbols (Truss, 2004). For instance, using a lowercase *x* to symbolise multiplication instead of the proper  $\times$  mathematical sign is a typographic approximation. Quotes are even trickier in Japanese. Traditionally, when writing in vertical mode, 「...」 鉤括弧 *kagi kakko* hook brackets are used; more occasional are the double hook brackets 『...』, 二重鉤括弧 *nijū kagi kakko*. Usually, the only difference of use between the two would be that the *nijū kagi kakko* would be inserted within a quotation, in a sort of *mise en abyme* style. Of course, because of the vertical reading, the quotes are rotated 90° and look like the ones shown in appendix 187. Vertical mode sometimes displays more familiar symbols,

such as a *reversed double prime quotation mark* “ ” to open the quote, and a *low double prime quotation mark* ” (cf. appendix 188) (Chiba et al., 2012). In horizontal writing, although the hook brackets are very much in use, double quotes “...” are generally used; they are called 二重引用符 *nijū inyōfu*. Simple quotation marks (‘...’ 引用符 *inyōfu*) are also sometimes used (ibid). Much like quotes, the Japanese writing system has combined traditional marks and Western ones, the traditional ones reserved more for vertical writing, while the horizontal ones are generally used in horizontal writing. For instance, commas and full stops come in two different shapes in Japanese: ideographic and Western. When writing vertically, the ideographic full stop (終止符 *shūshifu*, represented 。 ) and the ideographic comma (読点 *tōten*, represented 、 ). In vertical writing, a Western comma and an ideographic point, completely ideographic marks or completely Western marks may be used, to the choice of the author (ibid). Ellipses (the three dots that usually represent an intentional omission of a word or a text, an unfinished thought, a silence, etc.) can also be quite tricky to manage correctly. Most word processors nowadays automatically turn a series of three full stops into an unbreakable ellipsis (... becomes ...). In English (but usually not in French), when the ellipsis happens at the end of a sentence, a fourth dot, the full stop, is added and the space before ellipsis vanishes: ... When a comma follows the ellipsis, exclamation mark or question mark, the same typographic principle applies. Otherwise, a word space is required front and back (Bringhurst, 2004). Japanese ellipses (省略符号 *shōryakufugō*) are generally represented a sequel of two or three unbreakable median points (respectively .., called 二点リ一タ一 *nitenrīdā* ..., called the 三点リ一タ一 *santenrīdā*), but there is also a strong occurrence of double ellipses (cf. appendix 189), hence six unbreakable points ..... (Chiba et al., 2012), both in horizontal and vertical writing.

When writing a text, paragraph design is also very important. An issue that Western typography can encounter is the one of *orphans* and *widows*. These very graphic denominations are simple typesetting “don’ts”. A widow happens when the paragraph is cut in two by a change of page: most of the paragraph is on one page but the last line. An orphan is the reverse: most of the paragraph is written on the following page, except the first line. Bringhurst (2004) explains the reason for those names in the following terms:

*“Isolated lines created when paragraphs begin on the last line of a page are known as orphans. They have no past, but they do have a future, and they need not*

*trouble the typographer. The stub-ends left when paragraphs end on the first line of a page are called widows. They have a past but not a future, and they look foreshortened and forlorn.”*

Another issue that might come up in Western paragraphs is a river. A river is a series of unexpected gaps, or blanks, which seem to run through a paragraph, the way a river would run through land (Felici, 2011). Spacing settings might not have any influence over the creation of rivers, but the combination (or even the independent use) of justification and monospaced fonts tends to create rivers. Although rivers can be created for aesthetic, or artistic purposes (cf. appendix 190, where the Wikipedia article about the Amazon river was rearranged to let two wide rivers “flow” through), they tend to be a hindrance to a proper reading experience. As Dowding (1995) puts it:

*“The eye also tends to be confused by a feeling of vertical emphasis, that is, an up & down movement, induced by the relative isolation of the words & consequent insistence of the ascending and descending letters. This movement is further emphasized by those “rivers” of white which are the inseparable & ugly accompaniment of all carelessly set text matter.”*

According to Felici (2011), one good way to look for rivers in a text is to run it upside-down. Using this perspective, the eye focuses less on the letters, that are less recognisable, and embraces more the text as a whole.

One other element that needs to be checked is spacing (cf. *supra*). Kerning should be taken care of, leading should be checked, so that the colour of the text is not too dark (nor too light), paragraph should start with indents of at least three ems... Many typography books, such as Bringhurst’s *Elements of Typographic Style* (2004), or Felici’s *Complete Manual of Typography* (2011) give extensive pieces of advice on how to build good, legible text. As for Japanese writing, Chiba et al.’s *Requirements for Japanese Text Layout* (2012) is, to our knowledge, the most comprehensive document in English about the matter.

### c. Defining text as a visual language in advertising

#### i. Writing beyond the words: “deadvertising” and visual puns

The notion of deadvertising expanded in Japan during the 1980s-bubble economy (Bartal, 2013), but sprouted during the 1970s 脱広告 *datsukōkoku* (the first kanji 脱, read *datsu*

as a prefix, symbolizes the act of reversal, or removal, and *kōkoku* means “advertising”), translated by Ivy (1995) as *deadvertising*. The first big campaign using this strategy was the nation-wide Discover Japan (cf. appendix 191), financed by the JNR, the Japanese National Railway Company 日本国有鉄道 *Nihon Koku Yūtetsudō*, also known as 国鉄 *kokutetsu*, and designed by 藤岡和賀夫 *Fujioka Wakao*. This campaign was designed to promote the railway services after the 1970 Osaka Universal Exposition. Although the posters clearly depict the slogan “*Discover Japan*”, the campaign was mostly known in Japan under the nickname 日本の再発見 *Nihon no saihakken*, which means “*rediscover Japan*” (Ivy, 1995). This name actually fits the goal that the JNR and Fujioka had set for the campaign. Heavily inspired from a 1967 American campaign unsurprisingly called *Discover America — It’s 3,000 smiles wide promoting domestic travelling* (Shaffer, 2001), Fujioka’s concept was to change the vision of travel in the mind of Japanese people. The idea of デイスカバー・ジャパン was to reconcile the Japanese people with the idea of “Japaneseness” through traveling, which is why the pictures, even though they are taken in famous sites, emphasize the people, usually showing the discrepancy when different generations, or when tradition and modernity (cf. appendix 191 and 192) meet. *Discover Japan* was designed to revolutionize the idea of traveling: instead of linking traveling to sightseeing, and specifically the seasonal pilgrimages to see cherry blossoms, or the snow-capped mount Fuji, devoid of unusual encounters and making the traveller rather lonesome, this campaign emphasises contact. The notion of contact (触れ合い *fureai*) is very important for Fujioka, in the quest for identity. Ivy (1995) quotes him saying:

“What we were trying to do in our campaign was to promote, in this day and age, the discovery of the self that money cannot buy, through the kind of travel that money cannot buy [...] What Mr. Matsuda of our project team decided on as the *Discover Japan* poster motif was not scenic beauty, but rather “the beauty and sadness of ‘contact’””

Instead of advertising beautiful landscapes, this campaign emphasises the *fureai*, making the decorum a context for haiku-worthy encounters, and construction (or reconstruction) of the self through contact. The beauty of contact, and of this quest of the inner self through traveling is alluded in the slogan 美しい日本と私 *Utsukushī Nihon to watakushi*, “Beautiful Japan and Myself”. The idea behind the stress on beauty is also due to the increase of women traveling (Fujioka, 1987), expanding the JNR number of potential customers.

To Fujioka, the Discover Japan campaign marks a turning point with the previous considerations of what is marketing, and more specifically, what is advertising (Ivy, 1995). He considers that, more than its mere design, his campaign is different in the philosophy that accompanies it: instead of selling a service or a product, the advertisements promote the genuine, noble vision of Japaneseness, and the values of Japan, far from any profit. He writes in 1972 (as translated by Ivy, 1995):

*“Advertisements should not serve business or commodities as their masters. If we use the word “serve” then what advertising must serve is contemporary cultural and social thought and consciousness. In order to do that, advertisements must be conceived not from the perspective of business or commodities, but rather by asking what society or the masses are searching for—by asking what will appeal to the society or the masses. If that something is not information about a business or a commodity, then we can no longer call it an advertisement, according to existing conceptions. The reason that I call this kind of phenomenon deadvertising is because [its rules] are absolutely different from the rules of advertising.”*

Deadvertising spread to other companies, such as NTT (cf. appendix 193). Following the rules set by Fujioka, the advertisement does not display any clear message about the company, not anything alluding to it. The poster mainly depicts an angler in a boat, with what appears to be an enormous marlin laid in front of him. The slogan, written in a Minchō type, reads 魚と話す日 *Sakana to hanasu hi*, “The day I speak to a fish”. Bartal (2013) explains that this advertising campaign refers to Hemingway’s novel *The Old Man and the Sea*, especially the scene where the old Cuban angler painstakingly catches a giant marlin, a metaphor for the struggle between humankind and nature. Bartal adds:

*“The slogan of the poster does not anchor the image, and even more noteworthy is the fact that neither the image nor the slogan provides any clue of its relevance to the telephone company.”*

This advertising of a new kind has quickly expanded in Japan since the 1980s. Campaigns featuring deadvertising would often catch the viewer’s attention by hiding their product and the company name, thus arousing the attention and the curiosity of customers, turning the understanding of the poster into a game of clues and hints. By hiding their name and products, the companies can raise brand awareness through the feeling of satisfaction that arises when one figures out where the campaign comes from. The concept of minimalistic,

sometimes even empty advertising is used quite often by 焼酎 *shōchū* companies. *Shōchū* is a Japanese distilled liqueur, generally prepared from potatoes, and quite similar to vodka. Iichiko is one the biggest brands of *shōchū*, and distinguishes itself with very seasonal, nature inspired CE campaigns that do not put the product forth at all. Appendix 194 shows the March 2013 campaign, displaying a countryside dirt road and a blossoming bush of red camellia, or hibiscus. On the left-hand side of the poster is written: “いそぎすぎたと花を見て思う” (*Isosugita to hana wo mite omou*, “Gazing at flowers made me think of my frenetic life”), in white, Minchō characters. The bottle of liqueur is standing in the bottom-right hand corner of the poster, by the dirt road, barely visible; next to it, in red letters, is the name of the brand. Both the bottle and the brand name blend into the background very easily: the red letters are a strong reminder of the flowers, and the colour of the bottle resembles that of the sandy soil, or could pass for rocks. This poster is then a bucolic vision of a spring landscape, with a rather poetic and inspirational quotation on the side. The representation of the product and the brand themselves is rather minimalistic, and nothing in the other visual elements is linked, or at least alludes to the product: these are the rules of contemporary deadvertising. However, as Iichiko, and other liqueur brands such as Nikaidō use this process in both their print and video advertising, deadvertising becomes advertising, in so as this lack of branding becomes branding in itself. Deadvertising thus becomes a way of promoting by losing the consumer: the classical landmarks that are pictures and text become useless in finding what the advertising means. Western advertising campaigns tend to use minimalistic advertising instead of deadvertising. Minimalistic advertising tends to use images only (cf. appendix 195), which is not our focus here. One CE campaign that loosely takes on the rules of deadvertising is a 2013 CE campaign for Ponto 1 Gym, a chain of fitness centres (cf. appendix 196). This CE campaign, designed in 2013 by the Brazilian agency MP, is not quite as misleading as its Japanese counterpart is, but respects the rules of deadvertising nonetheless as it forces the consumer to think twice about the message of the poster. This advertisement is very simple: it is all pink, with a nose, a moustache and a chin on top, and the slogan on the bottom-left hand corner: “*Look at the size of the problem*”. Without the logo of the company, and the very univocal term “gym”, it would be quite hard to understand what is advertised here. Besides, because the slogan is written in very thin characters, it is easy to overlook it, which could be problematic when reading this baseline is essential in understanding the meaning of the campaign. All the elements of the poster are intertwined in a very subtle way. It is also essential to note that the word deadvertising has also been understood in a very different manner: not as *deadvertising*, but as *deadvertising*. In that case, to quote Epstein’s *PreDictionary* (2011):

*“Deadvertise v (dead + advertise) – to advertise and promote political causes by death.*

*Terrorism is the art of deadvertising.”*

One other way to create interesting content is to play on the relationship between text and image. As Frutiger said, *“The work of a type designer is just like that of a dressmaker: clothing the constant, naked human form”* (Osterer and Stamm, 2009), therefore allowing the written word to take endless shapes and form, including those of images. The image of both body and dress have been applied to typography, bringing with them various kinds of perceptions of what typography really is. For Willberg (2002), typography could be considered as the body, which means that typography is the condition of any text to exist: without printing, there is no text, and without text, no possibility of spreading the content. Postman (1985) writes:

*“Print made a greater impression than actual events... To exist was to exist in print: the rest of the world tended gradually to become more shadowy. Learning became book-learning.”*

This way of thinking confers to typography the same power over written text that prosody has over the spoken word. However, some others such as Frutiger, or Bell (2001), consider that typography is more of a mere shell, the dress of the text, or even, according to the type designer Alan Fletcher, a *“straitjacket”*. The works of Bell (2001) on the purely aesthetic aspect of typography come from his sociolinguistic background, instead of a purely linguistic one. His research pushes him to think that the font used in a text reveals something about the nature of the person or organism producing the text, and of the profiling of the targeted audience, which Bell refers to as *“audience design”*. It is then not surprising to consider that typography has mostly been pushed away from research in linguistics, since research in this field, such as Dürscheid’s 2006 *Einführung in die Schriftlinguistik*, have mostly focused on the various relationships between phonemes and graphemes, and the elaboration and construction of writing systems, voluntarily ignoring the appearance of glyphs.

There is a claim that can be made that typography is more than just a shell, or a constrictive garment to glyphs. Writing can be considered a connotative sign system, in the meaning defined by Barthes (1996), which is the associated, or secondary meaning attached to a word, an expression or a semiotic system (cf. *infra*) in addition to its original, or explicit meaning. As for typography, it is a system that uses combination of content-form from a primary sign system, the language, to turn them into signifiers of a secondary system, typography. Berger (1979) goes further into the considerations and claims there are three semiotic levels embedded in typography, each conveying a different meaning. The first level is of course an encoding one. Even though some linguists such as Nöth (1985) consider that

typography only is a medium that does not change the reading experience no matter which font is used, an important part of reading is decoding the graphic signs to recognize the graphemes and the lexemes. The second semiotic layer of typography resides in the anatomy of letters (cf. *supra*): a connoisseur will at once understand the connotative meanings of the various parts of letters, and get in touch with a more emotional aspect conveyed by the choice of font in the document (Bell, 2001; Stöckl, 2005). Last, on a third level of meaning making, typography can convey pictorial aspects. Words can be reshaped to become graphical, using for instance a technique called the calligram. Calligrams are an ancient genre of text display, the first evidences of them dating all the way back to the Roman Empire (Varga, 1999). The French poet Guillaume Apollinaire brought the genre back to life with his collection of Calligrammes, written between 1913 and 1916. Even now, calligrams extend their prints on the French culture, with advertising campaigns such as the 2014 Ricard campaign (cf. appendix 197). Through image editing, letters can assume very visual aspects, including daily life objects (cf. appendix 198, a 2014 advertising campaign for a theme park in Wisconsin named Kalahari, designed by the agency FOREAL, where the letters are shaped like a water slide). These various layers of meaning conferred upon typography give it flexibility as a communication mode, since both the designers and the audience can shift between the three intertwined semiotic levels. Stöckl (2005) writes:

*“Interestingly, the three semiotic layers of typography correspond to the three general types of signs (according to Peircean semiotics [cf. infra]): reading is mainly symbolic, an act of deciphering conventional signs, but it can take on indexical and iconic qualities. In many ways, registering the connotative and pictorial aspects of typographic design can be seen to be prior to the symbolic decoding in the process of reading as graphic shapes intrude upon our perception as gestalt properties of images.”*

The German language provides a word to express the blend between image and picture that English does not have: *Schriftbild*. *Schriftbild* transcribes the ability that one might have to distance oneself from the sole linguistic capacities of the written graphemes, and get more interested in the visual aspect of the word. Of course, this is not always a prerequisite: some documents, such as the advertising campaign presented in appendix 198, will drive the reader away from the connotative part of typography, which, according to Bell (2001), most advertising campaigns will do, to various extents. Some other documents, for instance a legal contract, or any official document, will rely much less on this capacity of typography. A good example of this concept is to compare the appearance of a corporate website, and its page

dedicated to careers. The appearance of the homepage is usually much friendlier, and respects the image of the company, whereas the one dedicated to job opportunities is generally leaner, more professional, and as such, more connotative. In German, there are words to differentiate both types of type: *Gebrauchstypographie* or *Lesetypographie* stands for the merely symbolic, highly functional, designed to be read typography, whereas *Akzidenztypographie* or *Displaytypographie* embodies the idea of a more dramatic, norm-bending typography, such as the one presented in appendix 198, that takes advantage of its three semiotic layers to their full capacity (Gaede, 2002).

So, where is the limit? How can one separate what is an image, and what is text? Stöckl (2004) show us that the definition of pictoriality, of what is an image exactly in a semiotic way, is quite blurry and vague. Typography is, in fact, a middle ground between image and language. For researchers such as Stötzner (2003), what would turn typography into a complete image (instead of being only a symbolic medium) would be for it to be particularly complex and figurative. He also acknowledges that “*a neat dividing line cannot be drawn*”. Goodman in 1936 theorised the idea of semiotic density, which claims that an item is closer to a picture the more graphic aspects can be linked to it: therefore, it is only logical to infer that when the viewers link visual elements to typography (such as its colour, its weight, its font type, and all the elements seen before), it can be considered as a picture. Appendix 198 is a good example of *typopictoriality*, a term created by Weidemann in his 1994 *Wo der Buchstabe das Wort führt: Ansichten über Schrift und Typographie*, also called figurative letters by Gaede (2002).

The Japanese language, by its very structure, does not have to face the apparent dichotomy that exists between written words and images. Of course, the two kana syllabaries are rather close to our letters, in the sense that, by themselves, they do not mean much more than their own sound, even though they come from Han characters (cf. *supra*). Kanji combine by nature both a form and a meaning, which Barthes in his *Empire of Signs* (1983) calls “*a revolution in the propriety of symbolic systems*”. Therefore, each Han character has two meanings: first, a functional mode, which is the literal meaning of the character, paired with a symbolic or iconic mode, the aesthetic meaning. Therefore, text and image in Japanese are neither harmonising nor opposite, they are one. A good example of a perfect blend between character and image is the 円相 *ensō*, such as the one designed by 御弓師 二十代 柴田 勘十郎 *On'yumishi nijūdai Shibata Kanjūrō*, known in English as Kanjuro Shibata XX, displayed in appendix 199. *Ensō* is the ancient character for the circle (contemporarily 丸 *maru*), but also embodies enlightenment, the universe, elegance, and the Zen notion of void *mu* (which became

the kanji 無). The polyvalence of letters opens an unparalleled field of possibilities for designers. One poster that perfectly embodies these opportunities is the 1958 森・林 *Mori – Hayashi* poster (cf. appendix 200), designed by 山城隆一 *Yamashiro Ryūichi* for the World Fair. Any viewer, knowledgeable in Japanese or not, can understand through the design of the poster that it depicts a snowy forest. People familiar with the Han characters can enjoy a second layer of meaning, for what the poster shows is a mix of the kanjis 森 *mori*, “forest”, and 林 *hayashi*, “grove”, both variations of the tree radical 木 *ki* (cf. *supra*). Therefore, in the same poster, the image of the forest not only renders through the design, it is also literally written. This intermingling of both letter and pictoriality has led the Taiwanese entrepreneur 薛曉嵐 *Xuē Xiǎolán* to develop a learning method for Chinese characters in 2014 named *Chineasy* (cf. appendix 201), a comprehensive method to learn and remember some Han characters through the pictorializing various radicals, and explaining how they can combine.

Another level of considering the letter is simply to look at it as part of aesthetics. This is the case when content is written in 草書体 *sōshotai*, literally “grass writing”, but generally understood as “creative style” (cf. appendix 202). Most of the Japanese audience is familiar with *sōsho* style, although they cannot read the characters that are written. The only aspect of the letters that matter is connotation: by looking at the document, people are transported to a world where Zen monks write creative, artistic letters and trace *ensō*.

The multitude of embedded meanings in the Japanese characters changes the relationship people have with their writing systems. Where Bringhurst (2004) wrote that the very first goal of typography was to create legible content (cf. *supra*), there are many cases in Japanese advertising, or art, where letters are not meant to be read at first sight. One last, good example of this change in the perception of letterform is Japan’s vexillology. Vexillology is the science that studies flags around the words, their design, colour, meaning, etc. The Japanese flags, especially the prefectural and municipal flags, have an unequalled reputation of creativity and talent in using their characters. These are either presented in a highly-stylised version, or in rebus. For instance, the flag for the city of 久留米 *Kurume* is the perfect example of a rebus flag (cf. appendix 203). It displays a circle, with a coat of arms-like sign in the middle. However, a second, more thorough look allows us to understand that this circle is in fact made of nine katakana ル *ru*. The digit nine 九, usually pronounced *kyū*, can also be read *ku*. In the middle

of the circle is actually the kanji 米 *me*, “rice”. And there is the rebus: nine katakana ル, surrounding the kanji 米: *Ku-ru-me*. This rebus aims at only playing with the readings (and aesthetics) of characters, not necessarily at representing the kanjis of the city. An example of kanji deformation to create an image is the municipal flag of 八戸 *Hachinohe* city (cf. appendix 204). The two half-circles are in fact the two strokes of the kanji 八, and the needle-like symbol in the middle is a representation of 戸. Put together, they look like the head and the wings of a flying crane, the sacred bird of Japan.

ii. *A matter of perception: English in Japanese media, Japanese in Western media*

Japan presents, despite suffering from various clichés due to its insular situation (being closed to foreigners, and a rather unaccepting culture in general) a significant amount of English everywhere. More than just the signs directed mainly at tourists and visitors (the international *toilets* or *exit*), words written in English are printed on billboards, in fashion items, can be heard in songs or on TV. Of course, this is not new: Stanlaw (1992) shows that during the late XIX<sup>th</sup> century, after the Meiji Restoration, studying English was a very prevalent subject, and that using loanwords in the conversation was considered stylish. The use of English understandably decreased during World War II, but came back in force right after, and has never stopped increasing since then. To this day, there is an estimate of about 10% of Japanese words being 外来語 *gairaigo*, or loanwords (Tomoda, 1999), a figure that of course excludes the words borrowed from the Chinese language (cf. *supra*). In the field of advertising, the amount and occurrence of loanwords is even higher, with none less than 20 to 25% of the content, which is, according to Daulton (2004) the direct linguistic consequence of the thriving economic bubble that occurred in post-war Japan. Tomoda and Daulton even agree that there are so many loanwords, and that new ones appear at such a rapid pace that many Japanese consumers do not really know what they mean.

Yet, an extensive use does not automatically mean that it is a correct use. Many signs can bear approximations (cf. appendix 205). An extensive database of research (Daulton, 2004; Doughill, 2008; Goldstein, 2011; Hyde, 2002), and numerous websites are dedicated to erroneous English in Japanese advertising, making it easy to think that these mistakes make the

most part of English in the media. However, a study conducted by Kjeldgaard in 2014 tends to prove otherwise. In her sample of 53 advertisings displaying valid content in English, she evaluated the use of the language and ranked the posters in four categories: 1) no errors, 2) contextual errors, 3) errors in spelling or grammar, and 4) Japanized English. It so happens that out of the 53 samples, 30 of them, hence more than half, proved to be free of errors. She qualifies her result by noting: “*Phrases such as “Gold Point Card” and “New! Rainbow Mountain Blend” were in this category*”. Kjeldgaard estimates that the mistaken, or incorrect use of English is much more talked about because mistakes are simply “*more visible*”, and appeal much more to native, or proficient speakers.

There are indeed different kinds of mistakes, both on the linguistic and typographic level. There are many ways to approach the incorporation of English words in the Japanese language: the “*loanword approach*”, the “*English-inspired vocabulary item approach*”, and the “*Made-in-Japan English approach*”, all terms defined by Stanlaw (2005). The first loanword approach considers it is near impossible to separate the borrowed word from their original language: an English word, no matter which language it ends up in, will always be an English word, and is therefore considered a “*borrowing*”. However, every word has cultural baggage, and the borrowing induces that this baggage comes with the word. For instance;

*“the use of the English loans hazu (‘husband’) and waifu (‘wife’) [...] carry with them a range of connotation, e.g. modern attitudes to marriage, greater gender equality between the sexes, the changing role of motherhood, etc.”*

In the particular case of *waifu* (written ワイフ) and some other specific words, the katakana spelling has come back to the English language as slang, with a new connotation linked to pop culture. The *Urban Dictionary* website defines *waifu* as:

*“A term coined by Otaku and Weeaboo [“a foreigner so obsessed with Japan and its culture that they try to act Japanese. Also called ‘wapanese” (Urban Dictionary)] alike for their 2D significant others; predominantly anime and video game characters.”*

However, these cases of back-and-forth motion between English and Japanese are quite rare, and the borrowing goes generally one way only, which bring the “*English-inspired vocabulary item approach*” supporters to defend that the term “*borrowing*” is misused. Linguistically speaking, the words are not “*given back*”, and therefore not “*borrowed*”, rather taken. Besides, the abovementioned cultural baggage of a word is sometimes changed, meaning that a word that sounds and looks like its English counterpart might mean something different.

Let us consider for instance, the adjective “*smart*”. The online version of the Cambridge Dictionary gives it five meanings: 1) “*having a clean, tidy, and stylish appearance*” or “*A place or event that is smart attracts fashionable, stylish, or rich people*”, 2) “*intelligent, or able to think quickly or intelligently in difficult situations*”, 3) “*done quickly with a lot of force or effort*”, 4) “*A smart machine, weapon, etc. uses computers to make it work so that it is able to act in an independent way*”, and 5) “*not showing respect, especially when making a funny remark*”. The borrowed word スマート *sumāto* means “*stylish*”, but mostly “*slim*”, or “*slender*”. To avoid confusion and be closer to the truth, Stanlaw offers an alternative term to “*borrowing*”, and prefers it “*English-inspired vocabulary items*”. Therefore, the relationship shifts from a transfer to an adaptation, implying that both English and Japanese words exist independently. The last approach is the one of 和製英語 *wasē ēgo*, which literally stands for “*Japanese-made English*”. This approach, preferred by Stanlaw, claims that the words are actually created by and for Japanese people, and exist completely independently from their native counterparts.

As for typography, the main mistakes that can be found in the use of English in Japanese advertising usually concern spacing, namely kerning and leading (cf. *supra*). Appendix 206 is a good example of typography that does not respect the Western rules of readability. The leading between the line *Just!* and *my size* is so narrow that the dot over the *i* merges into the letter on top of it. This would be acceptable should the two lines be written using different colours; yet the use of all black, condensed characters produces a final impression of cluttered letters that are hard to read. Same goes for the alphanumeric characters of the font Minchō: of course, this font is not meant to be used for text written entirely in Latin characters. However, it is surprising that a font that is used so much around the world has such a poor rendering of each character and space management (cf. appendix 207), making the text quite hard to read.

It is quite important to wonder why incorrect or approximate usage is so widespread in Japanese media, especially in a country that teaches English at school for at least six years (Martin, 2004), which hints that the Japanese audience at least reasonably understands the language. Let us note here that all languages and scripts have two functions: a decorative one that is only visual and does not need to be understood, and a communicative one, that aims at conveying meaning (Goldstein, 2011). Doughill (2008) and Hyde (2002) consider that the use of English in Japanese media is vastly decorative, and that there is little to no meaning conveyed by the words that are used. Doughill writes:

*“Apparently, the English is never even read, even by students and teachers of the language: it is purely decorative”*

Hyde goes further and states:

*“Perhaps too the English visible in their everyday environment [...] is equally useless [...] precisely because it is so functionally unlike real English – divorced from a real speaker and a real listener and any real communicative purpose.”*

These claims would mean that when English is used in advertising in Japan, it does not wish to communicate content through it, and the campaign becomes only a one-way message: *“the billboard or TV talks at us”* (Goldstein, 2011). Other researchers such as Takashi (1990) offer a more qualified opinion, arguing that there may very well be a part of English in Japanese advertising that means something. It is first a very salient element, because of the difference of letterform. This opinion is echoed by a series of interviews that Goldstein (2011) conducted in the advertising agency Dentsu (電通 *Dentsū* in Japanese):

*“[O]ne of the copywriters I interviewed said that kanji and katakana were うるさい, or “noisy”. He thought that they cluttered up the page, whereas English had a much cleaner feel.”*

Therefore, by its sheer shape, the English language manages to convey some sort of meaning, which gives quite some importance to the choice of type. If the audience is not going to read the text for the meaning that the glyphs assembled convey as words, then the appearance of those words should definitely be a concern for the advertisers. The vast abundance of Latin alphabet fonts compared to the Japanese ones (cf. *supra*) is both an asset and a trap: of course, there is the possibility to be extremely specific in the mood that one wants to convey through the choice of characters, but looking for the perfectly adapted letterform can be a tedious task. This could be a good reason why most Japanese magazines use Latin letters to write their titles (cf. appendix 208). In the case of magazine name, the title is often accompanied by a phonetic transliteration in katakana. In the case of appendix 208, in the left of “men’s FUDGE” is written “[メンズ・ファッジ]”. This subtitle of some sort asserts the fact that the use of Latin characters is more intricate than just decoration. Of course, using alphabetical glyphs is a way to make the title stand out, and provide all the images linked to the English language (cf. *infra*), but the presence of katakana shows a concern in the pronunciation of the title. Correct pronunciation is the key to ask a shopkeeper whether the magazine is present in his shop, or to talk about it to your surroundings. By understanding that promotion can be done through written

and spoken content, the Japanese advertisers show that they can use English in a communicative way, when need be.

The connotative dimension of English language, the fact that it means more than its content –what Goldstein refers to as “*雰囲気* or “*atmosphere*” – is a theme that has been treated quite abundantly. Tomoda (1999) estimates that 45% of the English content in Japanese media were used as “*special effect givers*”. According to Haarmann (1984), English may suggest a sense of trustworthiness, high quality, poise, or pragmatism. Hogan (2003) stated that residents of a countryside Japanese town linked English with youthfulness, innovation, casualness, and cosmopolitanism. The state of the art tends to confirm that, when the English language does not aim at being meaningful (e.g. when it is neither lengthy, nor using an intricate lexicon), it is simply decorative.

Despite its mainly pictorial attributes, it cannot be ignored that Japanese people are completely ignorant of the language. How is it possible then that advertisers, especially international corporations do not care more about the occurrences of what is called *Engrish*, or *Japlish* (the incorrect use, or creation of words)? According to Azra (2011), Japanese people consider English as a code, that can be used to transpose Japanese, as opposed to being a window onto a different culture. This, to him, is the reason why people learn English through conversations that revolve around very Japanese themes, and explains the tendency that Japanese people have to “*copy and paste*” Japanese to English. This version of English is made by Japanese people, for Japanese people, which Kjeldgaard (2014) considers to be an “*emergent Japanese version of English*”.

Errors when using Japanese in the West come from a different source, usually a deformed version of Japan. It is no secret that the media, may they aim at specialised or mass consumption, have a great influence over the perception that one people might have over foreign countries (Baum & Potter, 2008). Barthes (1983) considers that the prism that our stereotypes and preconceived ideas shed over those countries and cultures that are not ours, especially the Asian ones, poses a great damage to international relationships. He writes:

*“Someday we must write the history of our own obscurity—manifest the density of our narcissism, tally down through the centuries the several appeals to difference we may have occasionally heard, the ideological recuperations which have infallibly followed and which consist in always acclimating our incognizance of Asia by means of certain known languages (the Orient of Voltaire, of the Revue Asiatique, of Pierre Loti, or of Air France). Today there are doubtless a thousand*

*things to learn about the Orient: an enormous labour of knowledge is and will be necessary (its delay can only be the result of an ideological occultation); but it is also necessary that, leaving aside vast regions of darkness (capitalist Japan, American acculturation, technological development), a slender thread of light search out not other symbols but the very fissure of the symbolic.”*

Because of this alienated vision of what is Japan, and what is the Japanese language, along with all the rules that this very specific writing system implies, some misuses of Japanese can be found. However, they appear to be very rare, and usually lie in the incongruity of the character(s) used in a given advertising and the product advertised. For instance, appendix 209 is a poster for an American based sushi chain called Zen sushi. The place (in this case, the Dallas branch of the chain) claims itself to be an unexpected “sushi joint”. This baseline implies several layers of meanings, from the type of food (probably more fusion cuisine rather than traditional Japanese food) to the quality of said food, the mention of an “Executive Chef” meaning that the place, despite looking like 禅 “your typical sushi joint”, may have all the qualities of a top-class restaurant. What interests us here is the name of the chain: Zen. Zen is a school of Mahayana Buddhism, which originated in India, and made its way to Japan through China during the VIIIth century. By itself then, the principle of Zen has little to do with sushi, or even Japan joining the opinion of Barthes of the Western “our incognizance of Asia”. Even more flagrant is the character that is used: is actually the Chinese character; the proper kanji for “zen” is 禅. The difference between the two characters is faint but exists, and the confusion between the two (using a Chinese character while trying to promote an Americanised version of the Japanese culture) is relevant of the amalgam that is made by the West of Asian cultures.

Another example of unsuccessful usage of the Japanese language can be found in tattoos. Having Chinese or Japanese characters inked in one’s skin is a tradition that has been going on for decades, yet errors and misinterpretations of characters happen often, and are largely documented online. One of these, appendix 210, reflects a collection of unfortunate choices: there is no meaning in 銭ぶくあ痛い恋, and the disposition of characters is completely wrong: the leading is regular, but the two hiragana ぶ and く are crammed on the same line when clearly the writing mode was meant to be vertical, and the い of 痛い seems to merge into the kanji 痛. The fault lies in the hands of the tattoo designer of course, but is relevant that whoever

drew this, albeit having a rather clear idea of the shape of the various characters, did not understand the rules of character arrangement.

In a personal interview conducted in 2016, Jean-Luc Azra, a French teacher at a Japanese university and the author of the excellent guidebook *Les Japonais sont-ils différents* (2011), went over this topic and tried to help us understand why there is so little use of Japanese in Western media, and why, if and when it is used, the language is generally mastered to a seemingly native level of proficiency. To Azra, this use of a foreign language in media comes from a different perspective on, and perception of what is a foreign language. He takes the example of Hergé, the creator of the famous series of comics *Tintin*:

*“In Tintin, which is admittedly not the most sophisticated reference in literature, Hergé, the author, has always been very careful that everything written in Chinese or in Arabic was linguistically flawless. So, he always asked people to write the foreign characters for him: the Chinese ones in Tintin au Tibet for example. In Tintin au pays de l’or noir, the Arabic written in the speech bubbles is always actual, spoken Arabic. To me, it means one thing [...]: there is a conscience that a language is an interpersonal communication tool. It has a usage, and it is this usage that you will find in posters and billboards. In Japan, it is not the case: the language is not considered as an interpersonal communication tool, but rather as a code.”*

Because of this understanding, this conscience that when one is using a foreign language, one is trying to use a communication system that another people use on a daily basis, the use of foreign language in media is more scarce. Azra explains that in France, for instance, when billboards are written in various languages, it usually means that the content is aimed at foreigners, and therefore should be written by natives, *“and not just any native: [the company] didn’t ask the nearest exchange student to translate the billboard, they used the services of a company specializing in advertising content translation, to come up with a perfect translation”*. All these services are expensive, which reduces the amount of use of foreign languages. Besides, the connotative power of languages in the West is much less strong than it is in Japan. Therefore, using Japanese words in the conversation, or in written content, besides in the very specific context of Japanese culture related domains (manga, anime, martial arts, etc.) makes much less sense than using English or French in Japan.

iii. The unique case of the Japanese language: interchangeability of the writing systems and 語呂合わせ goroawase

As we have mentioned before, the Japanese writing system is uniquely rich in its possession of four different writing styles: hiragana and katakana, kanji and Latin letters. These systems are not only interchangeable; they also convey meaning by themselves. As Bartal (2011) puts it: “*The same content can look very different, depending on the alphabet used*”. Depending on whether one writes content in kanji or in kana, the impact of the text will be very different. Playing with the overall visual aspect of written content was particularly used in Japanese poetry, especially 俳句 *haiku* (Hiraga, 2004). One of the important effects of using kanji in a haiku is what is called foregrounding, a stylistic device that aims at shedding light on some key elements. Kanji have a set form, made of different radicals (cf. *supra*), which differentiate them both visually and semantically from hiragana and katakana. Using kanji, the overall impression of a haiku can be changed. Let us take as an example a haiku from 松尾芭蕉 *Matsuo Bashō*, from his 1694 炭俵 *Sumidawara*. The poem, in its 1993 translation by Sieffert offers two writings: 荒海や佐渡に横たふ天河 and 荒海や佐渡によこたふ天河. The pronunciation is the same: *Araumi ya Sado ni yoko tafu Ama no Gawa*, translated by Sieffert as “*Rough sea: lying toward Sado Island the River of Heaven*”. The second writing, where the kanji 横 becomes the hiragana よこ, seems to be the most adequate. This haiku is a eulogy to the magnificence of the Milky Way (天河), which deploys itself over the rough Sea of Japan (荒海) and leans towards the shores of Sado Island (佐渡). The stressed words in this second version are the ones in kanji: 荒海, 佐渡 and 天河. All of them are two-kanji compounds, and share one common trait: one kanji of each compound is made using the water radical 氵. The regular repetition of compound words, added to the reiteration of the water radical express the image of waves and water, all of which are foregrounded by a selected use of kanji. For the Japanese writers, it is quite the effort to choose which writing system, kanji or kana, to spell out the sounds, the images and the meanings of what they are depicting. Correspondingly, it is a cognisant exercise on the reader’s side to read what is represented in the haiku not only by the semantic denotation conveyed but also by the connotation of character choice and layout.

Besides, because kanji characters are discrete in form and include iconic meaning, readers usually picture them as the figure rather than the ground. Said ground is typically represented by hiragana. in the process of reading. Therefore, the choice of a specific kanji to represent what the rhymesters want to convey is essential in the making of poetry. Similarly, knowledgeable readers understand implied meanings in the choice of some precise kanji characters.

The iconic role of the various writing systems in Japanese does not stop at poetry; advertising is of course a field that plays extensively on the implied meanings of characters. As it has been mentioned before, using Latin characters may give an international feel to an advertisement, due to the connotation of words from foreign languages. Writing Japanese words in rōmaji is also a way of giving a quirkier, more modern feel to some Japanese words (Robinson, 2007). Choosing between kanji, hiragana and katakana can be very relevant too. Traditionally, each writing system has its own roles (Igarashi, 2008):

*“[C]ontemporary Japanese possesses three major types of words, (1) kango (Sino-Japanese words), (2) wago (Japanese native words), and (3) gairaigo (loanwords), and each word type is associated with three types of scripts. Kanji is used for presenting kango and wago, while some wago is written only in hiragana. Katakana is used for presenting gairaigo”*

There are many other occurrences of katakana use, especially katakana used to write words of a Chinese, or a Japanese origin. Hashiba (2007) then states four other functions for the katakana syllabary. The first one is a mark of emphasis, to stress the word (writing ココ instead of ここ *koko* to mean “here”). The second one is the representation of slang terms, or words that have just appeared in the language (for instance, 元カノ *motokano*, to mean “ex-girlfriend”, カノ *kano* being a shortened version of 彼女 *kanojo*, “girlfriend”). The third one is simply a matter of image, to make a word (at least seem) trendier, writing カッコいい instead of its hiragana version かっこいい *kakkoī* to mean “cool”, or “awesome”. The last one is a euphemistic function, especially when dealing with harsh or serious matters: “counterfeit”, or

“knock-off” is pronounced *nisemono* in Japanese, and although it can perfectly be written in kanji as 偽物, it is usually written in katakana, ニセモノ.

Appendix 211 displays a very diverse and interesting use of the writing systems. MassMedian is an important advertising company in Japan, dedicated, as their name shows, to mass media content diffusion. On the left side of the banner is written, mostly in hiragana: ちよっとのぞいてみる。ちよっと相談してみる。そんな方もお待ちしています。 *Chotto nozoitemiru. Chotto sōdan shitemiru. Sonna kata mo omochi shiteimasu.*, which could translate as “Just in for a peek. Just in for a little piece of advice. We are also looking for these people.” What is particularly catchy here is the conjugated form of the last verb: instead of writing it all in hiragana, as it should be, the last two characters マス are in katakana. Not only this unusual grammatical construction is going to attract the eye of the consumer, it is also a use of the emphatic function of the katakana alphabet: a way to strengthen the statement, the way the English language would use italics: “we are *also* looking for these people”. Lastly, マス is an echo to the name of the company, MassMedian, and to its activity: mass communication is usually understood in Japanese under its abbreviated form マスコミ *masukomi*. Another element worth noting is the central drawing. The character is entering a traditional cloth door, found everywhere in Japan at the entrance of traditional shops, bars and cafés. To strengthen this image of tradition and modernity combined together on the curtain is written マスメディ 庵, which is to be read the same way as one would read the company name: *masumedian*. The use of katakana conveys all the images we have seen earlier, while the kanji 庵 *an* means primarily “retreat”, or “hermitage”, but can also be understood in “shop”, in a very traditional way. By combining the characters, this company has managed to assert a much stronger message, and anchor their corporate image, between tradition and modernity.

A word that uses all sorts of appearances in Japanese is the word pronounced *kirē*. As an adjective, the word stands for 1) “pretty”, “lovely”, “beautiful”, “fair”, or 2) “clean”, “clear”, “pure”, “tidy”, or “neat”. This word can be written 綺麗 and 奇麗 in kanji, キレイ in katakana and きれい in hiragana. An interview with Wakiyama (2016), designer in Fukuoka-based advertising agency G&M resulted in some interesting answers as to which use to prioritise. He

first acknowledged that the use of kanji is becoming very rare, and that he would professionally barely every use it: “*newspapers and magazines display [this word] practically only in hiragana*”. However, should one want to use the kanji form, it is difficult to know which one to choose between 奇麗 and 綺麗. The original version of the word is in fact 奇麗, because both kanjis are in the 常用漢字 list of 1945 characters (cf. *supra*). However, the character 奇 by itself has the meaning of “strange”, “unconventional”, “strangeness”, or “curiosity”, all traits that are not exactly positive in Japan. Therefore, the other character 綺 was preferred to the previous one, because this new one means “beautiful”, “figured cloth”. However, because this new character is not in the list of common use, it is generally avoided. Wakiyama blames the lack of transgenerational communication for it as well, saying that intricate characters would be remembered easily if elders taught the younger generation about them. As far as the kanji combination is concerned, there is for him a difference of meaning between the compounds. He says:

*“If you want to say “this is pretty”, then use the hiragana, or if you really want to use kanji, then you should use the first [綺麗] compound. If you want to mean that something is clean, then the other compound [奇麗] is more adapted.”*

What about the use of kana in advertising for this word then? We mentioned before that the employees at the Dentsu agency consider that kanjis tend to “clutter” the page, which goes against the image of purity, beauty and cleanliness conveyed by the word. Therefore, hiragana and katakana are used. The advantage of hiragana, for Wakiyama, resides in the aesthetics of the characters. With their round, charming shapes, this alphabet which used to be used mostly by women (cf. *supra*) still conveys an image of femininity, and softness (cf. appendix 212). As for the use of katakana, it is either to put stress on the word itself, or for the shape of the characters. Katakana are, by essence, parts of letters (cf. *supra*), which makes them simple, slender character, very capable of transmitting the idea of purity and fairness. Advertisements such as appendix 213 use this idea of simplicity of the character to mean cleanliness, but also the tendency that Japanese people have to write their numerous onomatopoeia in katakana (cf. *supra*). キレイキレイ sounds very much like キラキラ *kirakira*, which is the onomatopoeia

for sparkling, or glistening. And what could be more sparkly than hands that have been cleaned by this soap? The round, simple drawings are echoes in the round gothic typeface, giving the product an image of being accessible, and that all members of the family, especially the children, should use it.

Play on words, and reading and sound associations are one of the fundamentals of Japanese advertising, called 語呂合わせ *goroawase*. In Japanese, numbers have various ways of being read, may they be read by themselves, in a group, or affixed with counters, which will change whether one is counting flat, cylindrical or heavy objects, machines or animals, etc. For instance, the number eight (八) can be read はち *hachi*, や *ya*, よう *yō*, はつ *hatsu*, やち *yachi*, やつ *yatsu*, な *na*, etc. Using all readings available, companies can turn their phone numbers into short sentences, much easier to remember than series of numbers! For instance, appendix 214 shows the online advertising banner of a removal company based in Nagoya, ウェルカムバスケット *Welcome Basket*. The phone number shown on the banner goes as follows: 0120-おひっこしやさん0754-83. The sounds おひっこしやさん *ohikkoshi ya san* simply mean “removal company”. The phone number transcribes the activity of the company, making it extremely easy for the customers to remember who to call when need be.

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The current typefaces we use then come from a long history of printing, where technology and design currents have gradually shaped and codified the glyphs we use as we know them. The definition of rules has contributed to turning typography into a design field, a sign system, therefore falling under the spectrum of fields that could be studied through the eye of semiotics. According to Crystal's 2008 *Dictionary of Linguistics and Phonetics*, semiotics is "*The scientific study of the properties of signalling systems, whether natural or artificial. In its oldest sense, it refers to the study within philosophy of sign and symbol systems in general [...]. In the second part of the twentieth century, the term 'semiotics' came to be applied to the analysis of patterned human communication in all its sensory modes, i.e. hearing, sight, taste, touch and smell.*" The concept of 'sign' in the semiotics field is very broad, and can be interpreted as something that can be understood as having a meaning, which is something other than itself, and which is therefore able to communicate information to the one interpreting or decoding the sign. According to Peirce (1932), "*nothing is a sign unless it is interpreted as a sign*", proving that the study of signs is not only relevant, it is also essential. Semiotics and typography is a rather new match, yet one that find its importance in our post-Gutenberg parenthesis era. Using the knowledge gathered so far on the origin of both letters and typography, let us now try and construct rules –the rules of typography as a semiotic mode.

\*

### **III. The semiotics of typography**

#### **a. Semiotics: looking for meaning in signs**

##### *i. A dyadic approach: signifier and signified*

One first semiotic model comes from Ferdinand de Saussure, a Swiss linguist and semiotician, often considered the founder of XXth-century linguistics (Wintle, 2002). Although he is considered one of the founders of semiotics – which he actually referred to as semiology – his ideas are in fact derived from Aristotelian and Neo-Platonist theories that can be traced back to the Middle Ages. To quote Munteanu (1996):

*"[A]s for the constitution of Saussurian semiotic theory, the importance of the Augustinian thought contribution (correlated to the Stoic one) has also been recognized. Saussure did not do anything but reform an ancient theory in Europe, according to the modern conceptual exigencies"*

As a linguist, Saussure in his analysis focuses of course on linguistic signs, such as words, lexemes, and graphemes. His analysis is called dyadic, meaning it splits every sign into two semiotic layers, namely the *signifiant* (“signifier” in English), and the *signifié* (“signified”). In Saussure’s words (1977), the signified is the concept of the sign, and the signifier is the sound pattern. He then qualifies his words by writing:

*“The sound pattern is not actually a sound; for a sound is something physical. A sound pattern is the hearer’s psychological impression of a sound, as given to him by the evidence of his senses. This sound pattern may be called a ‘material’ element only in that it is the representation of our sensory impressions. The sound pattern may thus be distinguished from the other element associated with it in a linguistic sign. This other element is generally of a more abstract kind: the concept.”*

The distinction is conventionally made now by accepting that the signifier is the form that is taken by the sign, and the signified refers to the concept linked to it. As time went by, Saussure’s ideas became more and more practical (Chandler, 2007). For instance, both the signifier and the signified were, to him, purely mental constructs (what he refers to as the “*impression of a sound*” for instance): one would think of the image of a boat (here, the signified), and would mentally link it to the word “boat” (the signifier), without having to say the word aloud. Further academic works, such as the ones from Jakobson (1990), gave the signifier a much more physical dimension, as something that can be seen, touched, smelled, tasted or heard.

The combination of signifier and signified, both forming a relationship called signification, is a sign. Both signifier and signified are essential for the sign to exist: there cannot be a signifier without any meaning, or a signified without any form (Saussure, 1977). However, the same signifier could represent different signifieds: the word open could be used both for the sign in front of a shop, or written on a push-button inside a lift: “*push to open the door*” (Chandler, 2007). Similarly, the concept open can be linked to various signifiers. The Saussurean analysis of signs favours the spoken word to the written one, considering the latter as a secondary, dependant on the former, yet comparable sign system (Saussure, 1977), turning the written word into the signifier, and speech into the signified. Considering that Saussure identified semiotics as “*a science which studies the role of signs as part of social life*” (1977), it is rather ironic to consider that his vision of linguistic signs is this immaterial (not to mention “*abstract*”, a term that he despised (ibid.)). The philosopher and writer Susanne Langer (1951),

although unrelated to Saussurean semiotics, helps shed some light as to why the vision is this disconnected to the physical world:

*“Symbols are not proxy for their objects but are vehicles for the conception of objects. [...] In talking about things we have conceptions of them, not the things themselves; and it is the conceptions, not the things, that symbols directly mean. Behaviour towards conceptions is what words normally evoke; this is the typical process of thinking. [...] If I say “Napoleon”, you do not bow to the conqueror of Europe as though I had introduced him, but merely think of him”*

The immateriality of the Saussurean signs is because the sheer value of words resides in the lack of value words have in themselves, which allows signs to convey communicative transparency. Saussure uses the analogy of a chessboard and its pieces to illustrate his idea: each piece has a different value depending on its position on the board, the same way that *“the sign is more than the sum of its parts”* (Chandler, 2007). Because of this lack of intrinsic value, relations between signs are essential to create meaning; he writes *“everything depends on relations”* (1977), meaning that no sign can, by itself, convey meaning; only relations between signs can do so. This means that both the signifier and the signified are essentially relational concepts. This can be difficult to grasp, for one may think that a flower is a flower, and that the word “flower” does have a meaning by itself. The Saussurean logic would yet argue that the meaning of “flower” can only be understood through its relation to an environment of words, such as “garden”. There are therefore two levels of relationships in Saussurean signs: the relationship between signifier and signified, and the relationship between signs. To sum it up, while signification (in the sense of “what is signified”) undoubtedly relies on the relationship between the two parts of a given sign, the value of said sign is defined by the relationships between the sign and other signs within the system as a whole. Saussure (ibid.) illustrates this distinction with the example of the word “sheep”:

*“The French word mouton may have the same meaning as the English word sheep; but it does not have the same value. There are various reasons for this, but in particular the fact that the English word for the meat of this animal, as prepared and served for a meal, is not sheep but mutton. The difference in value between sheep and mouton hinges on the fact that in English there is also another word mutton for the meat, whereas mouton in French covers both.”*

The difference between sheep and mutton is a good example of the Saussurean conception of differential meaning. Therefore, each sign, of any semiological system exists in distinction from the other ones. Advertising is a good example of this differentiation of signs:

when advertisers position a product, they generally do not do it through the relationship of advertising signifiers and real world, physical referents, but rather use the differentiation of each sign from the others to which it is associated. The differences between signs are mostly negative: a sign exists by contrast with other signs of a similar system. For instance, if one had to explain the colour blue to someone who does not share the same language, instead of picking various blue items, one would find it easier to choose the blue item out of a collection of similar items, only different by colour.

One last trait of the Saussurean signs is their arbitrariness, which is also the principal feature of language, according to Saussure (1977). The idea of an artificial relationship between signifier and signified is not new, since it was debated by Plato in his *Cratylus*. This arbitrary relationship between signifier and signified is what Hockett (1958) refers to as the “*design feature*” of language, and could explain the exceptional changeability of language (Lyons, 1977). The arbitrariness refers to the fact that there is no natural, nor inherent connection between a concept and how we word it, may it be in speech or in writing, as Saussure writes, “*the signs used in writing are arbitrary. The letter t, for instance, has no connection with the sound it denotes*”. It is here important to note that this concept could not be applied to Japanese writing! Indeed, as we have seen before, many of the Japanese kanji, by their very nature and history, defy this rule of arbitrariness. The artificiality of the signifier/signified relationship also comprises the fact that different languages use different signified to refer to the same signifier (a tree is “*un arbre*” in French, and “*木*” in Japanese), and the acknowledgement that it is impossible to define a signifier better suited than another. Arbitrariness is a rather radical statement, in so as it defines languages as autonomous from reality. As Chandler (2007) states:

*“The Saussurean model, with its emphasis on internal structures within a sign-system, can be seen as supporting the notion that language does not reflect reality but rather constructs it.”*

The arbitrary characteristic of signs does help to explain the scope for their understanding (and the importance of context). There is no one-to-one link between signified and signifier; signs have manifold meanings, rather than unique ones. Within the frame of a single language, one signifier may allude various signifieds (with the clear example of puns) and many signifiers may account for a single signified, which is the case with synonyms. Critics such as Jakobson (1990) point out that some signifier/signified relationships are not completely artificial, with the example of onomatopoeia, particularly those of the sounds made by animals we are accustomed to. This point of view is valid, yet weakened by the variation of

interpretation of the same sound that is made around the world (the ガォー *gaō* made by a Japanese lion is quite far from its English counterpart, “rawr”). Saussure’s answer to critics is the recognition of a certain nuance in the arbitrariness of the relationships. If linguistic signs were to be completely arbitrary, language would not be a system and its communicative purpose would be destroyed. While the sign is not defined out of the language, it must undergo some intra-linguistic determination. For instance, signifiers must come about as well-formed sets of sounds which agree with existing patterns within the language in question: a new word in English that would need to be pronounced with the guttural French [r] sound would not match the language. Besides, a compound noun such as “screwdriver” is not completely arbitrary since it is an eloquent association of two existing signs. Saussure (1977) then concedes with the idea of degrees of arbitrariness:

*“The fundamental principle of the arbitrary nature of the linguistic sign does not prevent us from distinguishing in any language between what is intrinsically arbitrary – that is, unmotivated – and what is only relatively arbitrary. Not all signs are absolutely arbitrary. In some cases, there are factors which allow us to recognize different degrees of arbitrariness, although never to discard the notion entirely. The sign may be motivated to a certain extent.”*

Here, then, Saussure adjusts his stance slightly and refers to signs as being “*relatively arbitrary*”. Natural languages are not randomly defined, unlike past creations such as the Morse Code. Nor does the arbitrary nature of the sign make it politically or socially ‘neutral’ (understood as “free of connotation”): in Western culture, “white” has come to be a privileged (but stereotypically ‘invisible’) signifier (Dyer, 1997). As Lévi-Strauss stated, the sign is arbitrary *a priori* but no longer is *a posteriori* – after the sign has come into historical existence, it cannot be arbitrarily changed (Lévi-Strauss, 1963). As the sign becomes a historical reality and is used, it acquires a history of its own, and a connotative dimension. Saussure writes that “*a language is always an inheritance from the past*” which, as a user, one has “*no choice but to accept*”.

The arbitrariness principle does not, of course, imply that anyone can arbitrarily choose any signifier for a given signified. The signifier/signified relation is not a matter of individual choice; should it be the case, any communication would be rendered impossible. As an individual, a mother tongue is a “given”: no one creates a system for themselves. Saussure considered the language system as a non-negotiable ‘contract’ into which one is born. The ontological arbitrariness that it encompasses becomes imperceptible to us as we come to accept it as natural.

ii. Peirce's trichotomy

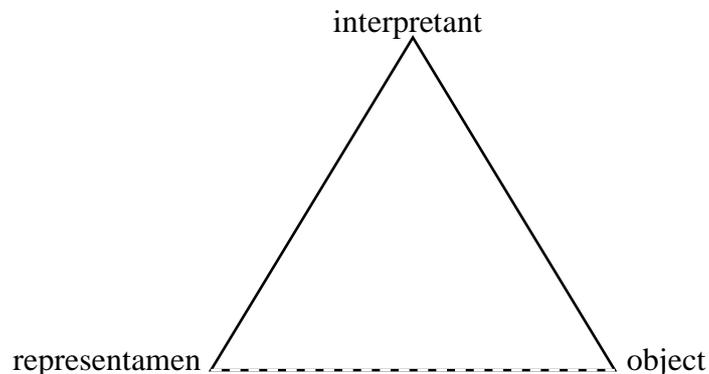
Another approach to semiotics is the triadic one, conventionally theorised in the United States by the scholar Charles S. Peirce. Where the Saussurean conception of a sign could be considered as a “*self-contained dyad*”, the Peircean consideration can be defined as “*something that relates to something else for someone in some respect or capacity*” (Merrell, 2001). Let us first explain this rather hazy statement. As it is understood in the word triadic, the Peircean approach divides the sign in three parts: the *representamen*, which is the form which the sign takes (its physical, material one in the case of a tangible object), the *interpretant*, which concerns the sense that one makes of the sign, and the *object*, which stands for “*something beyond the sign to which it refers*” (Chandler, 2007). To quote Peirce (1932):

“A sign... [in the form of a representamen] *is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the interpretant of the first sign. The sign stands for something, its object. It stands for that object, not in all respects, but in reference to a sort of idea, which I have sometimes called the ground of the representamen.*”

All three elements are essential to define a sign, which is the result of what is depicted (the object), how it is depicted (the representamen), and how it is interpreted (the interpretant). Before we go any further into explanations, the conception of object needs to be slightly qualified. Peirce (along with Merrell, 2001) create a distinction between the “real” object and the “semiotic object”, the latter being the one which will be discussed from now on. According to Peirce, our knowledge of the world can never be absolute, only an approximation of the “real” world as it is, or as it is becoming. Expanding such a claim, the object that one can see, touch, taste, hear or smell, the “semiotically real object” can never be exactly similar to the “really real object”, for the world is far too complex for our minds to grasp it all. Therefore, an object can never be more than “semiotically real”. Object and representamen are mediated by the interpretant, which both creates an interrelation between them both, and with the interpretant. A proper, balanced sign offers these three, interdependent parts. Munday, retrieved in Chandler (2007), illustrates the three parts of a sign as a box:

*“The three elements that make up a sign function like a label on an opaque box that contains an object. At first the mere fact that there is a box with a label on it suggests that it contains something, and then when we read the label we discover what that something is. The process of semiosis, or decoding the sign, is as follows. The first thing that is noticed (the representamen) is the box and label; this prompts the realization that something is inside the box (the object). This realization, as well as the knowledge of what the box contains, is provided by the interpretant. ‘Reading the label’ is actually just a metaphor for the process of decoding the sign. The important point to be aware of here is that the object of a sign is always hidden. We cannot actually open the box and inspect it directly. The reason for this is simple: if the object could be known directly, there would be no need of a sign to represent it. We only know about the object from noticing the label and the box and then ‘reading the label’ and forming a mental picture of the object in our mind. Therefore, the hidden object of a sign is only brought to realization through the interaction of the representamen, the object and the interpretant.”*

Eco (1976) illustrated the Peircean model as follows:



If a parallel had to be made between the dyadic Saussurean conception of sign and the Peircean version, the Peircean representamen would roughly equal Saussure’s signifier. The interpretant could potentially be the signified, albeit the difference that it is itself a sign in the mind of the interpreter. To understand this and Jakobson’s remark *“the meaning of the sign is the sign it can be translated into”* (1971) and the principle of unlimited semiosis, which we will come back to later, let us remember that to Peirce, one cannot understand the world, nor the reality, in its entire complexity. Since our knowledge is only partial, any interpretation can be reinterpreted, which brings the concept of unlimited semiosis, which Umberto Eco conjectures in his *Theory of Semiotics* (1976). Because one’s interpretation of a sign becomes a

representation of the sign, this representation can be reinterpreted, leading to another representamen, and so on. Reasonably anguished by such a perspective, Eco finds an answer, in the form of what he calls an “*energetic interpretant*”. Essentially, to him, the interpretant produced by an object is double in nature. There is on one hand the emotional interpretant, the mental sign, the mark that, in each and everyone’s mind, creates the link between an object and a sign. Interpretations, within affective interpretants, have consequences remaining within the framework of interpretation and change of representations, without altering behaviour in any way. “Energetic interpretant” is, on the other hand, the one creating a change of habit (Eco, 1984). When this seemingly infinite sequence of representations of representations leaves the mental milieu to enter a more applied one, causing a change in behaviour, “*our way of acting within the world is either transitorily or permanently changed*” (ibid.). This new mindset, this practical aspect, is the final interpretant that ends the endless cycle of semiosis, proposing a tangible result to hang onto.

One key difference between the dyadic and triadic model is Peirce’s object (or referent). The inclusion of a more tangible term goes in contradiction with the Saussurean model, which was more intellectual (cf. *supra*). Of course, the Peircean object is not restricted to physical things, and encompasses more intangible concepts, but the choice of words definitely left space for materiality. The separation of objects and interpretant derives from Peirce’s belief that ‘meaning’ comes from both ‘reference’ (the object) and ‘sense’ (the representamen and the interpretant), which would allow a broader consideration of what is a sign (Bruss, 1978).

The Saussurean idea of signs is that of an arbitrary relationship between signifier and signified (cf. *supra*). Peirce’s model embraces a broader vision, with both arbitrary, or conventional signs, and natural signs, which resemble the object they depict. During the IVth century CE, St. Augustine, in the second book of his *De doctrina christiana* (translated in 1995 by Green), defined natural signs as ones that could be interpreted as such thanks to an immediate link to what they signified, even when no conscious purpose had formed them as such. For instance, smoke indicates fire, and footprints can indicate that an animal or a person has passed by. Peirce offers more than just a separation between natural and arbitrary signs, and has even built a typology of them, classified in different “*modes of relationship*” between sign vehicles and what is signified (Hawkes, 1977). The terminology ‘mode’ is rather definite, even though one could easily slip and characterise the ensuing categories as ‘types’. A sign can be iconic, indexical or symbolic, or even a combination of all. For instance, “*a map is indexical in pointing to the locations of things, iconic in representing the directional relations and distances between*

landmarks, and symbolic in using conventional symbols (the significance of which must be learned)” (Chandler, 2007).

- Icon

The icon is the simplest mode, since it is a pattern that physically resembles what it ‘stands for’. Icons have qualities which “resemble” those of the stuffs they characterise, which cause them to “*excite analogous sensations in the mind*” (Peirce, 1932). Simply because an interpretant bears a resemblance to that which it portrays does not necessarily make it purely iconic. Langer (1951) argues that “*the picture is essentially a symbol, not a duplicate, of what it represents*”. Pictures look like what they epitomise only in some aspects. What we tend to identify in an image are analogous relations of parts to a whole (ibid.). There is of course a lexical issue with terms such as “icon”, “index” and “symbol” (cf. *infra*) since their semiotic, technical meaning differs from their everyday, vulgarised ones. An icon, in popular terms, refers to three things:

- Religious icons, which are visual artworks of holy images, designed to be venerated.
- Computer icons, those small images that signify specific functions. Icons can actually convey an iconic mode, but according to the ones that are referred to, computer icons can also be indexical, or symbolic (cf. *infra*).
- The noun “icon”, and the related adjective “iconic”, can be used to refer to a person or an item which is famous among a given community or culture.

In the Peircean sense, the major feature of iconicity is purely alleged semblance. Peirce (1932) stated that an iconic sign represents its object “*mainly by its similarity*”. Note that notwithstanding the name, icons are not automatically visual (cf. *infra*). A sign is an icon “*insofar as it is like that thing and used as a sign of it*” (ibid.). On Saussurean terms, it would be a signifier that imitates the signified. For instance, a picture or a portrait of your face is an icon of you. The little picture of a printer in any computer software is an icon of the printing function (however, the actual word ‘print’ is not an icon, since the letters of the words and the act of printing in itself do not resemble each other). Words also can be, at least partly iconic. Onomatopoeias, onomatopoeic words such as “bow-wow”, “splash” or “hiccup” resemble the sounds they represent- at least a little. And the bird called the whippoorwill produces a call resembling this English phrase, so whippoorwill is an iconic word. In Japanese it is common in hypocoristic speech to use animal sounds to refer to the animals that make the sounds. For example, ワンワン wan-wan may mean ‘dog’, and モーモー mō-mō may mean ‘cow’. Even if a word is, by itself, not iconic, it can be pronounced in an iconic way: by saying “*Kazuya took*

*a carrot and went chop chop chop chop*”, instead of “*he chopped it*”, the discourse gives “*chop*” an iconic dimension. Imitative gestures, such as stretching one’s hand, palm facing outwards, to mimic a stop, are also iconic. Because iconicity relies on resemblance, there is debate over how similar a word must be to the signified to be iconic.

Semioticians commonly claim that there are no ‘pure’ icons (Chandler, 2007). In his 1976 *Theory of semiotics*, Eco provides an extensive critique of iconicity. All artists use stylistic conventional techniques and these are, of course, customarily and historically inconstant. Peirce (1932) wrote that although “*any material image*” (a painting, for instance) may be considered as looking like what it aims at depicting, it is “*largely conventional in its mode of representation*”. He then claims:

*“We say that the portrait of a person we have not seen is convincing. So far as, on the ground merely of what I see in it, I am led to form an idea of the person it represents, it is an icon. But, in fact, it is not a pure icon, because I am greatly influenced by knowing that it is an effect, through the artist, caused by the original’s appearance... Besides, I know that portraits have but the slightest resemblance to their originals, except in certain conventional respects, and after a conventional scale of values, etc.”*

- Index

An index is defined by some sensory feature. Indexicality, because of its intricacy, is probably the most unfamiliar sign system. It is a mode in which the representamen, or the signifier, is not arbitrarily, but rather directly connected, in some way, to the interpretant, or the signified. This relationship is either physical or causal, and do not depend on the intention of the subject. Typically, it can be understood that a sign A, something that can be seen, heard, smelt, touched or tasted, connects with, infers or points towards B, something that would be of interest to an animal (Gasser, 2012). Indexicality is then automatically rooted in the physical world, since Peirce considers the object of in this sign-meaning creation “*necessarily existant*” (Peirce, 1932), and their connection “*a matter of fact*” (ibid.). Whereas iconicity is categorised by similarity, indexicality is defined by contiguity. Peirce (ibid.) writes: “*Psychologically, the action of indices depends upon association by contiguity, and not upon association by resemblance or upon intellectual operations*”. To Bruss (1978), indexicality is “*a relationship rather than a quality. Hence the signifier need have no particular properties of its own, only a demonstrable connection to something else. The most important of these connections are spatial co-occurrence, temporal sequence, and cause and effect*”.

All animals use several kinds of indexical signs when dealing with the world. The more intellectually developed animals are good at learning and exploiting more advanced indices: a cat will use and learn many more indexical signs than a frog, a fish or an ant -- which tend to be restricted to ones acquired innately (ibid.). For instance, it is commonly thought in France that when swallows are flying low, a storm is coming. This indexical sign has scientific roots (as cumulonimbi drag the hot air up, only cold air is left underneath, and midges, which are swallows' privileged food, must fly lower to benefit from warmer temperatures; the swallows simply follow the midges) which are often ignored for the sign in itself. There, the link between the swallows (the signifier) and the storm (the signified) is observed and inferred; the same way one infers fire when seeing smoke, sound when hearing echo, flowers when smelling them... Other indexical signs can be medical (a symptom is an indexical sign of a disease, or an infection), measured (time is measured by a clock, temperature by a thermometer), signalled (a knock on the door means someone would like to come in), personal trademarks (slang, catchphrases or handwriting), etc. All these examples depend on a certain statistical uniformity of part A (the signal pattern) with part B (the behaviorally relevant state). The exploitation of this regularity requires first, detecting property A (which is not necessarily simple) and either learning (or innately knowing) its correlation with the B. The indexical connection needs not be perfect. It isn't always warmer closer to the sea surface, swallows flying low don't always mean the rain is coming this way, and even a stoplight can be broken sometimes, which means that even if it does not turn green or red, it can be either safe or dangerous to cross the street. This doesn't detract from the usefulness of these signs to guide one's life in a confusing and only partly predictable world. Words are said to be indexical when they directly point to their meaning - without depending on any relationship to other words. Thus, words like here, there, I, me, you, this, etc. For all of these there is an implied pointing gesture. A connection can be found with the Latin root of the word index, since it originally only referred to the index finger, which is traditionally used to point at things. Of the three modes, only indexicality can serve as evidence of an object's existence.

- Symbol

The two precedent semiotic modes can regroup natural signs, since there is either a physical resemblance (iconic) between signified and signifier, or at least a direct connection (indexical) between the two. The symbolic mode is much more conventional, if not arbitrary (Peirce, 1933). A symbolic relationship between a representamen and an interpretant needs to be agreed upon, and learnt by the language users. Nowadays language is usually observed as a (mostly) symbolic sign-system, yet Saussure avoided defining linguistic signs as 'symbols'

precisely because of the risk of misunderstanding with popular usage (Chandler, 2007). For instance, let us consider the word 'kitty'. On the one hand, this noun could be considered as an index for a cat, for English speakers. One could easily point at a cat and say "kitty". Yet it is quite rare for the utterance of a word to connect with the thing it refers to. Sometimes such a correlation exists, of course, but a word in any language is vastly more complex and sophisticated even for language-learning infants. Some signs that show that "kitty" is not indexical to the cat is that, for instance, the word "kitty" can be used even when a cat is not here, proving that the connection between the animal and the word is rather weak. Such a connection is at work when language users refer to entities that do not exist, such as "fairy", "god", "unicorn" ... None of these could be indices, for no one could point at them. However, mentioning a symbolic sign often enables the utterance of other words with which the original word (here, "kitty") shares strong connections, such as "cat", "cute", "soft", "fluffy", "cat food", etc. (Gasser, 2012). This suggests that the word "kitty" may be somehow physically linked to these other words in the brain. It also infers that "kitty" finds some meaning in the very stimulation of just these specific words (and their related emotional dimension) when the word "kitty" is spoken (Chandler, 2007).

These word-to-word connections, also referred to as word-associates, are critical for anchoring the meaning of a word without any necessary correlation in space and time between the signal (the sound of the word) and its meaning. Because of the directness of the connection between representamen and interpretant, indices do not require any such set of relationships to work as signs. Symbols, like most words in a human language, are (a) easily detachable from their context, and (b) are closely associated with large sets of other words. They allow humans to have a vocabulary that goes beyond their immediate environment: even children who have grown in an area where the climate is very hot know the word "snow", and even if they have never actually experienced the phenomenon, can link it to other words such as "cold", "white", "flake", "ice", etc. (Merrell, 2001). Thanks to these connections, the users get an idea of what experiencing snow is like - enough to read and produce the words fittingly. This is the enormous power of human symbols: once one has learnt a basic lexicon, based in part on indexical relationships, one can use it as a bootstrap to many other new concepts and words (ibid., Gasser, 2012). Given the opportunity of transgenerational cultural transmission, human knowledge and understanding have become cumulative and have grown at a very rapid rate, in comparison to the creation and transmission of innate knowledge. Symbols can also be nonverbal: although words stand for the archetypic symbol, non-words, such as flags, mascots or totem animals, fonts and logos are also symbols, for they directly link to other words. Mathematical and logical symbols also get their meaning from their relation to other symbols. Thus,  $\pi$  *pi* is defined as the

ratio of the circumference of a circle to its diameter:  $\pi = c/d$ . Therefore, nonword symbols, even when they do not have a phonetic form or attribute linked to it, act very much like words.

As we have mentioned before, the three modes coexist, and are not in the least exclusive of one another. Jakobson (1971) considers there is a “*relative hierarchy*” between the modes, where context imparts dominance to one mode over other(s). The same signifier may be used following the iconic mode in one context, and symbolically in another: a picture of a woman may stand for some comprehensive category such as ‘women’ or may more explicitly only stand for the woman depicted on the photograph. Signs cannot be separated in terms of the three modes without mentioning the purposes of their users within specific frameworks. A sign may thus be perceived as indexical by one person, as iconic by another and as symbolic by a third. Signs may also alter in mode as time goes by. As an illustration, a Rolls-Royce is an index of wealth because one must be quite affluent to acquire one. However, social usage has turned the brand into a conventional symbol of wealth (Culler, 1975).

There is a general tendency for signs to move from the more “natural” modes (iconicity and indexicality) towards the conventional symbolic one. The example with linguistic signs can be found in the evolution of the Latin alphabet (cf. *supra*), from cuneiform and hieroglyphs to letters. The anthropologist Lévi-Strauss (1963) acknowledged a comparable general shift from motivation to arbitrariness within the theoretical structures employed by specific cultures.

Eco proposes another difference between sign conveyance. This new perception relates to the notion of tokens and types which stems from Peirce (Eco, 1976; Peirce 1933b). In relation to words both in a speech or a written text, the amount of token corresponds to the amount of words that are used, no matter what type. A count of types relates to the amount of different words used, without the repetitions. In semantics terms, tokens instantiate (meaning “are instances of”) their type. Eco (2000) notes that “*grouping manifold tokens under a single type is the way in which language [...] works*”. Lyons (1977, quoted in Chandler, 2007) states that purpose is what can define a sign as a token or a type:

- “*Are tokens to include words with different meanings which happen to be spelt or pronounced in the same way?*”
- *Does a capital letter instantiate the same type as the corresponding lower-case letter?*
- *Does a word printed in italics instantiate the same type as a word printed in roman?*
- *Is a word handwritten by X ever the same as a word handwritten by Y?*”

To semioticians, these questions could only be answered case by case, according to whether the sign users were considering giving forms a meaning. Eco's 1976 list of sign vehicles is slightly different, and more tangible:

- Signs which have been copied several times (i.e. have several tokens) of the same type (e.g. a printed word, or exactly the same model of car in the same colour)
- “*signs whose tokens, even though produced according to a type, possess a certain quality of material uniqueness*” (e.g. a word that is spoken or handwritten)
- “*signs whose token is their type, or signs in which type and token are identical*” (e.g. the original, unique version of an artwork)

The type–token discrepancy may impact the way in which a text is understood, especially nowadays, in our technological society here reproductions of an original – tokens of the initial type – prevail (Benjamin, 1968). We have all seen multiple variations of Da Vinci's Mona Lisa: in postcards, in illustrations, and even distorted versions in the multiple parodies of the artwork that exist. Therefore, when seeing the actual painting, our judgement is biased based on our impressions of the painting that the copies have provided us. Mentioning the type–token discrepancy when dealing with signs is significant in social semiotic terms not as an utter characteristic of the sign vehicle but only when context and/or users give this dimension importance.

### iii. The theorisation of signs: a Japanese approach

The Japanese term for semiotics is 記号論 *kigōron*, which could be literally translated as “theory of signs”, since 記号 *kigō* stands for “symbol”, “sign”, or “code”, and 論 *ron* is the “theory”, the “argument” or the “discourse”. However, this word imported from China has an equivalent 和語 *wago*, a word which originates from Japan: *shirushi* (Toyama, 1986). The latter is usually translated in English as “mark”, but also encompasses a broad range of meanings, from an impression to an omen, each meaning depicted by the use of a different kanji for the same pronunciation: 印, 標, 徴, or 証 being the most used examples. Another term to mention ‘symbol’ as an aesthetics or literary criticism term is 象徴 *shōchō*, but this rather new word was not in use before the end of the XIX<sup>th</sup> century (Shinmura, 1976). The main difference between the terms *shirushi* and 記号 is that *shirushi*, through its various meanings, conveys an

overall impression of tangibility, whereas its Chinese counterpart would refer to more abstract signs (Toyama, 1986). Although there is a definition of what a sign is, according to Toyama (ibid.) “*semiotics as such did not develop in Japan*”. Rather than academia, perception and apprehension of signs has been done through several media, such as religion, philosophy and aesthetics.

Japanese aesthetics have long fascinated the Western world, inspiring key essays such as Barthe’s *Empire of Signs* (1983). Because Japanese aesthetics are remarkable by their complexity, it would be difficult to have a completely comprehensive explanation of all Japanese visual codes. However, let us go over the most important ones.

- 余白の美

余白の美 *yohaku no bi* is literally the “beauty of the margins”, since 余白 *yohaku* stands for “blank/white excess space”. This aesthetic concept aims at finding beauty in paucity, elevating blank space to the same rank of beauty as the space that are filled in. The beauty of blanks is a concept that is present throughout various Japanese art forms, that range from traditional music with long pauses between the sounds, to pictorial art, or even gardening (Timmons, 2012). *Yohaku-no-bi*’s use of empty space moreover embodies the concept of nothingness (understood as ‘no-thing-ness’), that any perception of an item as a continuous thing is flawed; the notion of a ‘thing’ in this respect is eventually non-existent. The use of *yohaku-no-bi* to artistically depict a concept in this way is archetypal of Japanese aesthetics (Keane, 1996). This concept can be linked to the Western “less is more”, which equally appreciates the beauty of the void. *Yohaku-no-bi* is traditionally linked to another crucial concept in Japan, called 間 *ma*. In Isozaki’s 1979 exhibition catalogue *Ma, space-time in Japan*, 間 is defined as follows:

*“MA is literally defined as ‘the natural interval between two or more things existing in a continuity’, or ‘the natural pause or interval in which phenomena arise through time’ [...] MA is filled with signs of the ephemeral [...] At the root of this idea lies a sense of the dissolution of all things. Thus all phenomena may be regarded as existing at a temporary stage ...”*

The concept of *ma* is actually embedded in the Japanese society. To understand what it means, one must go to the origin of the character. Before being written with the radical of the sun 日 enclosed in the radical of the gate 門, it was the radical of the moon 月 that appeared in

the central part of the kanji. *Ma* stood for the delicate, ephemeral moment of a doorway bathed in moonlight, which conveyed both the tangible and emotional dimensions of *ma* (Nitschke, 1993). According to the characters and the context it is placed in, *ma* conveys a vast array of notions, ranging from straight-lined, unidimensional distances (for example 梁間 *hari-ma*, which stands for an architectural unit of distance), two-dimensional surfaces (二畳の間 *nijō no ma*, a two-tatami-wide room), three-dimensional spaces (貸間 *kashi ma*, a room to let), or even four-dimensional concepts, usually blending space and time, with the simplest example of the word 時間 *jikan*, which means “time”, but literally stands for “the place of the time”. Nitschke (ibid.) writes:

*“This is abstract time, with no indication of length, beginning or end. The ji [時] character, which incorporates the radical for “sun,” is said to have denoted “forward movement of the sun” in ancient China. In Japanese the character is also pronounced toki, perhaps from the very old Japanese verb toku, to melt or dissolve. Thus “time” is expressed in Japanese as “space in flow,” making time a dimension of space. Indeed, time is essential to human experience of place.”*

The dimension of *ma* that is of real interest here is the artistic one, since it is the one that joins the concept of 余白の美: when one is appreciating art, a calligraphy work for instance, a possible comment would be “間が上手い” *ma ga umai*, meaning the balance between blank and filled in space is good. Any amateur calligrapher soon understands that skill lies not only in becoming proficient in drawing the characters, but also in the association between the form to the adjacent non-form. This equilibrium of form and space will always be taken into account in the concluding artistic verdict. The proper appreciation of 書道 *shodō* also takes into account the dimension of time, for calligraphy is more than just painting or drawing. It is a complex combination of poetry, movement and action painting. It is not only the definition of a layout, but also the elaboration of rhythm in time — the shapes of the strokes and speed of the brush.

- 侘寂

侘寂 *wabi-sabi* is an aesthetic concept that derives from Buddhism. In the Buddhist religion exists a concept called the “three marks of existence” (in Japanese 三法印 *sanbōin*),

leading to a life without suffering (Morigami, 2015). These marks are: 無常 *mujō* impermanence, 苦 *ku* “unsatisfactoriness” and 空 *kū*, the absence of self. Together, they transcribe a vision adaptable to art which would find its beauty in being “*imperfect, impermanent, and incomplete*” (Koren, 1994). To Koren (ibid.), wabi-sabi is everywhere in Japan, and has completely outgrown its initial aesthetic framework to become “*the most conspicuous and characteristic feature of traditional Japanese beauty and it occupies roughly the same position in the Japanese pantheon of aesthetic values as do the Greek ideals of beauty and perfection in the West*”, ideals which wabi-sabi sounds like it is the counterpart of.

Similar to the aforementioned case of 間, understanding the characters of 侘寂 help understand the concept of it. Both kanji used to have a rather negative connotation: *wabi* initially denoted the solitude of living in nature, distant from society; *sabi* meant “chill”, “desolated” or “withered”. The acquisition of the characters by Buddhism helped link these characters to more positive notions. *Wabi* endorses rustic simplicity, brightness or softness, and can be used to define both natural and manmade objects, or to inconspicuous elegance. It can also refer to quirks and irregularities arising from the process of creation, which add distinctiveness and elegance to the item. *Sabi* is beauty or quietude that comes along with age, when the lifespan of the object and its ephemerality are showed in its patina and wear, or in any noticeable upkeep (ibid.). For perspective, and possibly understanding, it might be useful to look back at the context when the *wabi* tea ceremony—the form and spirit of wabi-sabi—was being developed. During the XVI<sup>th</sup> century, the city of Kyoto was entangled in civil conflict. The mood of the public was sober, if not disheartened. Many treasured assortments of sophisticated Chinese apparatuses—the kind of “perfect” items then favoured in the tea ceremony—were being ruined. Additional objects were required. Japanese-made substitutes, though less polished and comparatively rudimentary, were available and reasonably valued. So they were used, changing the atmosphere of the ceremony into a more demure, ascetic moment. To quote Koren (2013):

*“The beauty of wabi-sabi is rooted in modesty—even poverty—that is elegantly perceived. The aesthetic pleasures of wabi-sabi depend on attitude and practice as much, or more, than on the materiality itself. Subtlety and nuance are at wabi-sabi’s heart. Wabi-sabi resides in the inconspicuous and overlooked details, in the minor and the hidden, in the tentative and ephemeral. But in order to appreciate these qualities, certain habits of mind are required: calmness, attentiveness, and thoughtfulness. If these are not present, wabi-sabi is invisible.”*

- 可愛い

可愛い (also written かわいい) *kawaii* is a word that means “cute”, or “adorable”, and that is only used in a Japanese, or Japanese-like context (Lebra, 2004). The concept celebrates all things “*sweet, adorable, innocent, pure, simple, genuine, gentle, vulnerable, weak, and inexperienced*” (Kinsella, 1995). The word *kawaii* finds its origin in the set phrase 顔映し *kao hayushi*, which exactly stands for “(one's) face (is) radiant”, generally used to describe a blush, a flush, or a guilty conscience. The second character is related to the *-bayu* in *mabayui* (written 眩い or, in the way that interests us here, 目映い) which means “dazzling”, “radiant”, “blinding” (the sound *ma-* comes from 目 *me* “eye”). Over time, the meaning of the phrase evolved to its modern connotation of “cute”, and the pronunciation turned to かわゆい *kawayui* and then to the modern かわいい (Maeda, 2005). While the word is most frequently written in hiragana, かわいい, the ateji (cf. *supra*) 可愛い has also been approved. The kanji in the ateji expression literally translates to “someone who is able to be loved”, or “lovable”. The expression *kawaii* can first be found in *The Tale of Genji* (cf. *supra*), to denote deplorable qualities. During the Shogunate era, under the dogma of neo-Confucianism, women came to be linked to the term *kawaii* as the vision of women being animalistic was substituted with that of women being submissive (Shiokawa, 1999).

The concept of *kawaii* emerged during the first half of the 1970s, through both the newfound craze for childish fashion, and the development of a new handwriting style (cf. appendix 215), used mostly by women (Kinsella, 1995). What could have been just a fad became a nation-wide phenomenon, and by 1985, about five million people were using this new handwritten style. Derived from the development of mechanical pencils in Japan and their use instead of the traditional brushes, *kawaii* handwriting was first very badly perceived, because the insertion of random cute pictures such as hearts and stars, or of both katakana and Roman letters made it hard to read. The first research made about cute handwriting in 1986 by 山根一真 *Yamane Kazuma* was eloquently called *Anomalous Female Teenage Handwriting*. *Kawaii* culture soon overgrew the boundaries of handwriting, and companies such as Sanrio and the designer 清水侑子 *Shimizu Yūko* developed cute characters, like Hello Kitty. People also

started to emulate the *kawaii* movement, and the values of cuteness, fragility, naïveté and mannerisms it carried have been proudly carried by celebrities such as 松田聖子 *Matsuda Seiko*, and have deeply influenced the vision of femininity and elegance in Japan, in both aesthetics and gender performatives (White, 1993). Japanese aesthetics have been so taken over by the *kawaii* phenomenon that in his 1994 *Kawaii Shōkōgun* (or “*Kawaii Syndrome*”), 増淵宗一 *Masubuchi Sōichi* sates that terms such as “cute” and “neat” have taken over other terms traditionally linked to Japanese aesthetics, such as “beautiful”, or “refined”. As a cultural movement, cuteness is more and more acknowledged in Japan as a part of the culture and national identity. 杉山奉文 *Sugiyama Tomoyuki*, the founder of the company and concept *Cool Japan*, states that “cuteness” is engrained in a culture that aims at making 和 *wa*, “harmony”, prevail. He said: “*Japanese are seeking a spiritual peace and an escape from brutal reality through cute things*” (Kageyama, 2006). Besides, the professor 栗田経惟 *Kurita Nobuyoshi*, who teaches sociology at Musashi University in Tokyo, has stated that “cute” is a “magic term” that includes everything that is satisfactory and desirable in Japan (*ibid.*).

- お洒落

お洒落 *oshare*, usually written in kana is a term whose etymology is quite complex. It first looks (and sounds) like 洒落 *share*, which means “joke”, “wit”, or “pun”. This very word *share* comes from 晒る *saru*, which stands for the natural bleaching of clothes due to time, weather and the sun and moon lights. It also derives from 戯る, also pronounced *saru* in the past, and now *tawamuru*. This term coins “frolic”, or “play”. Merged together because of their homonymy, they stand for “sophistication”, “tasteful flair”. The sound of the word shifted from *sare* to *share* during the Muromachi era, giving it its current sound. The kanji that are used, 洒落, denote a light-hearted, unconcerned mind, and because the sound of the two kanjis together sounds like *share*, they were kept as ateji during the Edo era. As for the meaning of the expression itself, it is probably based on 戯る more than 晒る, the former conveying ideas of quick-wittedness, cleverness, and eventually, style (Maeda, 2005).

Currently, oshare has referred to people who take great care of their appearance, and have been used by the fashion industry the way English would use “fashionable”, or “en vogue”. It has been defined by Kinoshita et al. (2008)’s research as an upper level of “cool”, and “beautiful”. Shimada et al. (2013) have found that “*OSHARE is not formed without high quality, regardless of the product’s design*”. There isn’t much academia that has been done on the subject, even though the economic and social impact of oshare are quite important. In his speech about Japanese aesthetics presented at the London semiotics summit *Space Doctors*, Arning (2016) defines oshare in the following terms:

*“Usually associated with the Economic Bubble of the 1980s and the fashion conscious, luxury label obsessed Japanese consumers. Carries connotations of snazzy as well as some class envy. [...] Aesthetically quite close to what we think of as premium design, which is slick, sleek and sharp often deploying blacks, metallics and greys.”*

- 派手

派手 *hade* is at the other end of the spectrum from oshare. If oshare was “*sleek and sharp*” (Arning, 2016), *hade* could be defined as “loud”, “gaudy”, “showy” or “flashy”. Bartal (2015) states:

*“[T]he contemporary hade style has motifs that are polychromatic, daring, colourful, exaggerated, dramatic, vociferous, and at times psychedelic and aggressive”*

In our current media, instantaneous impression is becoming more and more important, which is why *hade* is on the rise, especially in the world in Internet advertising, may it be banners or short videos (Arning, 2016). Quite representative of the Kansai area, especially Osaka, and parts of Tokyo such as Harajuku, the *hade* style is not however a complete debauchery of colours. There are rules and limits to the style. The creative director 宮田識 *Miyata Satoru* says, in an interview with Bartal (2015):

*“[T]here is a hade side, but there is also another side which is the shibui (subtle, delicate, and modest taste), and there are other sides as well. [...] For example, in the kimono – on top of the ma-aka (bright red color) they add a layer, and if the upper layer is lazuli or light blue, it results in a gentle red color.”*

The Japanese approach to design has yet again intrigued Western designers recently with their approach to web design. When wabi-sabi and Japanese aesthetics in general tend to display simple and uncluttered designs, Japanese websites tend to be the exact contrary, and most websites (cf. appendix 216, the homepage of the web merchant site Rakuten) “*look like they hail from around 1998*” (Gilbert, 2014), in a very 派手-like sense of aesthetics. They tend to display a lot – if not too many – elements on the same page, namely very dense text, a lot of small, low-definition images, several columns, very bright colours and animated, flashing banners, and on a more technical side, outmoded computer technology such as Flash. To the Western user, having this much information on the same page can be hard to handle. There are a few reasons, inherent to the language, that could justify such a display. The text zones seem to be very cluttered, because the use of 漢文 *kanbun*, meaning the whole sentences are written using kanji (cf. *supra*). This allows the designers and the advertisers to pack a lot of meaning in a few characters. Besides, because the Japanese language does not use stylistic devices such as italics (cf. *supra*), and rarely bold characters, web designers usually have to resort to using other means to emphasise a text, hence the abundant use of colours and tinkling banners. Gilbert (*ibid.*) also considers that, because most of the internet and the programming software are designed in English, or by English-speaking companies, most if not all the educational resources in those domains do not get published straightaway in Japanese, and that translation of content might lead to a delay in adapting style, design and technology. Besides those linguistic aspects, Gilbert also considers cultural and technical ones. He starts by stating that to avoid taking risks and standing out in a wrong way, companies simply replicate website models that have worked in the past, without pushing the site design or architecture further. Besides, companies seem to consider the internet not as an interactive tool, but rather just like another platform, and tend to design the websites along the lines of printed advertising, such as pamphlets, where all the information is meant to stand on one page, or on one side of a page. Lastly, following the rules of 派手, most websites are designed like the Rakuten one (appendix 216) to remind of the lively street of Shibuya in Tokyo, or of パチンコ *pachinko*, game arcades. One last reason that could explain the differences in appearance could come from lingering technical discrepancies. As we have seen before, Japan was the first country to use the internet on mobile phones, through the i-mode. Long before smartphones *per se*, and even before all laptops were connected, the Japanese flip phones allowed their users to freely browse the web. The phones screens were quite small then, and the resolution not as precise as it is now, which is why designers were forced to use 漢文 in small font size to cram as much information as

possible on those websites, and indulged in using low-definition images, to lighten the size (and the loading time) of web pages. Lastly, because fonts are tedious to create in Japanese (cf. *supra*), graphic designers usually play on graphics rather than text to highlight products.

Early works about semiotics in Japan have unfortunately been often overlooked if not completely forgotten, and books such as Tsuchida's phenomenological approach to signs *The Philosophy of Signs* (1919, reprinted in 1971) have been outshone by the importation of European and American theories, such as Saussure and Peirce's (Toyama, 1986). Barthes's first publication of *Empire of Signs* in the 1960s definitely propelled Japan on the international scene as a semantically, and semiotically rich culture – probably one of the richest there is, due to its many complementary sign systems for instance (cf. *supra*). One very interesting element described by Barthes is the conception of void, especially of an empty centre in the Japanese culture (Barthes, 1983):

*“The West has understood this law only too well: all its cities are concentric; but also, in accord with the very movement of Western metaphysics, for which every centre is the site of truth, the centre of our cities is always full... The city I am talking about, Tokyo, offers this precious paradox: it does possess a centre, but this centre is empty. The entire city turns around a site both forbidden and indifferent, a residence concealed beneath foliage, protected by moats, inhabited by an emperor who is never seen... The streets of this city have no names... the largest city in the world is practically unclassified. In this enormous city, really an urban territory, each district is placed on the rather empty map, like a news flash.”*

In the West, numbering of the houses induces a direction or movement along the street, not so in Japan. So as to move about the city, the visitor must write his own system of signs onto the environment of the street, and this becomes a Barthesian “*reader-as-author*” (ibid.). Barthes notices a similar notion of an empty centre wherever he focuses his attention; in Japanese aesthetics where the empty canvas/paper is a large part of what is seen (余白の美, cf. *supra*), or in poetry, for haiku is to Barthes a way to Zen nothingness, beyond God and beyond the ego of the author, which he claims as “*vision without commentary*”. Zen Buddhism is of course straightforwardly adequate to the hunt for the signifier without signified. Even eating in Japan is, to him, without centre or meaning: the Japanese was of dressing a table is traditionally fragmented and ornamental, and without the centrepiece, so frequent in Western cuisine. He

defines Japanese cooking as “*the twilight of the raw*” (ibid.). Of course there is a comparable empty centre in the text *Empire of Signs*, a tale not told and kept undisclosed to the reader, only to be deciphered *a posteriori*: Barthes’ visits to several male brothels in Tokyo. His own homosexuality is in this and many texts to follow yet another layer of secret signs, an empty space in the centre of the author of the text. To Japanese authors such as Ikegami (1991), the empty centre is not necessarily a weakness of the Japanese culture, rather one of its strengths. He writes:

“What is remarkable about Japanese culture or the Japanese language as well, is that this semiotic mechanism is working quite strongly [...] in order for alien elements to be admitted into the culture [...] The empty centre, however, could have no scruple about it, since it is at least theoretically ready to lend itself to, or even invites, all kinds of possible reorganization based on any standard of values and ideologies. A culture with an empty centre would thus tend to work centripetally – it is somewhat like the astronomer’s ‘black hole,’ which draws and absorbs everything into itself – without suffering any change at all. A culture with an empty centre can accommodate and keep in it apparently diverse elements.”

Besides Barthes’ publication that brought some interest to the Saussurean approach, semiotic studies were very marginal in Japan for quite some time. Famous writings came about some years later, with the works of Keizaburo Maruyama and Masao Yamaguchi, who have characterized the semiotics study in Japan. Their influence grew and they made the directionality of a Japanese semiotic study at that time (Muroi, 2008). Maruyama was a Saussurean specialist, and his ソシュールを読む *Soshūru wo Yomu*, “Reading Saussure” was published in 1981. This was a project of trying to point out what Saussure truly meant in his *Course of General linguistics* without saying it. Maruyama took as an example Saussure’s *Study of Anagram*, and supposed that an initial concern of Saussure was not “*langue*” as a synchronic system but rather “*language*”, understood as a diachronically and dynamically changing one. From there, he stated that understanding the semiotics of *signifiance* (e.g. linked to the signifier) instead of the semiotics of *signification* (linked to the signified) was more important. Through further research, Maruyama differentiated the articulation of the world by body (body-articulated structure) and by language (language-articulated structure), and he proposed an idea of “*life as excess*”. Here he suggested that culture is a kind of limits, fatally bestowed upon humanity, and highlighted the power of ‘life’ as a strength which overpowers various oppressive systems created by the ‘fetishism’, itself produced by the delusion which takes ‘substance’ for what is only a ‘sign’ (Muroi, 2008). This vision went against the arbitrary

conception of language assumed by Saussure (cf. *supra*). He drifted even further from Saussure by assuming that the Peircean issue of infinite semiosis (cf. *supra*) was a central principle of Saussurean linguistics.

Masao Yamaguchi's vision derives from his career as an anthropologist. He understood culture as caught between the opposite concepts of 'centre' and 'margin', and defined the model of 'culture' as a structural system, where contradiction and dichotomy 'activate' the whole (ibid.). His readership became quite broad very quickly, and soon it was considered that Yamaguchi's theory was the representative of semiotics in general in Japan. And in this cultural model, carnival or festival would play important roles, drawing Yamaguchi's work close to the Slav movements, and especially close to Bakhtin's theory of categories of Carnivals, theorized in his *Rabelais and his world* (1941). Based on this theory of *carnavalesque*, Yamaguchi applied it to Japanese cultural studies, and produced most of his work based on folklore and traditional events. Thus, the contemporary semiotic studies in Japan have been pushed forward and steered by Maruyama and Yamaguchi. Both regarded semiotics as a basic theory to account for the construction of the human 'culture' itself. Maruyama built an existential life philosophy, while Yamaguchi created a more hands-on way of researching, based on hermeneutics (Muroi, 2008).

## b. The Gutenberg parenthesis: a new context for textuality

### i. *Closing the bracket and entering secondary orality*

The *Gutenberg parenthesis* is a concept that emerged in the university of Southern Denmark. First a think tank available on the university website, it has outgrown this first context since Pettitt's 2007 *Before the Gutenberg Parenthesis: Elizabethan-American compatibilities*, which has first exposed the theory within the frame of academic writing. Pettitt, along with Sauerberg, another teacher from the university of Southern Denmark, propose this idea that we are currently witnessing a crucial change in our conception of media, and that this new era will have a dramatic impact on our behaviour, access and consideration of knowledge, and interpersonal relationships, to mention a few. In his essay *From Gutenberg to Google* (2006), Shillingsburg even considers that "we are now in the infancy of a textual revolution comparable to the one initiated by the invention of printing from movable type, from the XVth century" (as quoted by Pettitt in a 2010 lecture).

The premise of the Gutenberg parenthesis is that in the history of media, the invention, evolution and impact of the printing industry (cf. *supra*) has brought a tremendous change, and that the rise of the era of the Internet is closing the one of the printed word. The metaphor of brackets is explained by Sauerberg (once again, quoted by Pettitt's 2010) lecture in the following terms:

*“The Gutenberg parenthesis suggests that as in a sentence [...] which is the history of media, has been interrupted by the age of print [...] and that insofar as we are leaving that book phase, we are going back to the situation before that. This without any implication that the period in between was a waste of time or in the wrong direction, or misguided, it's not parenthesis in a pejorative sense, it's like in a sentence; if you're speaking a sentence or writing a sentence, and you interrupt for a while with a second thought to add to your first thought, you then resume the first thought at the end of the parenthesis, and the sentence goes on, but that sentence will be irrevocably changed by what has happened.”*

The bracket extends from around 1600 to 2000 CE, but the changes induced by the opening and the current closing of the brackets are of course very gradual. Pettitt (2010 and 2012) considers these dates as based on the mainstream cultures of Western Europe, and North America. He acknowledges that outside of this mainstream culture, there are different cultures, and that even the mainstream can be split in different layers of subcultures, each having their own timetables. Before we delve into the changes brought by the parenthesis, and what we can expect now that it is seemingly closing, let us consider the domains that are touched by a change in media. According to Pettitt (*ibid.*), there are two dimensions in the media: *cognition* (which he sometimes refers to as “mindwork”), and the *media technology*. Thinking that media technology has an impact on our cognition, and in this sense only, is dictated by the notion of technological determinism. This is the vision that is promoted in Carr's *Is Google making us stupid?* (2008), in which he analyses the impact of Internet browsing on our reading habits. He uses as a source of his opinions the five-year-long research conducted by Rowlands et al. (2008) on the reading habits of their sample, leading them to this statement:

*“It is clear that users are not reading online in the traditional sense; indeed, there are signs that new forms of “reading” are emerging as users “power browse” horizontally through titles, contents pages and abstracts going for quick wins. It almost seems that they go online to avoid reading in the traditional sense.”*

Pettitt, on the other hand, considers that the relations of influence between cognition and media technology is not one-sided, but rather reciprocal (which he illustrated by saying “*is our*

*stupidity making Google?*"): the media technology might very well influence the "mindwork", but in turn, the way we think, our cognition, will influence the way media propagate content. He also considers that both entities are mere contexts for cultural production: content is produced by the mind, and mediated thanks to technology (2010). Because all three are so intertwined, a change in the media is going to affect them all: cognition, cultural production and media technology. It is impossible to exactly define the behaviours and attitudes of our future selves. However, researchers such as Pettitt and Sauerberg, who are specialists of the pre-parenthesis era, have noted strong similarities (which we will expand further below) between the pre-print era and ours. To quote Pettitt (ibid.): "*The Gutenberg parenthesis suggest that what happened in this relatively distant past can be more than usually helpful in understanding what is happening in the present, and what will happen in the future, and vice-versa*". Following their lead, the researcher John Foley has built a collaborative website called "Pathways of the mind", which eventually lead to a paperback book of observations: *Oral traditions and the internet: Pathways of the mind* (2012), an analysis of the project. Both the book and the website explore the similarities between pre-literate and contemporary linguistic interactions, such as texts.

This dissertation essentially respects the periods of pre-parenthesis, the "*Gutenberg galaxy*", as McLuhan (1962) refers to it, and post-parenthesis. The first part of our research dealt with the pre-print civilisation, and the era of manuscript handwriting. Sauerberg (2009) considers that most of the knowledge in the pre-parenthesis era, after the Antiquity, was in the hands of the church. It was a matter of possessing and upholding a perpetual claim on the intellectual-property rights, in agreement with the welfare of a religiously kept world picture. The Church absolute domination on traditional knowledge conserved as hand-written and hand-copied texts, gave godlike expertise to the kinds of writings about spiritual life, whereas what was necessary for the everyday ordinary life of people had the authority given to it only in restricted forms in writing, such as legal devices, leaving the most part to oral tradition. It was a matter of authority: the Church detained the knowledge, the know-how (since reading, and writing, were such scarce skills during the Middle Ages, cf. supra) and the material, giving it all power, including power of interpretation of the written content. Sauerberg, in a 2013 interview with the *Columbia Journalism Review*, says:

*"I think authority was always invoked before the parentheses. You lived with God in the back of your mind all the time"*

As for secular art, most of it, if not all, was left to the oral tradition, meaning it was often re-interpreted, as Pettitt says in the same interview:

*“I’m thinking about the actual physical means by which information was communicated, and it was done by connections. It was done by people who spoke to people. Any tale, any narrative that survived existed by virtue of someone performing it. Someone who knew it, remembered it, and they performed it again and again. Or they performed it, and someone else heard it and remembered it, and they performed it, and someone learned it from them—just connections. Connections between a series of performances from one person who knows the tale and then a series of people who passed the material onto each other. That process of connection also involves instability because there’s no authoritative text. If you’re telling a story of King Arthur and Sir Lancelot, then the person who told it to you isn’t there when you’re telling it, and he didn’t compose it anyway, and there’s no fixed text. You will tell a story that works for the audience you are speaking to, and that story will change. So we’re talking about connections between performers, and through those connections, the material changes. The words are unstable and that is certainly going to have an effect on the way people think”*

Because most of the relationships were based on connections only, the interpersonal relationships were also different: people knew their family trees, and the networks they navigated in (related to work for instance), but rarely considered themselves as citizens of a country, or of a specific region (ibid.). Of course, these connections found themselves ranked into a hierarchy, and the Robin Morgan quote “Knowledge is power. Information is power.” was equally as true then as it is now: the possession of information and knowledge marked the authoritative status of the church (Sauerberg, 2009).

With the development of print, especially movable type in Europe (cf. *supra*), the vision of knowledge, and the ease of access to information drastically changed. With the print (understood in the Pettitt 2010 model as “*media technology*”) changed the nature of cognition (Pettitt, 2010, Sauerberg, 2009). With printing decreased the handwritten production of books, destined to sole closed privileged clients. The access to written information became much more democratised, especially with the rise of publication in vernacular languages (cf. *supra*), spread by Luther and the orthodox church. This induced what Ong (1982) refers to as *chirographic activity*, or the dependence of thought upon writing:

*“Many of the features we have taken for granted in thought and expression in literature, philosophy and science, and even in oral discourse among literates, are not directly native to human existence as such but have come into being*

*because of the resources which the technology of the writing makes available to human consciousness.”*

The conception of writing derived from a book-centred era is a finite, set one. Knowledge is the property of the scientific institutions producing the written content. Matching the heavy diffusion of the printed text, power was very much capitalised in the marvel that was the printed content for what it literally was: pressed and printed –and therefore finite— seal on the world of those ruling books. In his 2009 work on the evolution of encyclopaedias before, during and after the Gutenberg parenthesis, Sauerberg notes that during the parenthesis, when the book reaches a status of certain omnipotence, with at the peak of the medium, encyclopaedia as a figure of sovereign authority in matter of knowledge, the genre in itself is paradoxical: encyclopaedia claim to be the vessels of up-to-date, accurate knowledge when in fact, reeditions end up contradicting the previous ones, since research and knowledge have moved forward between two editions. He also notes that the sheer act of reading, or using an encyclopaedia during the Gutenberg parenthesis (thus using one, or many, of those leather-bound, metal-clasped multi-volumes) innately confers authority to the end reader:

*“To have all available knowledge standing there in the bookcase in an impressive number of volumes to be consulted in a manoeuvre requiring physical exertion, that is walking, fetching volume, turning pages, gives the retrieval of information an aura of substance, of something solid existing in and by itself and quite distinct and different from any other chore preoccupying the one seeking knowledge.”*

The physical dimension of encyclopaedia, and books in general is definitely the one that had the strongest impact on the perception of text. Books became, in Bacon’s words, “*ships of time*” (Bulwer-Lytton, 1833, quoted in Allen, 2012), the receptacles of texts as they should be, static and eternal, contained between covers. This idea of containment is both figurative and literal: with the Gutenberg parenthesis emerged the idea, natural for us now, that a written work is an individual work, the notion that a verbal work must be a story with a beginning, a middle and an end. Restraint is in fact a key element of Pettitt’s 2010 lecture. He says:

*“Words have been imprisoned in the Gutenberg parenthesis, if one thinks of all the ways the words have been regimented. Thanks to [the movable type] technology, words are regimented into lines of the same length and the same height. Those lines are structured into a block of text, that block of text is surrounded by a margin within a page, those pages are folded and gathered, then they are stitched together, then several gatherings are put together in a book and glued together, and that book is bound and then put in covers. It may then be put*

*in a dust jacket, and it may be put in a slip case, or in some cases it may be provided with metal clasps, to stop the words from getting out, it seems. An extraordinary level of containment.”*

Of course, this was not only the case of text, but of most, if not all forms of artistic expressions: the notion that a picture is just one picture, it doesn't crawl all over the walls and involve all kinds of sequences of action, come from the Gutenberg parenthesis as well, since the conception of framing an image dates roughly from the beginning of this second era. Plays and story-telling which both used to be quite flexible and adapted to their audiences (cf. *supra*) became rigid, set performances, and moved from the street to scenes in theatres, for instance. The idea of seclusion and confinement even changed our notion of geographical belonging: we used to be part of a family, a brotherhood, or a professional confederation; with the development of printed maps, we were now part of a region, or a country, part of a piece of land contained within borders, that deserved to be defended (Pettitt and Sauerberg, 2013). Containment defines, to Pettitt, the idea of book; to him, an old desktop, that cannot be hacked from the Internet, and that is completely static (no memory wipe, no modification) is essentially a book (ibid.), “*the last form of the book*”.

What of the current state of affairs? Why does Pettitt (2010) say that “*the Internet is ultimately going to make us think the way the medieval peasants thought*”? The reign of the book has begun to fade during the XX<sup>th</sup> century with the invention, and development of sound and film recording, then multiplied by radio and television, and now supplemented and enhanced by the internet and digital technology. With all this technology around us, from computer screens to smartphones, the very screen that millennials hold permanently in their hands, it is hard to fathom that our ultra-connected generation has anything to do with “*peasants*” from before the years 1600... And yet. Marcus' *Cyberspace renaissance* (1995) considers the exchange of text messages, and their impact on languages. Among his findings is the idea that our new way of communicating is becoming more and more fluid, and less stable, since we are communicating on an ever more instantaneous dimension. Besides, everything we write, may it be in texts, but also in much more recent tools, such as social media, or blogs, is very likely to be subject to intervention, by people who copy and/or alter the text. This, to Pettitt and Donaldson (2010) “*is taking [us] back to how things were in the age of manuscripts, in the age of the Shakespeare period, where texts were not as stable as they became in the meantime*”, which is why, to the question “*how is the Internet changing the way we create?*”, Pettitt likes to answer saying “*it's making me create a bit more like Shakespeare*”, which is admittedly much more pleasant an image than thinking like medieval peasants.

Besides fluidity of language, we are now going back to a more impermanent lifespan of the media content.

People post-parenthesis are also going back to a more connection-based model. The notion of network and connection between people is now so engrained in the minds of people that it has not only become the slogan of the telecommunication company Nokia (“*Connecting people*”), it has also become the business model of new companies and social networks such as the professional social network LinkedIn. Their goal is to expand their users’ networks by linking them to connections that their primary network of acquaintances has, up to the third degree. This system based on ‘a friend of a friend’ is the perfect embodiment of Karinthy’s 1929 “Six Degrees of Separation” theory, stating that everyone, and everything is six or fewer degrees away, by way of introduction, from any other person in the world (Newman et al., 2006). This system was already very much in place before the parenthesis started: communication and information were only accessible through the network of people that one knew (Pettitt and Sauerberg, 2013). The internet itself is a network instead of a container. And because the internet is a fluid network, content tends to become more and more impermanent, and subject to modifications... sounds familiar? People nowadays tend to accumulate content on their computer, on virtual clouds, on storage data, or on the internet, increasing the difficulty to find the desired content when need be, usually resolving to the familiar “[the content is] *somewhere in there*” (ibid.). Content online is only ephemeral: Google prioritizes content that is trendy, popular, or sources that have been prioritized through funding. Abandoned content is usually deleted: Pettitt says that the average lifespan of an internet website, if not maintained, is two years (2013), not to mention that platforms change roughly every ten years.

The question arises of who has the authority now? Sauerberg (2013) thinks that we are in a period of transition, and that authority is yet to be found:

*“The problem is that, nowadays, after the parentheses, you would have to find a new sense of authority. The Wikipedia phenomenon is very characteristic of the situation because on the one hand, we have the destruction of all paper, all print encyclopaedias. We have to use the online facilities, but the online facilities like Wikipedia are looking desperately for authority in order to become credible, so there is a war out there in cyberspace fighting for authority. But the point is that with the encyclopaedia, within parentheses, the authority was in the encyclopaedia, in the format of the book, in the book as a symbol. We no longer have that. You have to make up your own authority. Whenever you look up a word,*

*you have to be very much aware of, “how far is this authoritative?” So you have to think in two planes at the same time, on two levels.”*

This is a good reminder that the very nature of the Gutenberg Parenthesis is not one of a sharp division between what it contains and dismisses. Rather it is an elastic one that enables what is external to the parenthesis to merge with what is inside, and vice versa. *“Applied chronologically this means that phenomena current before the opening of the parenthesis may be observed within it, and what has become consolidated within it is seen to recur after its closure”* (Sauerberg, 2009). One good example of this concept would be the hard work the designers of communication software go through to try and make the text produced as similar to the printed or typewritten page as possible. Yet, simultaneously, both textual and communicative practice in the private sphere (as opposed to the professional one) is keen on accommodating the digital technological advances into the form of the writing, as one realises when sending emails or messaging.

We may be going back to a pre-parenthesis situation, as Foley’s project reminds us, but there are of course some substantial differences, for instance our level of literacy and access to communicative devices compared to our pre-print ancestors. Rather than a complete return, the post-parenthetical period of a reversion to the pre-parenthetical at a higher level of technology. Pettitt (2010) says:

*“The users of the new media are super literate. And they are all writing, that’s the difference. In the parenthesis, there are writers and readers. There are few writers, and many readers. The new age is one where you can’t really tell the difference between a reader and a writer, because they’re writing; they’re all communicating with the same freedom that before the parenthesis, they’re all speaking. We are reproducing with text the kind of fluidity, the interaction and the declining categories [...] between the creator and the receiver.”*

Our new ways of communicating come close to the concept of secondary orality, first theorized by Ong in 1982, with his *Orality and Literacy: The Technologizing of the world*. In this book, he claims that our civilisations have adopted writing to such great lengths that what is clearly a cultural act (as opposed to a natural, innate one) has essentially merged with our ways of life. This statement is pushed further by Mason (1998): *“If, as Ong claims, writing has become so internalized that it no longer appears to be an external technology, then the advent of these new media casts new light on the act of writing”*. Such statements prove that it is essential to understand what are orality and literacy to understand secondary orality, and our current ways of interacting.

As we have seen before, before humankind could write, civilisations were based on oral communication, which extended until the end of the pre-parenthesis period. All knowledge, from tradition to entertainment, to science, had to be transmitted face-to-face, through orality. This of course makes the transmission of knowledge quite perilous, since “*in the absence of any writing, there is nothing outside the thinker, no text, to enable him or her to produce the same line of thought again*” (Ong, 1982). The lack of continuity in cultural transmission made, to Ong (ibid.), scientific and historic knowledge impossible, not to mention abstract tasks such as reflection, analysis or research, which all presuppose that there are former reliable sources to base one’s judgement on. People’s mindset was based on a method of addition of knowledge, what Kirk (1976) refers to as the “*cumulative technique*” which, to him, had an impact on the construction of the poems, ballads and other riddles that were the basis of knowledge transmission, making it simpler to avoid misunderstandings. Oral-based cognition is also based on redundancy, allowing the audience to focus on one point because said point is repeated numerous times.

One other key feature of orality is its closeness to interpersonal relationships: because transmission is necessarily made in person, what is transmitted is unavoidably empathetic, subjective and agonistic (Ong, 1982). The vision of the world, especially of the past, is delivered through a strongly Manichean prism, whether through praise or contempt of a certain situation, or a certain person. It was impossible for peoples belonging to oral cultures to do without this antagonism and emotional identification, because all learning and communicative transmission happened with a speaker. Oral peoples gathered so much information by creating a state of complete personal involvement and emotional attachment (or even transfer) with anything that was being said (Havelock, 1963). The affective dimension of orality makes knowledge very fluid, since all elements that are considered irrelevant are often forgotten (Ong, 1982). All knowledge was transmitted based on the world around them, “*assimilating the alien, objective world to the more immediate, familiar interaction of human beings*” (ibid.). It was impossible to differentiate the knower from the known. Oral peoples did not use abstract notions such as circles or squares, but rather defined those in association to known objects, such as plates or doors (Brownson, 2010).

The emergence of the purely artificial process of writing completely changed the perception of knowledge, and cognition of the humankind (cf. *supra*). Language changed, because the meaning could now exist without an interlocutor, allowing sentences and lexicons to become more intricate (Ong, 1982), not to mention punctuation (hence the adoption of brackets to theorise the idea of the Gutenberg parenthesis). Linearity was preferred to

redundancy, for there was no need to hammer information down an audience's head anymore. Since written text becomes an unavoidable layer of mediation, indexing (cf. *supra*) and abstraction arise, and the gradual diminution of direct human contact when transmitting knowledges allows for empathy to give way to objectivism (ibid.).

The theory of secondary orality approaches and compares orality and literacy, and reveals that “*persons who have deeply interiorized literacy can no longer separate literacy from their natural mental processes*” (Ong, 1982). Instead of conceptualising words as phonemes or transient sounds, people bathing in literacy can visualise words as things because they “see” them in written form. Media become more and more spoken-word based, but the content of what is said is written based, or as he writes it, “*secondary orality (radio and television): floods the world with sounded words (and other sounds) again. But it is the product of a writing and print culture*”. This means that even though our culture is definitely a literate culture, a new era of orality starts as media technology ‘speaks’ to us (Fowler, 1994). CMC (Computer-Mediated Communication) in particular reveals signs that are normally linked to orality: the construction of communities of people, the instantaneousness and “*flaming*”. According to the Urban Dictionary (2004), flaming is: “*An online argument that becomes nasty or derisive, where insulting a party to the discussion takes precedence over the objective merits of one side or another*”, giving it the empathetic and agonistic qualities of orality, a term that should be understood in its broad sense here, as “*habits of thought and expression tracing back to preliterate situations or practice, or deriving from the dominance of the oral as a medium in a given culture*” (Ong, 1982). Orality in CMC is one of the bases of secondary orality. The instructional designer Chris Lott considers secondary orality as “*the next era in human literacy*” (Brownson, 2010), and considers that millennials display some “*behaviours that are foreign to us*”, but also show that they “*have the capability in some instances of reflecting on our societal structures and communication mechanisms differently*”, which would be very similar to being a literate person in an oral-based context (Lott, 2009).

To give a more practical overview on how the internet brings its users closer to orality, let us first consider hypertext. A hypertext is a computer-based text retrieval system that enables a user to access particular locations or files in webpages or other electronic documents by clicking on links within specific webpages or documents. The sheer principle of ‘hypertextuality’, because of its arborescent logic (one link leads to a new document, which in turn can lead to a new one, and so on) enhances the fluidity of text, or as McAdams and Berger (2001) state:

*“In contrast to linear stories with distinct beginnings, middles, and endings, hypertexts generally have multiple possible entry points, many internal threads, and no clear ending”*

Contrary to the passivity of the reader during the literary, Gutenberg parenthesis era, the hypertext reader is an active one, who can choose which element he or she decides to read further into. This provides much more dimension to the written content, as opposed to flat printed matter. There are however flaws to ‘hypertextuality’, namely the sometimes confusing aspect of it, with readers ending up being “*lost*” in the text, or forgetting what they initially wanted to read (Foss, 1989). Because hypertext connects information from diverse sources to form a cooperative whole, its general aspect is aggregative. Just as epithets amplified connotation in the times of orality, hypertext sums digital texts to improve content. Hypertext links also permit users to check any related data whenever they so desire, which gives room for redundancy. Readers may come across the same or analogous information whilst using ‘hypertextuality’, not to mention that the same page can be viewed over and over (Brownson, 2010). This keeps the message of the initial document close to mind, all the while allowing the reader to follow related concepts, thus merging both oral and literate aspects, i.e., *secondary orality*.

One other good example of secondary orality is the affluence of blogs. Blog is a term used to label websites that sustain a continuing record of information. Traditionally, they are regularly updated, and display articles similar to diaries, usually, if need be, featuring links to pertinent articles on other websites. There is a vast array of blog topics, from professional to personal, from entertaining to political. There tend to be a few common features on all blogs:

- a main content part with articles ranked chronologically, the latest on top,
- a side archive space, where older articles are generally stored,
- a space for readers to comment,
- a list of links to other correlated sites.

Blogs differ from books in so as chapters in books tend to be listed in a linear, rational manner (what Pettitt referred to as “*regimented*”, cf. *supra*), blog articles rather follow an additive format. Each entry appears in reverse chronological order, without any other logical connection between articles than time, mirroring the speech patterns of orality. Of course the articles are written linearly, as anticipated in a literate culture, yet the structure of the blog in itself is one that resembles orality most.

When a blog writer posts a new article, followers obtain a notification, usually via email, RSS feed, social networks, etc. This enables readers to become actual participants, and interact

with the writer and add to the conversation in an almost-real time dialogue (Brownson, 2010). This quasi-synchronicity provides a feeling of propinquity in blogs. While not quite on the same level as oral speech, blogs' immediacy is much closer to instant communication than any printed matter has been before, including daily newspapers. As they are intended as logs or diaries, blogs are a complete part of human interaction. They are not an external, detached series of information, rather aim at reflecting who the writer is through their impressions, views, or perceptions of human-related matters, ranging from cooking to corporate strategy.

Variety of content attracts different kinds of "*followers*", from "*lurkers*" who do not aim at participating in the discussion and just come on the page to read the entries, to "*trolls*", whose aim is to start what is usually called "*flame wars*", simply by criticising (usually violently) anything they can: the writer or the content of the article, or the readers and their comments. The intervention of trolls online clearly fuels agonism in the blogosphere. Just as oral peoples used to engage in verbal fights as some kind of intellectual exercise (following the Socratic method), trolls represent a rite of passage for new bloggers as they learn how to polish their responses to steer through or around these outbreaks. No aspect of the Gutenberg parenthesis could account for a similar aspect. Critics would be the closest one (one author contests the text of a predecessor), but even then it is done in a very linear way, in (usually) rational, logical terms, as opposed to the spiteful bursts of hatred that can happen online (ibid.). This is due to the fact that not anything can be published, for publishing and editing companies also act as content filters. "*Literacy uses logos to attack ethos; orality employs pathos to undermine ethos. The secondary orality in new media allows both.*" (ibid.). Lastly, blogs provide "*a sense of community around common topics, across vast geographic distances, among people who would never meet each other in person*" (Gurak and Antonijevic, 2008). The system of blogs is empathetic, collective, and involves every user that gravitates around it. Even in the case of a blog that has no follower base, the writer posts entries whilst being self-conscious of their acts, of the public aspect of blogs, etc. This self-awareness comes from the literate cognition, and when in conjunction with a context of collaboration, leads to a new kind of "*self-aware individualized community*" (Brownson, 2010) a distinctive aspect of secondary orality. The format of blog posts going against chronological order manages to maintain certain facet of equilibrium, since the latest articles are always at the top of the page. Previous entries go down the page as new ones come in, or are stored in the archives of the blog. Just as pre-parenthesis peoples shed or alter memories no longer noteworthy (cf. *supra*), so blogs are always fluctuating as new ideas take the place, or improve conversations or threads of ideas from the past. Even though blogs are usually based on textuality and written content, their changeability far-exceeds the inert nature of printed matter. As Bolens (2001) wrote, "*textuality has one*

*fundamental and non-negotiable limit: it is irremediably still*". While a text is permanently immobile, blog writers can remove articles or comments, alter their content, and even delete the whole blog. Blogs are not quite as impermanent as the speech can be, but much more so than the printed word.

Flexibility and fluidity of text can also be seen in the rapidly growing medium of instant messaging, where instantaneity is the key, transforming written content into the closest it could be to speech. The addition of images (emoticons and emoji, cf. *supra*) give textuality new dimensions that neither orality nor literacy have ever explored before, making it a new trait of secondary orality. Although academia is still very new in this actual domain, it is easy to link it to Ong's vision of new orality, and McLuhan's 1964 theory of "*global village*":

*"A tribal and feudal hierarchy of traditional kind collapses quickly when it meets any hot medium of the mechanical, uniform, and repetitive kind. The medium of money or wheel or writing, or any other form of specialist speed up of exchange and information, will serve to fragment a tribal structure. Similarly, a very much greater speed-up, such as occurs with electricity, may serve to restore a tribal pattern of intense involvement such as took place with the introduction of radio in Europe, and is now tending to happen as a result of TV in America. Specialist technologies detribalize. The nonspecialist electric technology retribalizes."*

ii. *Multimodality: the new approach to reading*

Multimodality is a semiotic theory that approaches the elaboration of content, and is part of both communication and social semiotics (Halliday, 1978). It refers to communicative practices using visual, textual, but also linguistic, spatial, aural, palpable, tastable or olfactible information, each considered as a separate mode (Lutkewitte, 2014). The use of different media in the same document affects rhetorical situations, and usually has an impact on the targeted audience. Understanding of the effects of texts and, in return, the influence of context on the apprehension of a written matter is the reason why social semiotics came into existence, with claims such as Halliday's (1978) that texts need to be considered as contextually placed signs. As we enter a post-parenthesis era and the technological context evolves, the use of images increases, as the use of sole text as a main medium declines (Lutkewitte, 2014; cf. *supra*). Let us first explain the difference there is between a mode and a medium.

In a series of interviews organised by the University of London and published in YouTube, Gunther Kress (2012) defines *mode* in the following terms:

*“Mode is a term that allows us to get away from using language for everything. I could say there is visual language, there is gestural language, and there is language of flowers. [...] Modes are these things which are socially produced, and they become cultural resources for making meaning. They’re regular, because the community uses these resources over long periods of time in similar kinds of circumstances, so there is a regularity that applies to them. They’re material: they have sound, or they have image texture, or tactile, or they even smell. Modes are these things which a culture has means of making meaning, and it allows from making language too general, and maybe therefore too vague a term to be useful.”*

The cultural aspect of a semiotic mode is also the one that Kress detailed in his 2010 *Multimodality*, which has become a reference in the field of social semiotics. In previous works he also considered a second layer to semiotic modes, stating that they *“are shaped by both the intrinsic characteristics and potentialities of the medium and by the requirements, histories and values of societies and their cultures”* (Kress and Van Leeuwen, 1996). Therefore, each and every mode has both a historical and a cultural background, and can be broken down into several other modes (Kress, 2010). If we consider the writing mode, it can be separated in various modal resources such as lexical, syntactic and grammatical resources, but also graphic ones, which in turn can be divided into further resources, such as typeface, weight, size, colour, etc. (cf. *supra*). Modes also are a rather flexible resource, since they are shaped by their background as much as they shape meaning which, to Kress (*ibid.*) contributes to making them *“meaningful”*. The combination of modes in the same ensemble creates multimodality.

A *medium*, on the other hand, stands for a more technical, technological, or even tangible approach of content. Where a ‘mode’ refers to the type of information delivered, a ‘medium’ refers to the means of delivery: for instance, the radio would be a medium through which modes such as speech or music can be transmitted.

Comparing Kress’ 2010 and Jewitt’s 2009 handbooks about multimodality, three intertwined theoretical statements can be made to grasp multimodality. First, multimodality embraces the idea that representation and communication continuously come from a combination of various modes, all of which aim at developing meaning. It emphasises on analysing and unfolding the full range of meaning-making resources that people have available, and make use of, may they be written, spoken, heard, seen, etc. Multimodality also assumes

that different contexts induce different modes, and seeks to develop ways to show how these are ordered in order to convey meaning. Then, as we have seen before, multimodality embraces the fact that resources are socially fashioned over time to turn into meaning-making resources that connect the various layers of meanings, may they be societal, social, or individual, demanded by the rules of different groups. Modes then contribute to communication in discrete ways – making the selection of mode(s) a main aspect of interaction and construction of meaning. As use of a specific mode, or set of modes, becomes a more and more inherent part of a given culture or community, they become ever more articulate and comprehensive. This is why modality needs a communal cultural background for something to ‘be a mode’, and participate to meaning-making. Lastly, people compose meaning through their own selection and understanding of modes, making the implication of interaction between modes prominent. Consequently, all acts of communication are defined by the standards and contextual norms in action when sign-making is elaborated, and determined by the drives and affects of people in a given social context.

A multimodal analysis starts with the application of a series of key concepts: *mode*, *inter-semiotic relations*, *semiotic resource* and *modal affordance*. As we have already defined what is a mode and modality, let us continue to inter-semiotic resources, which concerns the relationships across, and between modes in a given multimodal document. Analysing the relationships between modes helps semioticians asking the ‘right’ questions: for instance, Flewitt’s (2006) multimodal works about interactions in the context of preschool classrooms establish a clear connection between the communicative requirements of a context (in the study, home and preschool kindergarten) and the modes in use. Concentrating on all modes of communication (aural, gestural, motional, visual, etc.), Flewitt was able to examine young children’s versatile uses of different modalities as “*intentional, socially organized activity in the construction of meaning*” and to make a claim against “*pathologizing the absence of talk*” (ibid.). Studies such as this one reveal the potential of multimodal research to propose a different vision of classroom communication by pinpointing the examination of speech in a larger context, understood as children’s entire multimodal semiotic resources, and examining their interrelations. Then, the term ‘semiotic resources of a mode’ defines regularities in the ways in which people make usage of said modes, and can be thought of as the link between representative resources and what people do with them. Lastly, modal affordance refers to the potentialities and limitations of various given modes – what one can express, represent, or communicate by using the resources of a specific mode, and what would be, at best, hard to communicate, if not impossible. Studying affordance is of course rendered difficult by its inconsistency, since it varies with its context. From this viewpoint, the word ‘affordance’ does

not refer to perception, but rather to the tangibly, culturally, socially and historically established ways in which meaning is constructed with precise semiotic resources (Kress, 2010). Affordance of a mode is formed by its materiality, by what it has been times and times again used to mean and do (referred to by Kress (2010) as ‘provenance’), and by the communal norms and conventions that condition usage in context. Because of their cultural and contextual dependence (cf. *supra*), each holds some ‘logical’ aspects. For instance, the logic of time sequencing is typical to speech: one sound is voiced after another, one lexeme after another, one syntactic component after another. In creating opportunities for placing elements first or last, or completely displacing them, as far as temporal arrangement is concerned, this ‘sequentiality’ becomes an affordance.

With the closing of the Gutenberg parenthesis and the boom of the internet, multimodal research has gained a lot of popularity, especially in the consideration of the evolution of literacy (Kress, 2003). The main change for the previously omnipotent writing mode was of course the presentation of written content from a printed page to a screen. When printed text provided a permanent support where images and text could easily be separated, browsing the internet makes the user experience several visual modes, often simultaneously: text, pictures and videos are intertwined. This of course does not mean that printed written content, and speech in its traditional way are obsolete, rather than the development of new media supposes the adaptation of previous ones (Kress, 2003), leading to the evolution of different literacies, especially *multiliteracy*. As its name indicates, multiliteracy theorises the ability to understand information using various methods of communication simultaneously. Literacies evolve to integrate new ways of communication, stemming from new developments, or approaches in communication channels and devices, such as instant messaging, social media, and blogs (Selfe and Selfe, 2008). The embedment of modes within modes transforms the transmission of messages (Kress, 2003). This transformation is done by transposing the message of one mode into another, for example taking a text and integrating it into a video. However, the message may have been distorted or altered as it goes from one mode to the next. The video could very well become a mere addition to the text, much like the full version of an interview, the text being a summary of it, or it could become a portion that repeats the text, simply using a different format. This redesigning of content from a mode to another is acknowledged as *transduction* (ibid.). As information fluctuates from one mode to the next, how content is understood is credited to multiliteracy, as the initial text makes sense across an array of diverse modes or media. The internet typically delivers ‘transducted’, fragmented content, and the only way for users to understand said content is to be literate on several modes (Androustopoulos, 2001). Where text used to be the central element, it is now not only adorned, but interaction with visual

modes such as videos, images, or interactive content (icons, buttons and other animated content). This interaction can penetrate the text to its very core, through addition of pictorial (or animated) elements such as emoji, or emoticons (cf. *supra*). Social medias are a typical platform using constant interactive content: for instance, Facebook allows users to “react” to content (Krug, 2016) using an array of various emotions (cf. appendix 217), and even to share content they appreciate and wish to spread. Interactive and visual content are a key feature of the web 2.0, and can be understood, according to Androustopoulos (2001) as multiliteracy.

As the previously mentioned works of Flewitt (2006) show, multiliteracy is a parameter to seriously take into account in the education system. Works such as Hassett and Curwood’s 2009 *Theories and Practices of Multimodal Education* lead to conclusions such as “*print represents only one mode of communication*”, insisting that new modes and new media are needed, emphasising the visual aspect of texts and interaction, all of which can be found in platforms such as e-books. There is of course debate as to whether these new ways of communicating educational content sound the death knell on traditional literacies, pointing at children’s books for instance, where the importance of text by itself is dramatically decreasing. Miller and McVee (2012) consider that the public should not be alarmed, and that “*these new literacies do not set aside traditional literacies. Students still need to know how to read and write, but new literacies are integrated*”. As a typical assignment integrating new literacies, they suggest storyboarding, stating that such a task would integrate both visual and textual elements.

Multimodality and multiliteracy have of course an enormous influence over the advertising industry, and multimedia advertising campaigns are constantly evolving. Printing advertising is not enough anymore, and agencies now have to play on many different modes to try and get their message across. The website of the magazine *Advertising Age* has a page dedicated to some of the best XXI<sup>st</sup> century advertising campaigns, and all of them present a mastery of multimodality management. One example of a successful multimodal advertising campaign is the “Dumb ways to die” PSA public transport safety campaign, commissioned by the Melbourne Metro Trains company. Launched in November 2012 by the advertising agency McCann, it was first a song, recorded by a band called Tangerine Kitty, and spread via iTunes, YouTube, the radio and more (Gruger, 2012), and reached iTunes’ top 10. However, the video (cf. appendix 218) marked the complete success of the campaign when it reached 4.7 million views 72 hours after it was uploaded on YouTube – so much so that McCann launched a karaoke version of the video on November 26<sup>th</sup>, twelve days after the first upload. The video literally features dumb ways to die, such as poking a bear, or using your genitalia as piranha

bait, all of it to highlight the message that one needs to be safe around trains, since getting hit by a train is one of those dumb ways to die. The mix of cute and gore is very reminiscent of the adult cartoon *Happy Tree Friends*, where cute animals repeatedly slaughter each other in ever more creative and gruesome ways. The campaign was definitely designed for viral promotion, with posters and ambient displays that proved fodder for Instagram and social media. For example, passers-by could shoot themselves alongside the campaign's characters and press a giant button to take the pledge to be safer around trains. The campaign assured its longevity by using other platforms, such as mobile gaming since May 2013 (cf. appendix 219), and even stuffed toys! The campaign's awards included Best of Show at the 2013 New York Festivals International Advertising Awards. It also became the most awarded campaign in the history of the Cannes Lions International Festival of Creativity, with 28 Lions, including five Grands Prix. Lastly, the campaign was also effective: Melbourne Metro Trains reported a 21% decrease in accidents and deaths on its network as a result of the campaign.

### c. The semiotics of typography

#### i. *The emotional dimension of typefaces*

Like language, typography can communicate on aesthetical and semantic levels, but letterforms communicate at a level more intricate than linguistic syntactical structure. Rand (1993) defined this as “*to design is to transform prose into poetry*”. Even though a written message allows unlimited number of readers its content, the sender is unable to control the reaction of the recipients. Carefully designed and chosen typography can provide the receiver with a focus on the main idea of communication, because it increases the appeal of the message in time and space, and eases interpreting the message (Šilić et al., 2009). Given the importance of every feature of the process of communication, as well as those as subjective, ethnically and sociologically conditioned as letterform can be, several studies were conducted during the XXth century aiming at defining the connotative qualities of typography, as soon as 1923 with Poffenberger and Franken's studies, followed by Schiller in 1935. These early works were led to determine which typefaces would be appropriate to advertise certain goods. Interviewees were asked to rank numerous fonts, depending on how those would fit brands of cars or coffee, or how well they would express values such as dignity or luxury. Later studies focused away from marketing, and more on the connotative meaning of type. The term “*connotative meaning*”

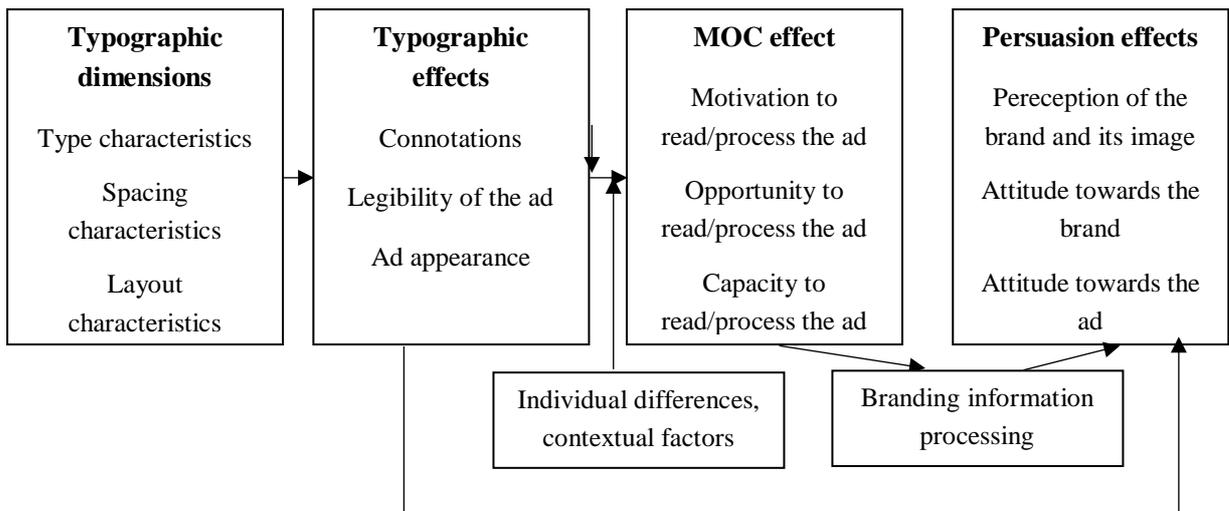
or “*secondary meaning*” of type was coined by Ovink in 1938 as “*those properties by which [a font] excites feelings within the reader*”. What is meant by that secondary, connotative meaning of typographic forms is a seeming impression of a personality, situation, feeling or action that is suggested by a form. In his studies, Ovnik goes over about thirty different typefaces by classifying them according to different features (‘vivid’, ‘exciting’, ‘aloof’, ‘cruel’, etc.), and in three categories, which he labels “*luxury-smooth*”, “*economical-precise*” and “*strong*”. He believed that a font providing a positive feeling would become more readable. In 1946, Tinker and Paterson confirmed Ovnik’s point of view and the connection between readability and appeal of the form, and revealed that readers respond slower, and in a more distant manner, to texts in which typographic design which is not in concordance with its context.

In the process of typographic communication, also referred to as “*technical writing*”, designers or typographers become the interpreters, and not just impartial carriers, of the message (cf. *supra*). Although it is not always clearly perceptible which was the typographers’ inspiration when they designed the type, correspondences and analogical associations are created at the subconscious level.

The internet nowadays offers an ever-growing database of fonts available, some for free, others for a (sometimes significant) fee. For instance, the website [dafont.com](http://dafont.com), which mostly offers free fonts for download and private use, gathers more than 30,000 of them as of May 2016. Despite the overflowing abundance, and the importance of the visual aspects of texts in a post-parenthesis era (cf. *supra*), there is little academia that has been written on the topic (McCarthy and Mothersbaugh, 2012). Amongst the studies available, some such as Brumberger’s (2003) focus on the personality of type, and her studies show that “*readers do consistently ascribe particular personality attributes to particular typefaces and passages*”. Craig et al. (2006) also acknowledge the persona of type, and the potential business implication that such persona can have: “*typefaces have personalities and convey different moods. While a single, well-drawn typeface can be utilized for a variety of jobs, there are occasions when specific projects seem to dictate a particular typeface*”, highlighting the necessity for both professionals and students in communication to consider the impact that the choice of a certain font can have. Resources detailing the personality of type are however very scarce, and usually quite vague in their description of fonts (Mackiewicz, 2005), which, to McCarthy and Mothersbaugh (2002), is a proof that lack of empirical evidence about macro-relations between typographical dimensions and subjectivity make the matter hard to produce academia about.

Unfortunately, as Brumberger (2004) states, technical communicators may “*make design decisions based on personal preference, intuition, or even the fact that ‘that’s what the*

*company has always used*”. This regret is shared by McCarthy and Mothersbaugh (2002), to whom typography is essential in advertising persuasion, since it greatly influences the



consumers’ MOC (purchase Motivation, Opportunity and Capacity). They offer a model that could be presented as follows:

Therefore, how can one assess the personality of a typeface? To Mackiewicz (2004), there are two categories of type: text typefaces and display typefaces (referred to before under their German appellations: Lesetypographie or Gebrauchstypographie is text typeface, and Akzidenztypographie, or Displaytypographie translates display typeface). Text typefaces would be letterforms such as Times New Roman, the one currently used here. They are designed to be read in technical, official, or professional documents, and cause minor to no reading problems when used in lengthy texts. Text typefaces gather both serif and sans serifs fonts, and their declinations (semi serifs, etc., cf. *supra*). Display serifs, such as Ransom Note (cf. appendix 220) have a much heavier visual impact, but would be very difficult to read over long stretches of text. It should be noted here that studies such as Song and Schwartz (2008) show that legibility, referred to in the study as “*processing fluency*”, result in a positive affect. The results corroborate the previous studies of Tinker and Paterson (1946), showing that even in a post-parenthesis era, the understanding of connotation has not changed. To help people, especially professionals, researchers such as Brumberger (2003) studies congruency between font and feeling (what she refers to as appropriateness), while Mickiewicz (2004) offers an “*easy*” way to understand type by only focusing on a few characters, namely the uppercase J, and the lowercase a, g, e and n, arguing that these five letters by themselves and their parts (cf. *supra*) gather enough information to estimate its connotative impact. Her works and views join Brumberger (2004) stating that designers should move past their personal preferences, or “*safe*” typefaces (such as Times New Roman or Helvetica) when choosing a typeface when creating

an advertisement or a corporate identity. A sign that companies and design agencies should take a closer look at the personae of typography is the increasing need for people to express meaning through short amounts of texts, such as messages. As people use textual messages instead of calls on their mobile phones, the occasions to write down one's emotions become more and more frequent, and because there is usually only one font available on instant messaging platforms, users turn to emoticons and emoji to express their sentiments (Šilić et al., 2009). If the current system would meet all the needs for interpersonal communication, there wouldn't be a constant exertion in attempting to convey other dimensions of the spoken message through the visual tools. Crystal (2008) stated that, if they have the choice, people prefer talking over writing as the mean of everyday communication. The level of communication is higher when words are spoken, one can communicate feelings and desires more truthfully, and the response time isn't unimportant either. Because of those qualities, Saussure (1977, cf. supra) settled that the written word would never replace the speech, and always be a complementary mode. As we enter secondary orality, the Saussurean postulate is not enough anymore, and text needs to be accurately enriched. With raising the level of expressiveness in typography, recipient will be able to understand the true meaning of the message, regardless of its context.

More than simple affective response, works such as Velasco et al.'s *Taste of Typeface* (2015b) try to assess the connotative aspect of type in more specific domains, such as taste. For instance, rounder shapes seem to be associated with sweetness, and high legibility, while angular fonts were considered less legible, and linked to bitterness, sourness, or saltiness, depending on the fonts. However, previous works from the Velasco et al. (2015) show that sweetness is not automatically linked to round shapes, but rather that taste hedonics can impact the way people tie tastes to shapes. *"In other words, the more that an individual likes a taste, the more they will choose a round shape to match it to, and the less they like it, the more they will tend to associate the taste with an angular shape instead"* (Velasco et al., 2015b). Works such as Westerman et al., 2012 explain this correlation by stating that people prefer round objects to angular ones.

Japanese type also offers some connotation, however, the lack of research, and the limited amount of type that is used gives us only scarce elements. In an interview conducted in March 2015, the graphic designer 高山憲一 *Takayama Kenichi* said:

*"Something that really stands out when I have to use Japanese type at work is the historical baggage that [a font] can carry. Usually, when my clients come and want me to design an advertising support or the corporate branding of a company, if their company, advertising campaign or event has anything to do with Japanese*

*culture, they will prefer a traditional feel to the design. [...] This means that the font used for logos, titles or headlines will usually be directly derived from 書道 shodō, or inspired by the Edo era [cf. supra]. For instance, if your client wants to open an 居酒屋 izakaya, or promote a traditional event –or at least an event that feels traditional– they will most likely not ask you to use modern fonts like Gothic, or worse, Latin characters. It will all be written in characters that give an atmosphere of tradition and authenticity, which is what people want when they enter an ‘authentically Japanese’ [the interviewee signed air quotes to represent the quotation marks] space.”*

Therefore, it seems that, more than personae, Japanese type has to deal with the connotations that history and culture has given to them. Letters such as 相撲文字 (cf. appendix 140) will always find echo in the Sumo tournaments, and be associated not only to the strength and masculinity of the fighters, but also to the long tradition that is sumo. Therefore, any client who would want to convey such images would only have to use this type of font. According to Takayama (ibid.), this makes being a good calligrapher, or at least having a sound understanding of how to manipulate a calligraphic brush, an asset in Japan, while in the West there is a big discrepancy in computer-assisted design and the art of calligraphy.

Connotation and anatomy of letters (cf. *supra*) have both helped in the classification of the ever-growing family of typefaces. Type classification is an intricate, fluctuating domain, but to understand type, it is essential to talk about it further. The first official categorisation of type comes from the French 1921 Thibaudeau typographer, who created four categories, based on types of serif: *Antiques* (sans serif), *Egyptians* (slab serif), *Didots* (Didot-like serifs, cf. appendix 116), and *Elzevirs* (serif). He then amended his classification in 1924 with a script category, and a *Fantasy* one, dedicated to more creative types. Based on his classifications, Vox expanded the Thibaudeau model in his 1954 *Défense et Illustration de la lettre*, especially by dividing the Elzevir category into *Humanes*, *Garales*, and *Réales*, and by dividing the scrip category into manual and script (cf. appendix 221). The model was acknowledged and slightly enhanced by the ATyPi (Association Typographique Internationale) (Celay, 2013), but soon faced the shortcoming of not being able to embrace all the new categories of type that developed with the expansion of computer-assisted design (cf. *supra*). In 1979, a French typographer Alessandrini edited his *Codex 1980*, displaying a more comprehensive and precise ensemble of 19 families of type. However up to now, the Vox classification stays the most acknowledged by designers (Pohlen, 2011). However, more and more criticism about those classifications are

emerging, such as the paper presented by Dixon in 2002, where she explained that those classification methods favour roman type over display type, deriving from the past of typography, instead of embracing its future. She says:

*“Distinctions between text and display are now increasingly irrelevant, with the greater subtlety that has been introduced into sans serifs and slab serif designs, leading to a wider application of such types for text purposes.”*

Following Dixon’s steps, designers such as Kupferschmid (2003) strived to offer new classification methods, to try and overcome obsolescence, but also confusion. With a fully globalised market and type community, we see that it is the chaotically assorted terminology that is the biggest cause of misunderstanding. Neither the typology coined by the type foundries nor the one used in printed classification systems are globally compatible. For example, French people call sans-serif typefaces ‘Antique’, the Germans call them ‘Grotesk’, and to make things harder, Americans calls them ‘Gothic’ which is the term used to coin ‘blackletter’ in Europe. On her blog [kupferschrift.de](http://kupferschrift.de) she accounts for various classification methods, and draws inspiration from Noordzij’s 2003 *The Stroke: Theory of writing*, in which he separates typefaces between translation, which stands for forms (understood as ‘contrast and structure’) derived from writing with a thick pen, and expansion, or what resembles forms resulting from writing with a pointed pen. Kupferschmid adds another group: *“foundational writing – “drawing” the linear skeleton form with a round pen”* (2009), thus creating three form models:

*“Writing with a broad-nib, held in a certain angle, delivers an inclined course of contrast, open aperture and divers stroke width. This gives the letters a dynamic and varied general form and feel (also in the italics and caps, which follow the proportions of the Capitalis).*

*In writing with a pointed pen the thickness of the stroke is related to the pressure put upon the nib while drawing a stroke. Because this is applied to the down-strokes only, the axis is vertical with high but less modulated contrast and rather closed aperture. This gives the letters a more static, stiff impression. The letter forms (e.g. q, p, d, b) and the proportions of the characters are rather similar, especially the width of the caps.*

*The rounded-nib renders linear, more “drawn” looking constructed forms (e.g. circular o) like in Futura or monoline scripts. Caps often follow the classical proportions of Capitalis.”*

In Kupferschmid's model, these three forms create the first layer of a "bone/flesh/skin" type of classification. The "flesh" part stands for the thickness and contrast of the strokes, and the presence or absence of serifs (no matter what shape these might take). The third, most superficial layer, that of the "skin", this where all minute specifications can be made (shape of the serifs, ornaments, genre, etc.). To her, the advantage of this new classification system is that its syntax is not completely arbitrary, but rather related to the impressions of typeface, which tends to clarify the end use, and make it more ergonomic. She writes:

*"It is relatively easy to assign atmospheric keywords to the form models, like warm, open, friendly to the humanist model and the rather regular, strict, formal model. This helps the selection of typefaces enormously, because the impression and atmosphere you want to achieve is usually what you think of first when you start looking for a typeface. [...] Also, it aids combining typefaces as all fonts that stand in one vertical column here combine well and harmoniously, whereas mixing the horizontal neighbours is more tricky."*

Even though the Kupferschmid classification (cf. appendix 222) also excludes non-Latin scripts, it has then the advantage of being much more intuitive. Besides, it has the enormous advantage to be based on a system that is quite similar to a Japanese approach of type classification, defined by 小宮山博史 Komiyama Hiroshi in 2010 (cf. appendix 223). Komiyama's classification sets apart 'Mincho', 'Gothic', 'calligraphic style' and what he refers to as "mix". Each group of type is then subdivided in four different styles: 'Old', 'Standard', 'Modern' and 'Design'. Besides, the system also sets apart square or round styles. When looking at a visual representation of both systems, respectively the appendices 222 and 223, some clear parallels stand out: Serif and Mincho style could be merged, Sans Serif and Gothic, as well as handwriting and calligraphic styles. Besides, the subdivisions can also find echo in both systems: Geometric and Modern, Decorative and Design, Dynamic and Old, and Static and Standard (Takagi, 2014). Stemming from the similarities between the two matrices, Takagi built a system merging Chinese typography and the Latin ones (cf. appendix 224). In the Takagi classification (ibid.), characters are separated in four categories, inspired by the Kupferschmid system: 'Dynamic', 'Static', 'Constructive' (which stands for Kupferschmid's 'Geometric') and 'Expressive' (Kupferschmid's 'Decorative'). These groups are then divided by presence or absence of serif, and the 'Analogue' part, which refers to fonts "*with a calligraphic touch*".

The Takagi system, by merging the Chinese and Latin types, leaves room for a form of type that is often ignored when classifying fonts: exotypes. Exotype is a category of type that was first named by Alessandrini (1979), but they have been around since long before him.

Exotypes aim at transmitting the idea, or atmosphere of a particular culture by modifying the appearance of letters. They are very common nowadays in the food packaging industry, or in some niche markets that aim at reflecting one targeted culture.

Exotypes mimicking Japanese writing are commonly referred to as “*bamboo fonts*” (Takagi, 2013), and have been around since the XIXth century in European posters advertising for Japan, promoted through the artistic movement of Japonism. For instance, appendix 225 is an advertising poster from 1906 for a bicycle company called Cycles Clément. The poster depicts all the clichés linked to Japan that Japonism spread: Mount Fuji, geishas and kimonos. Aimed at women, this poster showed that they could ride a bicycle while staying as elegant as Japanese geishas. What is essential here is the font used to write the name of the company: it clearly aims at imitating strong, fragmented brush strokes. To accentuate the idea of foreignness, round letters such as the “C” are divided in many incurved strokes. Bamboo fonts are still very much in use nowadays, and companies such as Suzy Wan, that sells Asian ingredients or ready-made food, display bamboo fonts in their logos (cf. appendix 226). The French manga publishing company Kana has more than just a Japanese-sounding name: its logo (cf. appendix 227) uses all the codes of the Japanese writing system (verticality, and characters that are heavily inspired by both kanji and kana) to convey a Japanese impression. To Alessandrini (1983), there are more assets in the use of exotypes than just conveying an exotic atmosphere:

“[Exotypes consist] *in first giving the illusion to the reader that they are in presence of an untranslatable writing system –which their amount of knowledge will hint them, fully or partially, on the provenance—and then induce wonder as they realise they actually can read the content easily.*”

Exotypes in Japan tend to be rarer, with a few exceptions. For instance, in the 2005 edition of the Tokyo Type Directors Club, one of the design works in the running for the prize was the logo created by 水野 *Mizuno* for the 明神館 *Myojinkan* hotel in 2004 (cf. appendix 228). The logo depicts only kanji and some Latin letters, but all characters are constructed in a very fragmented, serif-inspired fashion. The stress is put on a giant 間 *ma* (cf. *supra*), which looks like a mix of uppercase Hs and Is. The use of exotypes gives a strikingly modern aspect to the advertising campaign. However, the design also strongly displays the Japanese origins of the hotel by using the 間 sign, and by including a traditional red stamp, using old style character design, 篆書体 *tenshotai*. By mixing the old and the new, tradition and modernity, the choice

of (exo)types give the design work the image of a hotel set in Japanese rituals with international ambitions.

ii. Typography as a semiotic mode

As we have seen earlier, legibility has, up to now, generally been the main concern in typographic studies: Bringhurst in his 2004 *Elements of Typographic Style*, a well-known reference, states as a first principle of good typography: “*Typography exists to honor content*”, which is univocal. McLean’s *Thames and Hudson Manual of Typography* (2000) corroborates Bringhurst’s opinion by writing that although “*to a very limited extent, lettering may help to express a feeling or a mood that is in harmony with the meaning of the words*”, but that essentially, “*lettering and calligraphy are abstract arts*”. The notion that typography is inherently subservient to the text is a legacy of the Saussurean semiotics (cf. *supra*). In his 1977 Course in general linguistics he wrote:

“[T]he actual mode of inscription is irrelevant, because it does not affect the system... Whether I write in black or white, in incised characters or in relief, with a pen or a chisel – none of that is of any importance for the meaning”

The claim obviously derives from the Saussurean concept of semiology, where the written word is only a transcription of speech, therefore making all graphic attributes to the text, if not irrelevant, at least of a much lesser importance. The impact of such a forceful statement still lives on, and mainstream linguistics publications in the West tend to look over typography when dealing with the meaning of textual content (Stöckl, 2005). In the same article, Stöckl assesses two potential roles to typography: the one of “*body*” and the one of “*dress*” of a text. The Saussurean claim pictures letterform as a mere dress, hence a superficial layer of the text of no importance when in-depth analysis is conducted. Bell (2001) considers that, if such had to be the case, only a sociolinguist, not a linguist, would find interest in studying type as well as the text, to reveal background information about the writer, or the targeted audience. Saussurean-style linguists have also mistakenly drawn their attention to the sentence or more specific linear units of language (such as words, graphemes or lexemes, cf. *supra*) and consequently failed to appreciate the spatial nature of text on a page and the impact of layout (Waller, 1996).

Fortunately, recent works (Kress and Van Leeuwen, 2001; Van Leeuwen, 2005; Nørgaard, 2009), aim at changing the perception of typeface by considering it not only as a the

mere appearance of a text (Stöckl's "*dress*"), but as a content provider in itself (a "*body*", or at least, part of it): more than mere form, typography has a function. These semiotics-inspired new tendencies in text linguistics and stylistics have recognised the central purpose of typography and text design. Such studies recognise the importance of the *Schriftbild* (cf. *supra*), and the construction of layers of meaning in a text, using more than just the written content. Following the statement that meaning can be made thanks to various sign systems and that language is essentially tied to non-verbal modes in communicative practice, typography can be seen as a mode/code in its own right (Stöckl, 2004). It supports textual meaning in several ways and must compete with linguistic and semiotic theories that undermine it. The effects of type within the text are both fundamentally tied to language as well as relatively autonomous.

In his *Towards a Semiotics of Typography* (2006), Van Leeuwen considers typography both as a semiotic mode and medium. He states: "*If a semiotic resource is organised as [...] a 'medium', it has [...] a 'lexis'*". To define *lexis*, he gives the example of colour in type: in the Middle-Ages, colour was a semiotic medium by itself, since the pigments had a lot of value:

*"Ultramarine, for instance, had to be imported from across the sea (as the name indicates) and was expensive, not only for this reason, but also because it was made from lapis lazuli. Therefore, it was used for high value subjects, such as the mantle of the Virgin Mary."*

Every colour had a history, a clearly defined origin, and as such conveyed meaning by its very presence. The evolution of techniques, but first and foremost of technology (e. g. the apparition of cheaper pigments) gradually deprived the colours of their *lexis*, and even abstracted the name of colours: instead of ultramarine or cerulean, all those hues were gathered under the same term "*blue*". The systemisation of colour organisation proves that they can now be considered as a semiotic mode, rather than a medium. Likewise, the fact that systemisation of type classification is still quite unpopular and recent (cf. *supra*) classifies typography as a semiotic medium, rather than a mode.

Van Leeuwen (2005) describes what he considers as two fundamental semiotic principles involved in the construction of typographic meaning: connotation and metaphor (or "*experiential metaphor*" (Van Leeuwen, 2006)). According to him, connotation (detailed above) depicts the 'discursive import' of typographic signs into a previously foreign framework. The creation of meaning derives from the emergence of associations from the domain to which a given typeface initially belonged to the targeted domain. The second semiotic principle is metaphor. The idea of experiential metaphor in type comes from the works of Lakoff and Johnson (1980), stating that "*a material signifier has a meaning potential that derives from our*

*physical experience of it, from what it is we do when we articulate it, and from our ability to extend our practical, physical experience metaphorically, to turn action into knowledge*” (Van Leeuwen, 2005; 2006). The metaphorical aspects of typography follow that of literary metaphor: it is based on a comparison of similar concepts. For instance, one of Shakespeare’s most famous metaphors comes from the monologue *As You Like It*:

*“All the world's a stage,  
And all the men and women merely players;  
They have their exits and their entrances”*

Typographical metaphor equally stems from a notion of similarity between the visual form of the signifier (the letterforms) and the signified. In explaining how this representational typographic meaning comes about, Van Leeuwen also mentions the empirical meaning-potential of typography: *“The idea [...] is that a material signifier has a meaning-potential that derives from our physical experience of it, from what it is we do when we articulate it, and from our ability to extend our practical, physical experience metaphorically, to turn action into knowledge”* (2006). To him then, typographical metaphor encompasses two rather different principles: the resemblance between typographical signifier and signified, as well as meanings to do with the material origin of the signifier.

Nørgaard’s (2009) vision of typography as a semiotic mode is more fragmented as she merges the vision elaborated by Van Leeuwen with Peircean semiotics (cf. *supra*). Rather than using terms such as ‘*connotation*’ and ‘*metaphor*’, which were both used extensively in literary analyses, she splits the metaphorical aspect of Van Leeuwen’s typography in ‘*icon*’ and ‘*index*’. Her vision is then triadic, with ‘*connotation*’ renamed ‘*discursive import*’ (following the other appellation provided by Van Leeuwen), ‘*iconicity*’ and ‘*indexicality*’. One example of indexicality is Master’s multimodal novel *A Life Backwards* (2006). Parts of the novel consist in excerpts from the protagonist’s diary. These parts are transcribed in a handwritten font, making the look of the writing invokes the material origin of its own coming into being. This imitation, or *mimesis*, is called high modality in multimodal terms, and could be defined by *“what we see is what we would have seen if we had been there”* (Van Leeuwen 2005).

Iconicity the choice of typeface mostly resides in the emotional connotation of the chosen font. As we have seen before, no typeface is completely neutral, or ‘transparent’. Where Velsaco et al. (2015 and 2015b) saw a sweet aspect in rounder typefaces (cf. *supra*), Van Leeuwen (2005) gives them qualities such as “*organic*”, “*natural*” or “*feminine*”, even though he does mention that all relationships between type and connotation are neither automatic, nor

individual, and that the meaning-potential of type heavily depends on its context. However, authors such as Nørgaard (2009) advise a word of caution against over-interpretation. Not all codes are this fluctuant: some typographic conventions have become obvious as, for instance, when letters are transformed to become more visible, to convey a different kind of salience. In *Stuart, A Life Backwards* (Master, 2006), the typographical feature of capital letters is clearly used to convey audible salience: “A former Labour Cambridge mayor, a no-nonsense political bruiser, called the gathering to silence. ‘Order, order, **ORDER! WILL YOU PLEASE BE QUIET!’”**. Two layers of sonic salience are used here: the introduction of ‘all caps’ to convey the meaning of a louder voice, and the one of italics, that both highlight a potential stress in the voice, but also in the meaning of the word itself. The iconic use of italics to provide salience, convey ideas of monologue, emphasis or even sometimes mockery (as it is sometimes the case in Master’s novel) is far from new, and then tends to go unnoticed by the reader (Nørgaard, 2009). Iconicity and indexicality can be joined in the creation of meaning. In Foer’s *Extremely Loud and Incredibly Close* (2005), colour and type are used to convey mimesis (cf. appendix 229, where the protagonist visits an art supplies shop and comes across a notepad where customers can test various pens), and type overlap is used to convey ideas of heavy confusion and chaos (cf. appendix 230). Discursive import refers to “a type face associated with a particular media context is imported into a different context in which it did not previously belong” (Gibbons, 2012). For instance, the typeface Courier (cf. appendix 231), since its creation in 1955, has conveyed the meaning of typewritten text in literary works.

The Japanese language is very much in advance on the English one when it comes to considering the design of letters as meaning-potential. Considering that the design of characters makes meaning by itself stems from the ideogramic and pictogramic nature of the writing system. Of course, not all kanji are pictograms, and about 92% of kanji characters in the Japanese writing system are in fact radical compounds (cf. *supra*, Kozuka, 2007). Yet of course, all designers, and especially advertisers, have played on both pictorial and linguistic dimensions of characters (cf. appendix 200). To quote Bartal (2013): “the text is itself a visual image”. In contrast with European semiotics, where signifier and signified are separated, and where text and image are two discrete semiotic resources, Japan displays by its very nature an alternative text-image relation.

Developing typography as a semiotic mode takes part in the recent field of research that focuses on the semiotics of graphic elements. As we have seen before, spacing for instance is a crucial part of typography, as well as layout is. In *Reading Images* (1996), Kress and Van Leeuwen define layout as a semiotic resource, in so as it follows certain general rules in its

meaning-making. They describe multimodal documents (then called “*composite texts*”) as a semiotic whole, instead of the sum of its parts (text, image, video, etc.). In other words, what a text means is the consequence of the influence of several different semiotic modes interacting with each other. Kress and van Leeuwen believe that the combination of the different modes is the work of an all-encompassing code. They describe two such incorporation codes: layout, which stands for the code of spatial composition, and rhythm, or code of temporal composition. The former (layout) operates in texts in which all elements are spatially coexistent (paintings, magazine pages) and the latter in texts which unfold over time (e.g. film, TV, websites). Layout unfolds in three main principles: information value, salience and framing.

The principle of information value can itself be separated categories. For instance, ‘*Given*’ and ‘*New*’, or the repartition of information value from left to right. When layouts make substantial use of the horizontal axis, placing some of their elements to the left and others on the right, the elements placed on the left tend to be determined as *Given*, the elements placed on the right as *New*. The right side of a layout generally displays the key information – what the reader must pay attention to – the *New*. It is introduced as something which is not yet known or, possibly, not yet agreed upon, hence something to which the viewer must pay attention. The left side of a layout is usually the side of the *Given*: something the reader is assumed to already know, as part of his/her cultural background. The *Given-New* structure also gives a sense of ongoing movement (before/after). It is possible that these meanings are linked to the Western habit of reading from left to right. ‘*Ideal*’ and ‘*Real*’ refers to the repartition of information on the top or at the bottom of an CE. If a layout is organised along a vertical axis, what is placed on the top of the layout stands for the *Ideal*, what has been placed at the bottom for the *Real*. For something to be ‘*ideal*’ means that it is presented as the idealised or generalised essence of the information and hence is also its most salient part. The ‘*real*’ is then opposed to this in that it presents more specific information, more down-to-earth information or more practical information. It is the elaboration or extension of the promise of the ‘*ideal*’. In advertising with a top/bottom layout, the upper section visualises the promise of the product, the glamour it can bestow on its users, or the sensory fulfilment it will bring. The lower section visualises the product itself, providing more or less factual information about the product, telling readers where it can be obtained or how they can request more information. Compared to the *Given-New* structure, the *Ideal-Real* structure in layout has less sense of movement and a greater sense of opposition or contrast. ‘*Centre*’ and ‘*Margin*’, or the accumulation of information in the middle of a document, is a third possibility. This layout structure is relatively unusual in contemporary Western layouts, which more commonly polarise the elements of a layout (i.e. the *ideal/real* and *given/new* structures). But central composition is important in

Asian design (perhaps, related to Confucian notion of harmony and continuity). If a visual composition makes a significant use of the centre, placing one element in the middle and the other elements around it as margins—the centre is the nucleus of the information on which all the other elements are in some way subservient. In many cases the margins are identical or at least very similar to each other. The centre may be a symbolic which unifies the information surrounding it around a central meaning.

*Saliency* is the second principle of layout debated by Kress and van Leeuwen. It refers to the extent to which an element of a layout catches the eye of the viewer. Saliency ranks the importance in layout by making certain elements more visible. The greater the visual impact of an element of a composition, the greater its saliency. Greater saliency of an element of a composition can be achieved through: size, sharpness of focus, tonal and colour contrasts, location of the object, perspective and overlap.

The last code is *framing*. The stronger the framing of an element, the more it is displayed as a discrete unit of information. The presence of framing stands for uniqueness and difference. Framing may be by actual frame lines surrounding an element, empty space surrounding an element or through other means. Connectedness can be emphasised by vectors. Vectors can be depicted elements or abstract graphic elements leading the eye from one element to the other, beginning with the most salient element. Horizontal and circular compositions often have weak framing while vertical compositions often have strong framing.

Considering images not only as a semiotic resource, but also as a semiotic mode (in opposition to a medium, cf. *supra*) is trying to understand visual elements as a kind of ‘language’. The language of pictures is considered as an evidence in the Japanese culture and language, but in the West, it is very modern conception. How can systemisation be adapted to typography? As we have seen before, the efforts in classification of type try and prove that typography is more than a medium, understood as a set of finite rules. In order to be a semiotic mode, typography needs to be a set of systems (cf. *infra*). In his *Towards a Semiotics of Typography* (2005), Van Leeuwen offers a set of systems (cf. appendix 232). The curly brackets and the square brackets respectively illustrate various syntagmatic rules, rules of inclusion, on the model “*both ... and*” (“*a letter form must have both a certain weight and a certain degree of expansion and...*”, *ibid.*) and exclusion, on the model “*either ... or*” (“*disconnection must be either internal or external*”, *ibid.*). Therefore, each part of the anatomy of letters (cf. *supra*), and the connotative aspect of type (cf. *supra*) can be considered as a semiotic resource, and enter and expand the system set in place by Van Leeuwen. For instance, Nørgaard (2009) proposes to also include ‘colour’ as a mode, and Kurz (2011) to mention the historical context

of the type. He writes: “*The historical axes and typographical conventions of a given time have to be taken into consideration; there is no one-fits-all relation between meaning and appearance (‘discursive import’)*”.

Each semiotic mode needs a set of system, principles and tools to be used in a sensible and consistent way: such a set is referred to as a grammar.

### iii. A grammar of typography?

Since his first article in the journal *Word* in 1961 *Categories of the Theory of Grammar*, the researcher Michael Halliday has developed a theory, a new conception of grammar, defining language as a semiotic resource, a “*meaning potential*” (Halliday, 1961). Grammar (as a phenomenon) is part of language; it is the ‘system of wordings’. The way one considers how it is conceptualized depends on one’s grammatics. In the history of thinking about language in the West, there have been two distinct theoretical viewpoints. Both find their origins in Ancient Greece (Matthiessen and Halliday, 2004), and although they have evolved, they are still both prominent in our current mindsets. On the one hand, language is considered as a set of rules for stipulating structures; therefore, grammar is a set of rules used to lay down structures, such as the assembly of a transitive sentence associating the functions ‘verb’ and ‘object’. Stemming from this perception of language come philosophy and logic, and the valorisation of the sentence as the elementary unit of language, developed around a logical model ‘Subject’ + ‘Predicate’. Since the sentence is the basic element, it is considered in isolation. On the other hand, language is a resource, a source for making meanings. Grammar then is a means to create meaning through wording. This viewpoint is that of rhetoric and ethnography, and the valorisation of text (understood as discourse) as the elementary unit of language, organized consistently with a rhetorical context. Since text is the basic unit, the sentence is studied in its discourse environment (ibid.). The Hallidayan grammar is part of the latter. It can also be referred to as a *lexicogrammar*, meaning that grammar and lexis are both ends of the same continuum. Traditionally, analysis of a grammar is trinocular. Adding the dimension of lexis, one can analyse lexicogrammar from two more levels, ‘above’ (on a semantic perspective) and ‘below’ (from a phonological point of view). This grammar gives emphasis to the view from ‘above’. It is based on two discrete linguistic and cultural models: English and Chinese. Halliday built his theory following the works of Saussure, and Firth, from whom he borrows the conception of language as a *system*, not as a set of rules (Halliday, 2002). The notion of

system is one of the two bases of Hallidayan grammar, along with *function* (or, rather, *metafunction*). In his chapter *Meaning as Choice* (2015), he writes:

*“It seemed to me that explanations of linguistic phenomena needed to be sought in relationships among systems rather than among structures – in what I once called “deep paradigms” – since these were essentially where speakers made their choices”*

“Choice” is the concept that drives the Hallidayan grammar, and that makes it enter the domain of semiotics. His claim is that all linguistic acts involve a certain degree of choice, made on various levels. Consequently, systemic grammars rely on system networks as their primary representation tool to map out the sets of options available in a language. Every linguistic choice we make is systematic, and the reason we say something in a certain way is the result of a choice, albeit unconscious. For example, a central clause must display some structure that is the formal realisation of a choice from the system of ‘voice’, meaning that the elocution must be either ‘middle’ or ‘effective’. If the speaker chooses for the voice to be ‘effective’, then such a decision leads to the further choice of being either ‘operative’ (or ‘active’), or ‘receptive’ (or ‘passive’). Halliday defines grammatical systems as “*closed*”, which means that they offer a finite set of options. By contrast, lexical systems are open, since new words and structures come into a language all the time (Halliday, 1961).

Halliday’s grammar is not just *systemic*, it is *systemic functional*, which is why his theory is usually referred to as SFG: *Systemic Functional Grammar*. He argues that the explanation of how language works “*needed to be grounded in a functional analysis, since language had evolved in the process of carrying out certain critical functions as human beings interacted with their ... ‘eco-social’ environment*” (ibid.). There were formerly four metafunctions to the grammar (Halliday, 2005): “*four components in the grammar of English representing four functions that the language as a communication system is required to carry out: the experiential, the logical, the discoursal and the speech functional or interpersonal*”, but these have been reduced to three: *ideational, interpersonal* and *textual*.

The ideational metafunctions refers to the understanding, construction and maintenance of experience. Thanks to the ideational metafunction, the subject is able to make sense of reality (Halliday and Matthiessen, 2004). It can be divided into two subcategories, the *experiential function*, and the *logical function*. The experiential function relates to the grammatical resources which revolve around construing the flux of experience through the basic unit of the clause. To quote Halliday (2003):

*“Most obviously, perhaps, when we watch small children interacting with the objects around them we can see that they are using language to construe a theoretical model of their experience. This is language in the experiential function; the patterns of meaning are installed in the brain and continue to expand on a vast scale as each child, in cahoots with all those around, builds up, renovates and keeps in good repair the semiotic “reality” that provides the framework of day-to-day existency and is manifested in every moment of discourse, spoken or listened to. We should stress, I think, that the grammar is not merely annotating experience; it is construing experience”*

The idea of the experiential function is that meaning is construed from experience, causing language to evolve, per Halliday. The logical function allows the user to create grammatically complex units of grammar through the combination of various clauses. The user then chooses how to associate these clauses, and the kind of relationship to sustain between them. To Halliday, both functions are quite close, and are therefore joint in the same metafunction. The ideational metafunction replicates the contextual value of *field* which itself refers to the nature of the social development in which the language is involved. Analysing a text from the standpoint of the ideational function involves focusing on the choices in the grammatical system of “transitivity”: process, participant, and circumstance types, combined with an examination of the resources through which clauses are united (Halliday and Matthiessen, 2004). Put in one sentence, the ideational metafunction focuses on the fact that *language represents the world*.

The interpersonal metafunction describes the choices made by the speaker to put the multifaceted and various interpersonal relations into words. This principle originates from the claim that a given speaker not only talks about something, but that there is always an addressee to interact with. Interaction happens on all sorts of levels, “[ranging] *all the way from the rapidly changing microencounters of daily life – most centrally, semiotic encounters where we set up and maintain complex patterns of dialogue – to the more permanent institutionalized relationships that collectively constitute the social bond*” (Halliday, 2003). This metafunction is linked to the *tenor* aspects of a text. Tenor can be divided into three categories: mood, modality, and polarity. Concisely, the interpersonal metafunction reflects the ability of language to *construct social relations*.

Halliday states that both experiential and interpersonal metafunctions are involvedly structured, but that between them “*there is comparatively very little constraint*”. In other words, “*by and large, you can put any interactional ‘spin’ on any representational content*” (ibid.).

The free combination of these two metafunctions is enabled by the mediation of a third, *textual* metafunction. The textual metafunction is linked to the notion of *mode*, or the core organisation and communicative nature of a text. This encompasses textual interactivity (for instance, disfluencies such as pauses or repetitions), naturalness (the grammatical, tonal and pitch cohesion of a text, its lexical density, and coordination) and communicative detachment. These functions “*create coherent text – text that coheres within itself and with the context of situation*” (Halliday, 2003). Halliday states that the textual function is separate from both the two other ones because its object is language itself. Through the textual function, the speaker “*creates a semiotic world of its own: a parallel universe, or ‘virtual reality’ in modern terms*” (ibid.). In a few words, the textual metafunction focuses on *how language forms texts*.

Thus, Systemic Functional Grammar does not describe language as a finite rule system, but rather as a set of systems, realised by choices, that is endlessly extended by the very choices that realise it and that is unceasingly reproduced and recreated with use. How can the SFG be applied to typography? According to Machin (2007), what is specific to the multimodal approach to communication is “*the idea that all modes need to be considered with the same kind of detail, as semiotic systems in themselves, whose potential choices, patterns and grammar can be described and documented*”. Consequently, because typography is receivable as a semiotic mode, and not simply a medium (cf. *supra*), some grammatical systems could be drawn. Such is the thinking of Stefan Kurz, Nina Nørgaard, Theo Van Leeuwen along with Gunther Kress, or Helmut Stöckl to quote a few; hence their will to try and determine a grammar of Western typography.

The model proposed by Van Leeuwen (cf. appendix 232) and the one proposed by Stöckl (cf. appendix 233) are slightly different. Van Leeuwen’s model’s is to “[bring] *out that, overall, [...] typography operates as a parallel, rather than a linear system*” (2005). This system fully establishes typography as a full semiotic resource, and allows it to be used both as a mode and as a medium (cf. *supra*). Because the model mostly plays on type features (“*weight*”, “*orientation*”, etc.), Nørgaard (2009) considers that it is not complete, and proposes to add dimensions such as colour, or surface. The Stöckl model (cf. appendix 233) encompasses more of those dimensions, since it aims at playing on various levels, ranging from “*microtypography*” to “*paratypography*”. He explains:

“(i) ‘*microtypography*’ refers to fonts and individual letters; (ii) ‘*mesotypography*’ concerns the configuration of typographic signs in lines and text blocks; (iii) ‘*macrotypography*’ deals with the graphic structure of the overall document; and

(iv) ‘*paratypography*’ is devoted to typographic media, i.e. surface materials and instruments for producing typographic signs”

Comparatively, Van Leeuwen’s model focuses more on the ‘microtypography’ and ‘mesotypography’ scales of the Stöckl model.

How can these models fulfil the metafunctions of Systemic Functional Grammar? Van Leeuwen finds answer in the metaphorical aspect of type. He writes: “*Increased weight is of course frequently used to increase salience, but it can, at the same time, be used metaphorically, to signify ideational and interpersonal meanings. Bold can be made to mean ‘daring’, ‘assertive’, or ‘solid’ and ‘substantial’, for instance, and its opposite can be made to mean ‘timid’, or ‘insubstantial’*” (2005). Earlier we talked about the indexical and iconic dimension of typography, and these could perfectly be represented by the Hallidayan dimensions of ideation and interpersonal. The textual metafunction of typography can be found in the meaning potential of layout (cf. *supra*; Kress & Van Leeuwen, 1996; Van Leeuwen, 2005), and in aspects such as colour, among others.

To make it clearer, let us take an example. Appendix 234 is a template for a real estate agency advertising campaign. The textual metafunction of the title resides mostly in the font used to write the name of the place where the goods are for sale, “Lakeside Residence”. The use of a heavily ornamented font, in rather big makes it salient: it becomes a title. The flourishes of the font convey the idea of ‘luxury’, and ‘refinement’. This idea is echoed by the combination of swashes and ornaments, that separate the picture of the lake from the part of the campaign that contains the *lorem ipsum*. As far as layout is concerned, we can note that the words are written slightly on the right-hand side of the advertisement, hence conveying an idea of novelty in the “Given-New” system (cf. *supra*). Note that the name of the real estate agency (for the sake of the template, here “REAL ESTATE”) also displays ornaments, while the word “AGENCY” is in capital, simple serif letters. Here, both the ideational metafunction (the company builds a representation of itself) and the interpersonal metafunction (the company “speaks” to its customers) come into play: the real estate agency sells luxury goods (the ornaments), but is a professional and serious establishment (the use of serif fonts, generally known to represent seriousness (Mackiewicz and Moeller, 2004)). Applying the previously exposed elements of the meaning potential of the company name components, the company here presents itself in ‘personal’ way (the sloping font, reminiscent of handwriting), as ‘human’ (or at least ‘humane’) rather than ‘mechanical’ (by using rounded, and slightly irregular characters), but also quite assertively (bold and wide). It also roots its warmth in professionalism. The typeface of the *lorem ipsum* on the left, by contrast, is less personal, more

formal (an all caps, sans serif font), and ‘mechanical’ (more angular and regular), and absences the ‘assertive’ features of the name or title. It is then meant to be factual and informative only, oriented towards legibility rather than expression. This contrast is also realised in the semiotic modes of language and colour: the lorem ipsum resembles more a plain text, with dark characters printed on a light background, while the company name, headline and baseline are all surrounded by colourful elements. Lastly, the company strongly plays on the interpersonal dimension here: the “Ideal” versus “Real” dimensions of the layout are effectively taken advantage of: the upper part of the advertising, the “ideal” one, represents the lake in a dreamy sunset, the name of the residence, but most of all, the word “you”, written in all capital letters. Besides, the baseline “*that you deserve*” is written slightly on the right, just under the name of the residence. In the semiotic dimension of the layout, the company is telling its customers “this is your dream, it will come in the near future, and it is waiting for you”. In the “real” (lower) part of the advertising is all the information about the agency, creating the link between the dream and the real world: if the customer wants to enter the dream residence that is awaiting them, they must go through the real estate agency. Intertwined to the interpersonal metafunction also plays the ideational one, of course: the company is revealing itself not only as a provider of high-standard dreams, it is also the key to access those dreams.

As for Japanese typography, to this day, no work has been done to link it to SFG (in Japanese, 選択体系機能文法 *sentakutaikēkinōbunpō*). This is probably because Japanese works about this theory are quite scarce, and the difficulty to create new letterforms in Japanese (cf. *supra*). One reference that is often quoted is 照屋一博 *Teruya Kazuhiro*’s 2007 *A Systemic Functional Grammar of Japanese*. However, to our knowledge, SFG has not been applied to anything close to visual design in Japanese.

## **SECTION TWO: EMPIRICAL APPLICATION**

## I. Methodology

Let us start this second section with an overview of the methodology that will be used in this study. This theoretical part will explain and justify the outline of the research that has been chosen, and the reasoning process behind the results analyses.

### a. Research method

The thought process at the beginning of the elaboration of a field study usually starts on whether to choose a quantitative, or a qualitative approach. In this first part we will assess each method, and expand by presenting the different stages of the current empirical study.

#### *i. Quantitative and qualitative studies*

There are multiple ways to collect scientific data. The two approaches that are traditionally opposed are the quantitative and qualitative approaches, even though bridge approaches have been developed since (Poisson, 1983). While the qualitative approach will focus on making sense of a confuse situation, or collect information through in-depth knowledge of a limited sample, through interviews for instance (Mongeau, 2008), the quantitative study, which will be retained in the current research, focuses on correlations that can be established between observed variables. One typical research field that could ask for quantitative methods is sociology, and the construction of a questionnaire to pass through a stratified sample. Quantitative studies are generally defined by a bigger sample, defined groups, construction and usage of specific instruments of observation and measurement, and assessment of the results through adapted statistic tools (Campbell, 1979).

Choosing between a qualitative and a quantitative method is usually a matter of epistemology (Rist, 1979). One would need to consider knowledge as a social product that human beings can have access to through means that depend on everyone's beliefs and values through which they see the world. Thus, each research method, as a means to better see, understand and interpret reality, influences the nature of research, observations and conclusions. Therefore, a researcher opting for a quantitative study will aim at gathering knowledge by

observing the behaviours of a large sample, while the qualitative researcher will focus on the internal thought processes (Poisson, 1983; Rist, 1979).

Quantitative studies aim at verifying the validity of a theory, or the possibility of generalising a claim (Mongeau, 2008). Such a claim is generally called a hypothesis, or a research question. The quantitative research is usually linked to the reasoning process of *deduction* (cf. *infra*), where hypotheses are deducted from previous studies and theories, which are all detailed in the section one of this paper. The statistical aspect of quantitative studies aims at assuring that fair conditions to generalisation are respected. The study essentially relies on the comparison of situations and data that are called *variables*, some of them being measurable, except for the variable whose impact is being measured. More than contextualisation and sense of variables for a given group, the quantitative research aims at validating and expanding results. In turn, those results can be used to develop further hypotheses, building further quantitative studies.

Both methods have their assets and drawbacks, which is why, to give a better-rounded overview, the current study will use both approaches: a qualitative *exploratory study*, and a quantitative, central *confirmatory study*.

## ii. The exploratory study

Prior to the quantitative study, a qualitative pre-survey can be conducted. Usually under the shape of semi-directed interviews, those pre-surveys help design and enrich the construction of a well-rounded questionnaire, that will bring the researchers the answers they need (Selz, 2012). These interviews allow the survey to broaden the terms and themes explored in the study, and consider new perspectives.

The interviews can either be entirely recorded and later be transcribed for statistical text analysis or thematic content analysis. Interviews that are not fully transcribed may be summarized to identify the main interview themes as they relate to the planned questionnaire outline. This stage also brings forth dimensions that may not have been initially planned for.

Once the interviews have been conducted and the questionnaire is built, a preliminary test of the questionnaire itself is necessary (*ibid.*). A small, diverse sample is defined, and *preliminary cognitive interviews* are set to pinpoint any difficulties respondents may encounter when answering the actual survey. These interviews help remove points of misinterpretation and any distance between the researcher's intentions and the way(s) respondents understand

questions. As the cognitive process involved in answering a questionnaire unfolds, the following shortcomings will be acknowledged:

- The respondent can misunderstand or misinterpret a question.
- The answer might not provide the desired information.
- The respondent's answer may be hindered by personal barriers (self-censorship, motivation, social desirability effect, etc.).

The protocols generally used in cognitive interviewing are *think-aloud* and *verbal probing*. During a *think-aloud* procedure, the respondent is instructed to describe clearly the mental process he/she is going through, from question comprehension to which thinking process leads to the final answer. In *verbal probing* the researcher asks a short series of secondary questions designed to increase insight into how the question is understood and how the respondent reaches and justifies his/her response (Priede and Farrall, 2011).

### iii. The confirmatory study

One of the main procedures that can be used to confirm hypotheses is the questionnaire. Questionnaires can be filled out on paper or on a screen, which will be the preferred method here. There are two types of questionnaire: *hetero-administered*, where the researcher directly asks the questions to the respondents, and *self-administered*, where respondents answer the survey by themselves. The latter will be used in the frame of this study. Respondents answer the questionnaire themselves, using either paper and pencil (Paper And Pencil Interview or PAPI) or a computer (computer screen, tablet, smartphone, etc., a method called Computer-Assisted Self-Interview or CASI) (Selz, 2012).

The questions are built around variables, some independent, some dependent, or of control (cf. *infra*). Since the goal of a quantitative study is to verify hypotheses, the questions must be formulated clearly, to provide reliable results, which in turn can be expanded outside the scope of the study.

Once the questionnaire is designed, and the mode of diffusion has been selected, a framework for the quantitative study needs to be set. The sample delimits this framework. The sample, as its name suggests, is a fraction of the population studied through the research (Mongeau, 2008). In the frame of a quantitative study, and to have a sample that is as representative of the whole population as possible, the members of the sample need to be selected at random, in a place where anyone has an equal chance of being chosen, to reduce

biases as much as possible. The means often defines the size of the sample available to the researcher, may they be of time, or financial resources.

## b. Reasoning processes

The main scientific reasoning processes are: induction, deduction, and the hypothetico-deductive model (Dépelteau, 2010). Induction, or inductive reasoning, consist in inducing truths, or general statements from specific, systematic, and meticulous experiments. Deduction, or deductive reasoning, deducts truths or general statements from previously constructed theories. Hypothetico-deductive reasoning is made of various steps: the initial question, the creation of deductions, or inductions, according to the empirical knowledge available, and the realisation of empirical tests to confirm or disconfirm the hypotheses. Lastly, another process may be pertinent, the one of abduction. Abduction considers that the creation of knowledge can be made only through a reasoning or an observed situation which has been put to the test of the Peirce theory (1878). He writes:

*“DEDUCTION.*

*Rule.—All the beans from this bag are white.*

*Case.—These beans are from this bag.*

*Result.—These beans are white.*

*INDUCTION.*

*Case.—These beans are from this bag.*

*Result.—These beans are white.*

*Rule.—All the beans from this bag are white.*

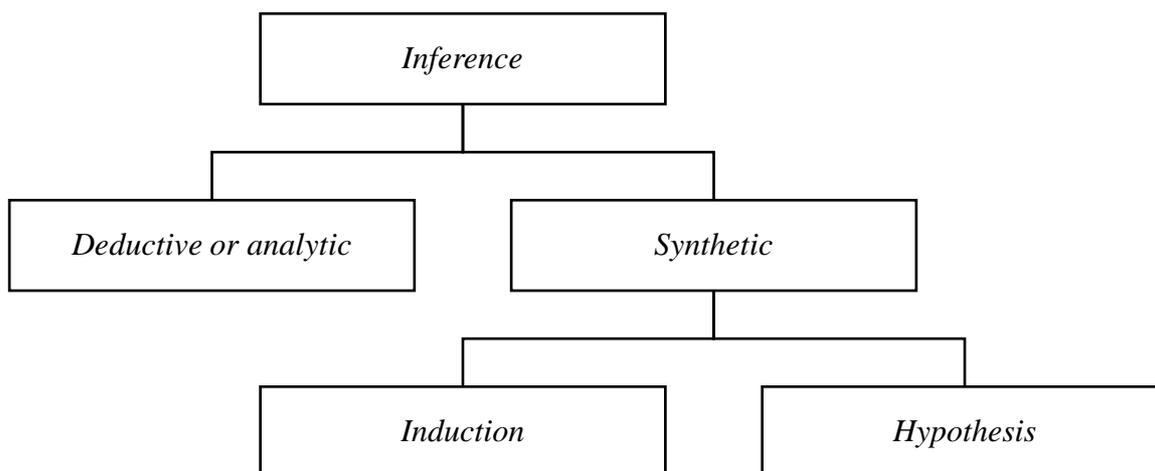
*HYPOTHESIS.*

*Rule.—All the beans from this bag are white.*

*Result.—These beans are white.*

*Case.—These beans are from this bag.*

*We, accordingly, classify all inferences as follows:*



”

The essence of an argument itself is to go from premises to reach conclusions in a valid manner (Toulmin, 2003). Later, Peirce (1955) revised his syntax to prefer the term “abduction” to “hypothesis”. As the beans example developed by Peirce in the previous excerpt shows, deduction generates consequences (or “*result*”), induction establishes general rules, and abduction creates hypotheses. The different modes simply display a different order between result, rule, and case. However, the main logical reasoning process is the deductive one (David, 1999). Abduction and deduction represent the conceptual comprehension of a given phenomenon, while induction is the quantitative verification of said phenomenon. When using abduction, the goal is to explore the data, find a model and offer a plausible hypothesis based on premises. Deduction allows for the construction of a logical and valid hypothesis based on other plausible premises. Induction brings us closer to reality, to root our beliefs in an in-depth study. To summarize, abduction creates, deduction explains, and induction verifies (Ho, 1994).

This paper will follow a deductive approach. The first section of this paper, the state of the art, laid down all concept and theories linked to typography as a semiotic mode, and the SFG approach. Stemming from these theories, and following a deductive approach, the aim of the current study is to present concrete, tangible proof of those theories. The field of semiotics suffers from being very theoretical and hard to grasp for non-specialists; offering quantitative, measurable results is a way to make this field of research, so essential as we enter the post-Gutenberg parenthesis era (cf. *supra*), more accessible.

All theories put to the test in this study have only been tested on the English language, and never on the Japanese one. Besides, apart from the Takagi classification system, all theories are Western, and have been applied to a Western sample. Here we will try to both confirm and expand the scope of application of the research: the application to a Western sample shall

confirm (or deny) the previous studies, and the application to the Japanese sample, expand the field and provide new cultural inputs.

As much as possible, this paper aims at presenting *sound* results, more than merely *valid* ones. Deductive arguments are assessed in terms of their *validity* and *soundness*. An argument is valid if it is impossible for its grounds to be true while its result is false. In other words, the conclusion must be true if the premises are true. A claim can be valid even if one or more of its premises are false. An argument is sound if 1) it is valid, and 2) the premises are true. It is conceivable to have a deductive statement that is logically valid but is not sound. Fallacious arguments often take that form.

The following is an example of an argument that is “valid”, but not “sound”:

1. Everyone who eats tomatoes is a teacher.
2. Kazuya eats tomatoes.
3. Therefore, Kazuya is a teacher.

The example’s first premise is false – there are people who eat tomatoes who are not teachers – but the conclusion would necessarily be true, if the premises were true. In other words, it is impossible for the premises to be true and the conclusion false. Therefore, the argument is valid, but not sound. False generalizations – such as “*Everyone who eats tomatoes is a teacher*” – are often used to make unsound arguments. The fact that there are some people who eat tomatoes but are not teachers proves the flaw of the argument.

In the research field, valid yet unsound results taken as “good enough” are dangerous, both for the research in the matter itself, because it only provides weak arguments, but even more so for subsequent research, that are based on shaky foundations.

\*

This paper will then follow an empirical study following a deductive thought process: among the theories that were detailed in Section one, some will be chosen to be applied to our sample, and be either validated or denied. The study will be divided in two movements: it will open on a qualitative exploratory study, which will help build a strong questionnaire, and the main, quantitative study, that will put the theories to the test. Let us now focus on the conceptual framework of the study, here understood as the selection of variables that will be put to the test.

## **II. Conceptual frame**

There are two categories of variables that will be examined in this study: individual variables, which are all independent characteristics proper to the respondent, and dependent variables, that are the empirical application of some selected theories from Section one. In this part, we will also draw a conceptual model, to best represent the thinking process that will be developed through this study.

### **a. Individual variables**

Individual variables refer to characteristics proper to each person forming the study sample. Very few of the studies used as sources for this paper have taken individual variables into account when conducting fieldworks. Therefore, to bring forth as many elements of study as possible, we have retained basic sociodemographic features, and personal background and international experience as variables. These allow us to assess whether the perception of design elements, in the case of the present study, typography, can be influenced by gender, age, and personal background.

#### *i. Sociodemographic variables: gender and age*

None of the studies focusing on typography (Halliday, 1961; Kress and Van Leeuwen, 1996; Mackiewicz, 2004 and 2005; Van Leeuwen, 2006; Velasco, 2015 and 2015b; etc., cf. *supra*) have taken gender into consideration. This is mainly because most of the works were

purely theoretical. The few studies including an empirical part might not have taken individual characteristics because the frame of typography as a semiotic mode is quite recent, and smaller indicators such as gender do not stand out as a priority. However, medical papers such as the 2012 *Sex and Vision* series of studies lead by Abramov et al. seem to prove that gender does affect the way humans see. In those studies, Abramov asked men and women to break down the hue of a colour and to assign a percentage to the categories red, yellow, green, and blue. The results showed that women were more skilful at distinguishing between subtle nuances than were men. This sensitivity was most evident in the middle of the colour spectrum. With hues that were mainly yellow or green, women could distinguish minute differences between colours that looked identical to men. Abramov found that slightly longer wavelengths of light were required for men to see the same hues as women—hues identified as orange by women were more yellow by men. This first part of the study, although very interesting, is only mildly relevant to the present study, since colour will not be considered in the questions asked to the sample. However, the second part of *Sex and Vision* fall directly in the spectrum of this research. Abramov discovered that when shown light and dark bars flickering on a screen, men were better than women at seeing the bars. This reveals that men were better able to perceive changes in brightness across space, a skill useful for reading a letter on an eye chart or recognizing a face. This effect was increased as the bars narrowed, suggesting that men are more sensitive to fine details and rapid movement than women. The researchers hypothesized that such discreet capabilities might be linked to gender-assigned roles in prehistoric civilizations: men would hunt, and women would collect plants.

The importance of gender in perception of typography as a semiotic mode is still unexplored, therefore only at the end of the field study will we be able to assess whether it is relevant or not.

As for the age of the studied group, the format of our envisioned survey first limits it to be its format: everything will be designed and spread online, which will require the sample to be internet users, and have both access and understanding of social network services. Most of the previous studies (Mackiewicz, 2004 and 2005; Velasco, 2015 and 2015b) have been conducted on groups of university students. However, typography as we now know it is not this recent (cf. *supra*). Therefore, to expand the scope and allow for a richer sample to answer the questionnaire, the age bracket will comprise three age groups: less than 24 years old, 25-34 years old, and over 35 years old.

Using those variables, the following questions can be formulated:

Variable	Question
Gender	Q 1.1: Gender has an influence over the apprehension of typography as a semiotic mode.
	Q 1.2: Men are more prone to grasp letterform details.
Age	Q 1.3: Age has an influence over the apprehension of typography as a semiotic mode.

ii. Personal background and international experience

Another series of variables that depend on individuals are personal background and how much each person has been in contact with the international scene. The personal background encompasses the highest level of education completed by the person filling the form in, and the number of languages the interviewee masters, besides their own mother tongue. The relationship between level of education and ability to appreciate art, or visual design has been assessed by research such as Bleed's 2005 *Visual Literacy in Higher Education*, or Hanafy and Sanad's *Colour Preferences According to Educational Background* (2015). Both papers agree that completing higher degrees of education provides the theoretical, rhetorical, and intellectual tools that help assessing one's opinion of a visual artwork, as well as a thought process akin to a critic's, that pushes the viewer to wonder past the basic liking or disliking opposition: "*To put it simply, saying 'I don't like this painting' is insufficient*" (Collins, 2007), and formulate comprehensive arguments.

The other argument which separates the sample is the mastery of both English and Japanese languages, and written systems. The current study aims at applying the same semiotic rules to both the Japanese and Western typographies. Following Elmes' claim (2013), one cannot learn a new language without getting insight on a new culture: "*language and thought interact constantly and linguistic competence is not enough for learners to be competent in that language*" (Elmes, 2013, Krasner, 1999). Their statements corroborate the Sapir-Whorf hypothesis of language influence over thought process and, eventually, culture (Whorf, 2012). Therefore, it seems evident that a person who has been in touch with both sides of the researched areas might have a different perspective than the one who has only dealt with either English or Japanese. Besides, when faced with a writing system that is known, the reader will automatically try to make sense of the words, or characters written. However, when dealing with a completely foreign system, the reader will only be able to rely on external clues, such as

typography, to make sense of the message (cf. *supra*). Following the claim made by Elmes, Krasner and Whorf, and to refine the degrees of influence of linguistic proficiency over the answers, the questionnaires will separate the proficiency levels of the sampled people over two discrete scales:

- To assess the Japanese level of English speakers, the JLPT (Japanese Language Proficiency Test, or 日本語能力試験 *Nihongonōrkyokushiken*) scale will be used. The JLPT is the reference test used worldwide to evaluate one's mastery of Japanese.
- To assess the English language of Japanese speakers, the 英検 *Eiken* scale will be used. The Eiken is an English proficiency test designed for and aiming at Japanese people, and the grading system is the local equivalent to other proficiency scales, such as the CEFRL (Common European Framework of Reference for Languages) in Europe.

Lastly, the individual variables focus on how much the respondent has been exposed to an international scene, by revealing how many languages they master besides their mother tongue, and whether they have lived, worked and/or studied abroad, and for how long. The answer to these questions will allow the aforementioned theories to confront the field of typography.

The personal variables can be explored through the following questions:

Variable	Question
Level of education	Q. 1.4: A higher level of education enables a better apprehension of typography as a semiotic mode.
Foreign languages proficiency	Q 1.5: Proficiency in a foreign language influences the viewer's perception of typography as a semiotic mode in his/her own language.
	Q 1.6: Proficiency in a foreign language influences the viewer's perception of typography as a semiotic mode in a foreign language.
Exposure to internationalisation	Q 1.7: Exposure to internationalisation influences the viewer's perception of typography as a semiotic mode.

### iii. Cultural variables

In this study, the most important independent variables are the origin, or the cultural background, of the respondents. Indeed, since this paper is included in the framework of an intercultural communication approach, whether the respondent is Japanese or a Westerner, and how this background influences their answers is at the centre of the research.

Besides, as it was explained earlier, the two main goals of this study are to confirm the studies that have been conducted in the past on a Western sample, and expand the scope by now including a Japanese sample, to verify whether the theories mentioned before are adaptable to a completely different cultural environment.

Therefore, the cultural variables can be explored through the following questions:

Variable	Question
Cultural background	Q. 1.8: Japanese people and Westerners have a similar approach to typography as a semiotic mode.

b. The concepts tested through the field study, and the elaboration of research proposals and variables

Among the concepts that have been detailed earlier, four of them will be assessed in the current field study. This paper follows two discrete leads: confirming the theories and frameworks that have been created before in the field of Western typography, and transposing them to the field of Japanese typography, to evaluate whether they are valid in such a different environment. As it has been proven before, the Japanese and Latin writing systems are so different that, should all theories and paradigms be validated in both spheres, one could infer that a generalisation of these theories to a global scale is possible.

i. The classification system

Takagi (2014) has proposed a type classification system for both Latin and Chinese typefaces (cf. *supra*). The Takagi classification system is a junction of two previous organising patterns, one defined in 2003 by Kupferschmid, and one designed in 2010 by Komiyama. All three systems are quite similar: Kupferschmid targeted the Latin typefaces, Komiyama the

Japanese ones, and Takagi aimed at comparing Chinese and Latin typefaces. The current study will try to transpose this model to both Japanese and Latin typefaces. The matrix is divided in 16 categories: the horizontal axis corresponds to the presence or absence of serifs for regular typefaces, and a discrete category for more artistic, handwritten-inspired fonts (the “*calligraphic touch*” Takagi mentioned earlier). The vertical axis refers to the structure of the letters: in Kupferschmid’s lexicon (2003), if serifs and stroke width contrast are the “*flesh*” of characters, the structure is their “*skeleton*”. There are four categories of structure: dynamic, static, constructive, and expressive. However, a pre-test (cf. *supra*) conducted before the actual field study has informed that it is *difficult* for non-initiated people to differentiate those four categories. Therefore, in the current study, since knowledge of typography is not a variable, only the categories of the horizontal axis will be considered. To validate our question, and Takagi’s model in the framework of Japanese typography, the respondent will be asked to pair Latin and Japanese fonts according to the specifics of each font.

Besides, by comparing the answers of the Western and the Japanese samples, we will be able to assess whether understanding the meaning of characters affects the understanding of the structure of characters. Should there be differences, they would agree with the views of 服部一啓 *Hattori Kazutaka*, a professional calligrapher and university teacher, who stated in a 2015 interview that Japanese people and foreigners do not consider calligraphy exhibitions the same way at all:

*“[The Japanese audience] will define trying to read the characters painted on the artwork as a priority. They do not see the piece in front of them as an artwork, but rather as a message that needs to be deciphered. Then, and only then, they might get interested in the writing style. It is a shame because I often see students trying to read the pieces, and if they fail to understand the characters, get frustrated and carry on. [...] Foreigners usually cannot understand the meaning of the characters, especially when they are designed in a very artistic manner. Because of this, they can only rely on their impression of the character, and how they feel looking at it.”*

The questions asked about the classification system can be summarised in the following terms:

Hypothesis	Question
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Typography can be framed in a global classification system	Q 2.1: Type can be classified following an international, common matrix, regardless of the writing system that is in use (Japanese or Latin characters)
	Q 2.2: Understanding a writing system affects the viewer's perception of the structure of characters.

ii. Roundness, sweetness, and hedonism

As seen previously, Velasco et al.'s *Taste of Typeface* (2015b) tried to assess the connotative aspect of type in more specific domains, such as taste. For instance, rounder shapes seem to be associated with sweetness, and high legibility, while angular fonts were considered less legible, and linked to bitterness, sourness, or saltiness, depending on the fonts. However, previous works from the Velasco et al. (2015) show that sweetness is not automatically linked to round shapes, but rather that taste hedonics can impact the way people tie tastes to shapes. *“In other words, the more that an individual likes a taste, the more they will choose a round shape to match it to, and the less they like it, the more they will tend to associate the taste with an angular shape instead”* (Velasco et al., 2015b). Works such as Westerman et al., 2012 explain this correlation by stating that people prefer round objects to angular ones.

Velasco et al. only experimented on American people. This new study has the double advantage of both confirming and expanding the scope of the previous study. Of course, it is highly likely that the Western sample (cf. *infra*) presents opinions to the American one. However, based on the cultural differences that exist between Japan and the West, the answers of the Japanese sample will either prove that the image of roundness is culturally dependant, or a rather global norm. Besides, should the results be even across the samples, the other propositions formulated by Velasco et al. (2015), such as *“the notion that “sweet” tends as be associated with round shapes and forms [...] a clear distinction between round and angular typefaces, with the former being liked more, considered as easier to read, and associated with sweet, compared with the latter which were less liked, considered less easy to read, and associated with the other tastes (e.g., sour, salty, and bitter). Overall, these results are consistent with previous research showing that there is no apparent distinction between bitter, salty, and sour, when participants match them to curvy and angular shapes”* could be all considered valid, and could be the base of an interesting tool for marketing and advertising agencies operating in the field of food packaging.

The questions asked about the impact of roundness of type can be summarised in the following terms:

Hypothesis	Question
Typography obeys international metaphorical codes, regardless of the writing system	Q 3.1: Round character design conveys a sweet connotation both in Japan and in the West
	Q 3.2: Round character design conveys a hedonic connotation both in Japan and in the West

iii. Typography as a semiotic mode – systems and frameworks

To Van Leeuwen (2005 and 2006), typography can be understood as a semiotic resource thanks to its connotative and metaphorical aspects (cf. *supra*). To Nørgaard (2009), there are three aspects to typography that make it a semiotic mode: icon and index (which are a separation of Van Leeuwen’s metaphorical aspect), and discursive import, which corresponds to Van Leeuwen’s connotative dimension of type. As we have seen before, to be recognised as a semiotic mode, and not a mere medium, typography needs to be more than a set of finite rules, and rather follow a set of systems. Proving that no matter where the respondents are from, the answers are similar would corroborate this view.

These two dimensions refer to the semiotic model of typography created by Stöckl in 2005 (cf. appendix 233): the choice of font has an impact on microtypography, and spacing belongs to mesotypography. Since the questionnaire is to be spread online (cf. *supra*) the paratypographical dimension of letterform cannot be included, and long excerpts of texts, that could take macrotypography into account, are difficult to get referred to in questionnaire, simply because their length would tend to lose the attention of respondents.

The metaphorical aspect of type will be explored through the lens of personality of type, as developed by Mackiewicz (2004 and 2005). In her 2004 *Why people perceive typefaces to have different personalities*, she asked her sample to examine 15 different fonts and classify them. She proposed 10 different personalities: friendly, professional, technical, formal, elegant, artistic, dramatic, individual, contemporary, and futuristic. To expand the scope of research to more than just Latin fonts, this study will include both Japanese and Latin typefaces. Besides, to reduce the “fatigue” factor of the respondents, there will be only nine typefaces, and six personalities to choose from.

This paper is written with an intercultural communication perspective, and therefore the answers from both the Western and the Japanese samples will be compared. This will allow us to assess whether the perceived personality of typefaces is culturally dependent or not. In turn, this will enable us to understand whether culture is a determining variable in evaluating typography as a semiotic mode.

Based on the same dynamic, this study also aims at evaluating the importance of spacing. As it has been mentioned before, kerning, as well as spacing management in general, is not just an aesthetic device; it is an essential part of typography (Bringhurst, 2004). However, Japanese and Latin spacing obey completely different rules (Chiba et al., 2012), since the writing systems are different to their cores: the anatomical structure of letters and characters are different, and the sense of reading can vary as well, since Japanese can be read both horizontally and vertically (Cheng, 2005; Takagi, 2015; Smeijers, 1996; Williams, 2003, etc.). The respondents will be presented two texts, one showing good kerning, and the other one, bad kerning, or “keming” (cf. *supra*). They will assess whether the correctness of spacing is a significant variable in legibility of the text, and whether good (or bad) spacing has meaning potential by itself. By comparing the answers from the Western and the Japanese samples, we will be able to determine whether perception of good or bad spacing is culturally dependent.

The questions asked about typography as a semiotic mode can be summarised in the following terms:

Hypothesis	Question
Regardless of the writing system, typography can convey meaning	Q 4.1: Typography can convey meaning in a language that is understood and/or familiar
	Q 4.2: Typography is considered a meaning-making element even if the language is not understood/is unfamiliar

#### iv. Typography and SFG

Halliday’s vision of Systemic Functional Grammar, or SFG, applied to language is a study of meaning construction through systems of lexicogrammatical choices that serve functions within social and cultural contexts (cf. *supra*) (Halliday, 1978). However, this new conception of language as a system, and not as a set of finite rules can encompass a new dimension when it is applied to other fields than linguistics. In 1996, Kress and Van Leeuwen

have applied the rules of SFG to visual design, in their book *Reading Images*, and Van Leeuwen expanded the scope to typography in 2006. As it was proven earlier, visual design obeys some international rules and codes (cf. *supra*), necessary for global understanding. It could be inferred that SFG, applied to design through three fundamental metafunctions (ideational, interpersonal, and textual), might present itself similarly around the globe.

- Ideational metafunction

The ideational metafunctions refers to the understanding, construction, and maintenance of experience. Thanks to the ideational metafunction, the subject can make sense of reality (Halliday and Matthiessen, 2004). Van Leeuwen writes: “*Typography can, and is, used ideationally, to represent actions and qualities.*” (2006). In the present study, we are asking the respondents to be on both sides of the system. The interviewees will first have to answer general questions, asking them whether they think that typography can help them understand a corporate image, therefore contributing to construing their environment.

Then they will be asked to become the content generator: a company, or a creative agency. They will be given a sample of fonts and must link them to various professional sectors. This will help comprehend whether everyone’s understanding of fonts, their image and their impact is the same. Besides, it is interesting for the respondents to try and become the content provider with a given set of resources, since it forces them to understand the communicative and meaning potential of letterforms, and to best initiate a common story with potential customers using the available typographical tools to create a joint environment.

- Interpersonal metafunction

The interpersonal metafunction of SFG refers to the function of language to establish social exchanges and display attitudes towards what is being signified. One of the lexicogrammatical resources for the former is the grammar of *mood*, which enables us to do various things with language, such as making claims, asking questions (Van Leeuwen, 2006). In typography, such a function can be achieved through emoji or emoticons (cf. *supra*), or through the choice of fonts. In the case of this study, we will remain within the frame of corporate communication, since it is the one that most people can identically identify with whether in the West or in Japan. Just like the two other metafunctions, inviting respondents to reflect on B2C (business to customers) communication is a delicate task. It is especially the case in a country such as Japan, where people’s distrust in companies and institutions is

particularly high (Helliwell et al., 2016; Edelman, 2016). Furthermore, explaining the meaning potential of a specific typeface is usually the work of specialists (cf. *supra*, the real estate template advertising analysis). Here, we will simply ask general questions on the communicative potential of corporate typefaces.

Halliday states that both experiential and interpersonal metafunctions are involvedly structured, but that between them “*there is comparatively very little constraint*”. In other words, “*by and large, you can put any interactional ‘spin’ on any representational content*” (2003).

- Textual metafunction

The textual metafunction is linked to the notion of *mode*, or the core organisation and communicative nature of a text. This encompasses textual interactivity (for instance, disfluencies such as pauses or repetitions), naturalness (the grammatical, tonal and pitch cohesion of a text, its lexical density, and coordination) and communicative detachment. These functions “*create coherent text – text that coheres within itself and with the context of situation*” (Halliday, 2003). Halliday states that the textual function is separate from both the two other ones because its object is language itself. Through the textual function, the speaker “*creates a semiotic world of its own: a parallel universe, or ‘virtual reality’ in modern terms*” (ibid.). In a few words, the textual metafunction focuses on *how language forms texts*.

In the field of typography, and design in general, Kress and Van Leeuwen (1996) consider that the textual function of typography, besides the obvious *actual* textual part of typography, resides in layout. To them, layout composition creates meaning the way letters put together create words. Layout unfolds in three main principles: information value, salience and framing. In this study, we will mainly focus on information value: the repartition of value from left to right with the *given* and *new* repartition of elements, and the separation between top and bottom, where *ideal* and *real* elements respectively fall (cf. *supra*). Since the perception of space, and the organisation of the writing systems in Japan and in the West are so different, comparing the answers from both sample will help us understand whether the direction used in writing has an influence on the perception of the “correct” repartition of information.

The questions asked about typography through a systemic functional grammar perspective can be summarised in the following terms:

Hypothesis	Question
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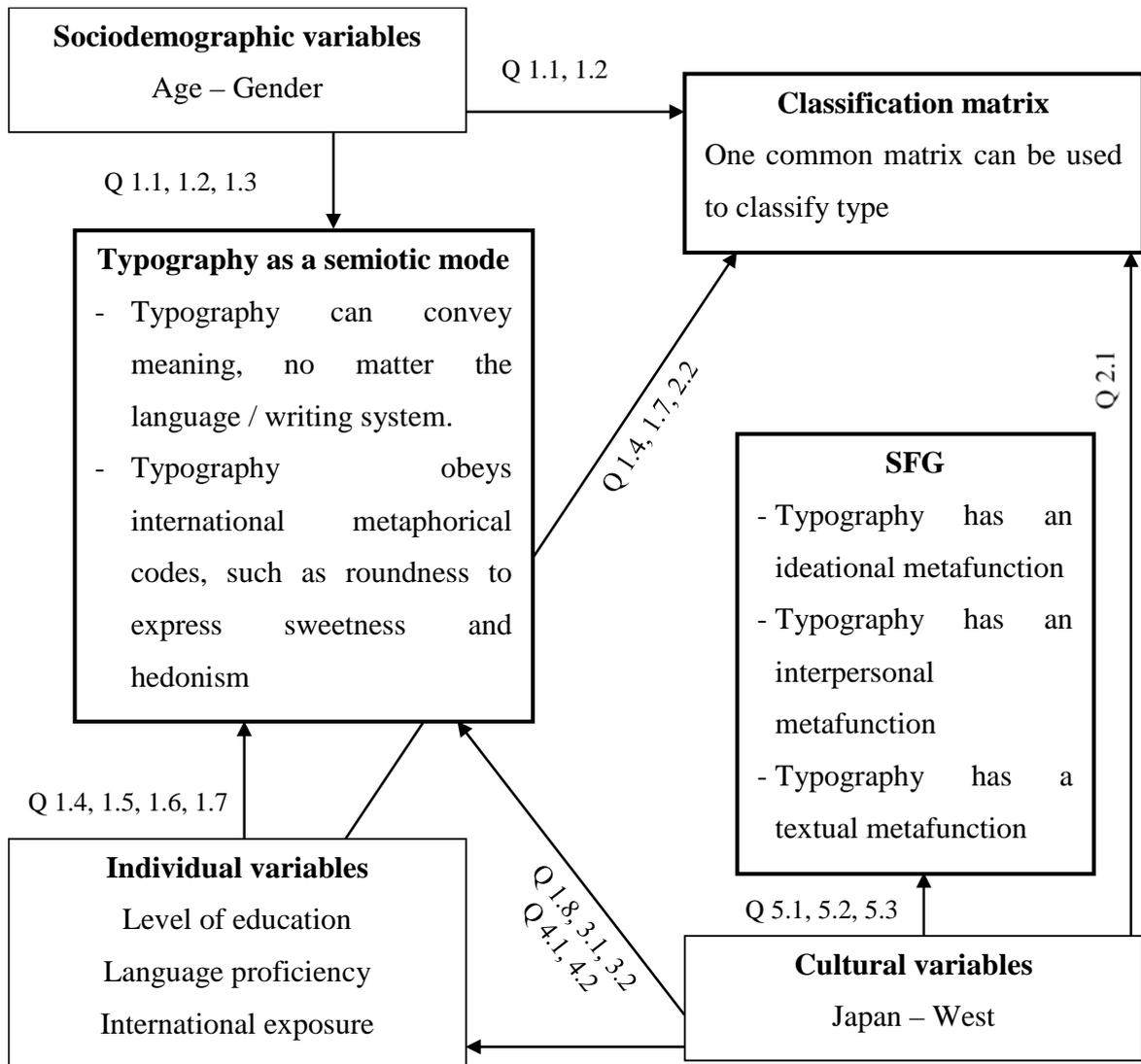
The rules of the Western 'grammar' of typography can be applied to Japanese typography	Q 5.1: Both Western and Japanese typographies have an ideational metafunction
	Q 5.2: Both Western and Japanese typographies have an interpersonal metafunction
	Q 5.3: Both Western and Japanese typographies have a textual metafunction

### c. Conceptual model

All the previous hypotheses, research questions and variables can be gathered in the same conceptual model. This model aims at clarifying everything that was explained before. In this model, the sociodemographic variables, individual variables and cultural variables are considered the independent variables of the research. The dependent variables are the classification matrix, typography as a semiotic mode, and the SFG, the Systemic Functional Grammar. Hereunder are a table summarising all the research questions, followed by the conceptual model itself.

Hypotheses / Variables	Questions
Gender	Q 1.1: Gender has an influence over the apprehension of typography as a semiotic mode.
	Q 1.2: Men are more prone to grasp letterform details.
Age	Q 1.3: Age has an influence over the apprehension of typography as a semiotic mode.
Level of education	Q. 1.4: A higher level of education enables a better apprehension of typography as a semiotic mode.
Foreign languages proficiency	Q 1.5: Proficiency in a foreign language influences the viewer's perception of typography as a semiotic mode in his/her own language.

	Q 1.6: Proficiency in a foreign language influences the viewer's perception of typography as a semiotic mode in a foreign language.
Exposure to internationalisation	Q 1.7: Exposure to internationalisation influences the viewer's perception of typography as a semiotic mode.
Cultural background	Q. 1.8: Japanese people and Westerners have a similar approach to typography as a semiotic mode.
Typography can be framed in a global classification system	Q 2.1: Type can be classified following an international, common matrix, regardless of the writing system that is in use (Japanese or Latin characters)
	Q 2.2: Understanding a writing system affects the viewer's perception of the structure of characters.
Typography obeys international metaphorical codes, regardless of the writing system	Q 3.1: Round character design conveys a sweet connotation both in Japan and in the West
	Q 3.2: Round character design conveys a hedonic connotation both in Japan and in the West
Regardless of the writing system, typography can convey meaning	Q 4.1: Typography can convey meaning in a language that is understood and/or familiar
	Q 4.2: Typography is considered a meaning-making element even if the language is not understood/is unfamiliar
The rules of the Western 'grammar' of typography can be applied to Japanese typography	Q 5.1: Both Western and Japanese typographies have an ideational metafunction
	Q 5.2: Both Western and Japanese typographies have an interpersonal metafunction
	Q 5.3: Both Western and Japanese typographies have a textual metafunction



The individual variables comprised in the framework encompass characteristics as broad as gender, educational background, or cultural background. It is the application of those independent features to theories such as the “taste of typeface”, or the Systemic Functional Grammar that will allow us to build, and conduct, a proper field study. Now that the framework has been set, we need to consider the practical aspects of the study, such as building efficient tools for the study, or finding a frame to our sampled population. This third part will also act like a journal of the field study, following the different steps of realisation, from the elaboration of the questionnaire, all the way to the feedback of the respondents.

### **III. The field study**

#### **a. Initial phase**

The initial phase of a field study consists in building the adequate tools to conduct a proper study. If we follow the metaphor of a house, the first part embodied the idea of building a house: do we want a house? Would we rather live in a loft? If we do build a house, what kind? The second part would resemble contacting professionals that would help making the idea a virtual yet defined project: architects, bankers, solicitors, etc. Now that the project has been drawn, it is time to surround ourselves with professionals who will bring the tools to make our house rise from the ground: contractors, interior designers, electricians, plumbers, carpenters, and so on. This initial phase is, to some extent, the moment when, together with all those professionals, the project of the house starts to take actual, tangible form.

##### *i. Creating the questionnaire*

The questionnaire follows the protocol of *self-administration* (cf. *supra*). The main flaw of this method is that misinterpretation, or misunderstandings can easily happen, since the researcher is not here to accompany the respondent through the process of filling the questionnaire up. Therefore, all questions need to be univocal, and clear (Ganassali, 2014; Mongeau, 2008). Both questionnaires are displayed as appendices, 235 for the English version, and 236 for the Japanese version.

The first part of the questionnaire aims at answering the individual characteristics of each respondent, which will in turn become the individual variables: gender, age bracket, educational background, and international exposure. Let us detail each question.

The gender and age brackets are quickly evoked. The respondent can choose between three genders: male, female or “other”, which encompasses all genders that do not fall under the spectrum of cisgenderism. As for age, there are only three age brackets: less than 24 years old, 25 to 34 years old, and over 35 years old. This questionnaire is to be spread online (cf. *infra*), therefore the age brackets were limited to people who 1) possess a sound enough master of the internet to answer an online survey and 2) had an interest in typography, which respectively tends to exclude elder and younger internet users.

Enquiring the sample about their educational background also appeared as a rather standard question: “what is the highest degree of education you have completed?”. The respondents have the choice between six options, the five first ranging from “high school graduate” to “doctoral degree”, and an “other” option. This last option is particularly important for the Western sample, as educational systems greatly vary from country to country, for instance from Europe to the US.

Language proficiency is the next step in the questionnaire. Since there are two samples, one Western, and one Japanese, there are two versions of the same questionnaire: English and Japanese. Both versions enquire how many languages the respondent speaks, besides his/her mother tongue. The English version then focuses on the Japanese proficiency of the respondent through practice (or lack thereof) of the language, and JLPT level (cf. *supra*). The Japanese version is centred around fluency in English and personal level in the 英検 (cf. *supra*).

Lastly, the questionnaire focuses on international exposure, asking the respondents about a potential experience abroad, and the duration of said experience.

From then onwards, the questions and examples are rigorously the same, for both samples (Japanese and Western).

The next step in the questionnaire aims at answering questions about the Takagi classification system. Per Ganassali (2014), in order to have an efficient questionnaire, the different parts should follow a “*funnel*” effect, ranging from broad, easy questions to specific ones, asking for more reflection. As we have seen before, the questionnaire does not specifically target people with acute knowledge in typography. Therefore, only questions about the horizontal axis of the Takagi classification matrix, what she refers to as the “*modulation of*

*stroke*” (cf. appendix 224) will be considered. The principle at use is the following: starting with a Western font, the respondents will need to match it with a Japanese font that displays, to them the same characteristics. The question they will answer is:

*“You are a designer in an advertising agency, and your client wants to export products to Japan. In this following section, try to match the English typefaces to the Japanese ones, to get a coherent design. Feel free to zoom in to get a closer look at the letters details.”*

Both samples must match a series five Western fonts with one of four Japanese options for each font. The first font is, per Takagi (2014) “*serif with stroke contrast*”, the second one is “*sans serif, less stroke contrast*”, the third one, “*sans serif with stroke contrast*”, the fourth one is “*analogue*”, and the fifth one “*semi-serif, with stroke contrast*”.

The third part of the questionnaire refers to Mackiewicz’s studies on the personality of fonts. In her studies, she focused on fifteen different Western fonts, and ten different personalities. Her sample was entirely made of students in communication and design, therefore used to browse typefaces. To prevent our sample from losing interest in the questionnaire and stop answering (the “*fatigue*” effect, Ganassali, 2014), we have reduced the scope of research: instead of fifteen fonts, only nine are displayed. Because Mackiewicz gave priority to Western fonts, here, five of them are Japanese typefaces, and four are Western. Instead of ten personalities, only six have been retained: the six personality traits that Mackiewicz (2005) estimated to be the easiest to recognize: “*childish*”, “*elegant*”, “*artistic*”, “*mechanical*”, “*friendly*”, and “*professional*”. For each personality, the respondents must rank the font in a five-point Likert scale. This part continues with an assessment of the importance of spacing in typography. Both samples are presented with two *lorem ipsum*. In publishing and graphic design, *lorem ipsum* (derived from Latin *dolorem ipsum*, translated as “pain itself”) is a filler text commonly used to demonstrate the graphic elements of a document or visual presentation. Using text without proper semantic meaning allows designers to focus on the shape of the overall document instead of the content. *Lorem ipsa* exist in all languages. The samples will first be presented a “Japanese” version, then a “Latin” version (even though neither of the texts are Latin, or Japanese *per se*), and then must answer questions about the impact of spacing on various aspects of the text (readability, overall impression, aesthetics, and professionalism) using Likert scales. Both personality and spacing, if considered relevant enough, will help prove that typography can be considered a semiotic resource, and corroborate the studies started by Van Leeuwen (2006).

The next section expands the works of Velasco et al. (2015 and 2015b) on the “*taste of typeface*”. The samples will be presented with a series of ten different typefaces placed on a blank food packaging. Each packaging displays the words “*Eat me*” and “*私を食べて*” written in the same font. Therefore, no confusion is to be made whether both versions of the same text represent the same thing or not. Using Likert scales, the respondents must rank the typefaces in matter of taste: sweetness, sourness, bitterness, and saltiness. Lastly, they must assess the likeability of the font, on a similar Likert scale.

The last part of the questionnaire aims at exploring the metafunctions of typography through a systemic functional grammatical point of view: ideational, interpersonal, and textual. As a reminder, the ideational metafunction of typography is its *experiential* aspect, “*the function of constructing representations of what is going on in the world (and in our minds)*” (Van Leeuwen, 2006), the textual function stylistic aspect of type, or “[the function that uses] *language to marshal individual representations-cum-interactions into coherent texts and communicative events, linguistically through the systems of cohesion, thematic structure, and given-new, and in images through the systems of composition, framing and salience*” (ibid.), and the interpersonal metafunction, the *conversational* aspect of type, or “*the function of language to constitute social interactions and express attitudes towards what is being represented*” (ibid.).

To evaluate the ideational aspect of type, the samples will be presented with six logos, divided in two groups. One group is the actual logo of three globally famous companies: Walt Disney, Subway and Apple. The other group uses the same logo codes (colour and pictorial elements) but changes the font. After looking at the two series of logos, the samples must answer whether the font change affects their impression and identification and understanding potential of the company. Then, to account for the imitative aspect that has the ideational function, the samples will be given four pairs of ready-matched fonts. Each pair is very different from the three other ones. The instructions inform them that, once more, they are advertisers, and that they need to match the fonts with various potential clients of their advertising agency. The clients range from a jewellery shop to a science-fiction movie poster. By correctly linking fonts to clients, the respondents will determine whether the typefaces do express the representations commonly associated to the various clients.

In his *Towards a semiotics of typography* (2006), Van Leeuwen considers that the textual metafunction of type can be assessed through the theory of layout (Kress and Van Leeuwen, 1996). The theory of type is quite complex (cf. *supra*), and promotes ideas that are very difficult to put into questions likely to keep the interest of people who do not foster an interest for typography. However, two key features of the theory of layout can be assessed: the *Given/New* aspect, and the *Real/Ideal*, which we will summarize here. In the first aspect, Kress and Van Leeuwen have estimated that generally, advertisers tend to place “*given*” elements (i.e. elements that are already known by everyone) on the left-hand side of advertisements, while the “*new*” elements, the characteristics or functions that only the product can provide) are placed on the right. These follow the cultural tendency Western people have to consider time as a line stretching from left (the past) to right (the future). The *Real/Ideal* opposition states that elements that deal with the real world, that show real objects, or write words linked to reality (product characteristics, legal disclaimers) are usually written on the bottom half of advertising supports. On the other hand, elements that deal with dreams and ideals tend to be displayed on the upper part of the posters. The samples will be given the following instructions:

*“As a designer, you are given an advertising project to complete. In this CE, you have two opposite elements to include: one element is ‘old’ (it is something both you and the consumers know), and the other element is ‘new’ (a characteristic, a function, or an image that only your product can provide). You can place your elements in four different spots: top, bottom, left or right. Where do you place your elements?”*

And:

*“As a designer, you are given an advertising project to complete. In this CE, you have two opposite elements to include: one element is ‘real’ (images of real life, and real products), and the other element is ‘ideal’ (a dream-like image of what your product can give). You can place your elements in four different spots: top, bottom, left or right. Where do you place your elements?”*

They will need to place their elements choosing between four options: “*top*”, “*bottom*”, “*left*”, and “*right*”.

Lastly, to identify the interpersonal function of the company, the samples will be asked general questions, to which they will answer using Likert scales. The interpersonal quality of type is a highly qualitative question, since it refers to personal opinion (Dépelteau, 2010; Mongeau, 2008; Poisson, 1983). However, the most important part of the interpersonal

metafunction can be covered by answering questions such as “*I feel like a company can ‘talk’ to me through typography*”.

ii. Choosing the sample

To choose the adequate sample size and get sound results, some calculations can be made. When the population of origin (here, all populations of Japan, and the Western world) are vast, the questionnaire cannot be handed to all, therefore a carefully selected section of the population of origin needs to be selected, to get a sample that will respect the opinions of the population of origin. For reasons of economy (both of time and money), it is necessary to reduce the sample population as much as possible, to access it as easily as possible while keeping the trust rate and the margin of error at satisfactory levels (Bouroche and Saporta, 2013).

The parameters we can consider to calculate the size of the idea sample are:

- $n$  as the size of the sample for a very important population of origin
- $s$  is the trust rate, how trustworthy we wish this study to be
- $t$  the margin rate, deducted from the trust rate  $s$
- $e$  the margin of error that we allow ourselves for the amounts we wish to estimate (for instance, we wish to know the proportion by 5%)
- $p$  is the proportion (known, supposed, or estimated) of elements of the population of origin that present a known propriety. When  $p$  is unknown, it is usually given the value of 0.5.
- $q = 1 - p$  is the probability of failure, or of negative realisation.

The relationship between the trust rate  $s$  and the margin rate  $t$  (and its square) are presented in the following table:

Trust rate $s$	Margin rate $t$	$t^2$
80%	1.28	1.6384
85%	1.44	2.0736
90%	1.645	2.6896
95%	1.96	3.8416
96%	2.05	4.2025

98%	2.33	5.4280
99%	2.575	6.6049

The formula to define the minimum size of a sound sample is:

$$n = \frac{t^2 p(1-p)}{e^2}$$

And the image formula:

$$e = t \sqrt{\frac{p(1-p)}{n}}$$

$n$  is proportional to the inverse of the square of  $e$ , which means that to divide the margin of error by 2, one needs to multiply the sample size by 4.

The formulae above show that the size of the sample  $n$  depends on:

- $t$ , and therefore the trust rate  $s$
- of the  $p$  proportion of elements of the population of origin
- $e$  the margin of error.

The trustworthiness of a sample is represented by the trust rate  $s$  and the margin of error  $e$ . With a trust rate of 95 %, it means that there is a possibility of error of 5% (one out of twenty) (Peck et al., 2008).

The population of origin is very big, and therefore it is close to impossible to exactly estimate  $p$ , which is why it will be given the arbitrary value of 0.5. The most commonly used trust rate is 95%, which means that the margin rate  $t$  is of 1.96, and its square  $t^2 = 3.8416$ . For this study, a margin of error of less than 6% is wished. For  $e = 6\%$ ,  $n = 267$  people, and for  $e = 5\%$ , the sample should be  $n = 384$  people. To have an even, round, and effortlessly marketable number that would be easy to divide between our two populations (Japan and the West) a choice for  $n = 300$  people has been made. Therefore, for this sample size, the margin of error is  $e = 5.66\%$ , a margin that is satisfactory enough, considering the short amount of time that this study will be conducted over.

Since we have two samples, and even though both original populations are not of the same size, to give the same voice to both the Japanese and the Western sample, the 300-people population has been divided into two equal samples of 150 people.

### *iii. Choosing the means of diffusion: the internet*

To conduct our quantitative, confirmatory study, the questionnaires will be spread online. Online questionnaires have become a fundamental tool of contemporary field studies: in France in 2014, they represent more than half of the studies; even qualitative approaches consider internet as a valid option, since 10% of qualitative studies are now conducted online (Ganassali, 2014). The reason behind this rapid evolution is the internet currently present a series of tools that greatly simplify administering questionnaires. Surveys used to be sent online as emails with word processor attached files, that the respondent would not only have to fill up by himself or herself, but also would have the responsibility to send back once completed. There are now client-servers, ASPs (Application Server Protocol) and SaaS (Software as a Service) that allow for much more ease of use. The researcher creates the questionnaire using a software or a freeware, then spreads the questionnaire using URL links, or directly via email.

While creating the questionnaire, ASPs such as Google Forms allow for creativity and interactive personalisation, from choosing the type of answer needed (a scale, a free answer, a multiple choice...) to the colour of the background. Creating a form via ASP offers many advantages:

- The sample size: spreading a form online represents the most adapted solution to reach a large panel of people, up to thousands of internet users if necessary
- The versatility: the researcher can access the questionnaire, and the respondents' data at all times, and everywhere, provided there is an internet connection available. Besides, they can monitor in real time the respondents' actions on the questionnaire (Ganassali, 2014).
- International samples: the internet has the great advantage of being a tool available worldwide. Therefore, global surveys can be done as quickly and simply as local ones.
- The survey cost: ASPs offer very attractive price ranges, compared to other means of administering.
- The speed: the amount of people answering the questionnaire simultaneously is virtually unlimited, which offers the fundamental advantage of considerably reduce the amount of time necessary to obtain enough answers, and allows the researcher to work alone, without a team to administer several surveys at the same time.
- The respondents' environment: the interviewees can choose whenever, and wherever they desire to answer the questionnaire. This means that when they

actually are answering, they are in a safe, comfortable environment, with time at their disposal. This may ensure more honest answers (ibid.), since there is none of the stress that could be induced by the presence of the researcher, or the fact that they could be answering in an unfamiliar context.

Of course, there are limits to the online survey: for instance, the reliability of the answers is more than ever dependent on the way the questions are written. It is then crucial to test the questionnaire through the exploratory study, to ensure that everything is understandable, and that nothing can be misinterpreted (ibid.; Mongeau, 2008). Besides, it is important to make sure that the options available in the answers cover all the respondents' needs, so that they do not choose another answer "by default", because theirs was not existing. Besides, since the questionnaire is self-administered, there is no one to provide any explanation in case the respondent gets confused with the terms.

To build the questionnaire for this study, the tool Google Forms was used. Google Forms has the advantage of being a free ASP, and displaying a very ergonomic and comprehensive user interface. The device also benefits from the fact that Google and its derived applications are very familiar, contrary to more advanced tools such as Sphinx, that are more elaborate but may not inspire as much trust. On the researcher's side, Forms is an efficient ASP, since it offers the possibility of automatically visualising the answers in real time, export all results in Excel-like tables, and presents downloadable add-ons that enable further options. For instance, formLimiter allows the researcher to control the size of the sample. Since we are looking for a 150 + 150 people-sample, both the Japanese and the English versions of the questionnaire have been set to close after all answers are completed. Should anyone follow the URL link to the survey after the sample is complete, an automatic message would pop up, informing that no more answers were required.

## b. Procedure and realisation

All the tools have been decided: the questionnaire is built, a sound sample has been defined, and a diffusion channel is chosen. It is now the first day on the construction site, and time to start digging to build the foundations. The exploratory study is the foundations of the study: it is a critical step that will ensure that the house (the main study) will be built safely, and that the construction of the building is done without harm, or unexpected turn of events.

i. The exploratory study

As it was mentioned earlier, prior to delving into the quantitative study, the questionnaire was put to the test through a qualitative pre-test. This pre-test, or exploratory study, took the shape of semi-directed interviews with six different people, all academics, all bearers of a Ph.D. title. Two of the interviewees were Japanese, and one was Korean, but is occasionally teaching and researching in Japan; two were French, and one was American. All of them are either university teachers, or professionals who occasionally lecture in graduate schools. Since some of them desired to keep their anonymity, their names will not be revealed here; they will simply be numbered.

- Interviewee 1 is a professor at Kyushu University, where he teaches ancient History of Japan, and organises seminars about the Japanese traditional culture.
- Interviewee 2 is a professor at Hiroshima University, and teaches linguistics and pragmatics.
- Interviewee 3 is a banker at Seoul, Korea, but also teaches corporate finance in Tokyo University.
- Interviewee 4 is a young professor in Bordeaux, France. She lectures at Kedge Business School, on the Bordeaux campus.
- Interviewee 5 is a professor at Brest University, France. He teaches proto-linguistics, and ancient languages.
- Interviewee 6 is the CEO of a business consulting company in New York, US. She also organises seminars about corporate strategy at New York University.

Gathering an equal amount of people from each cultural background seemed the best option, to treat both versions of the questionnaire equally.

All interviewees were either met in person (for the three Japanese members), or a Skype appointment was agreed upon, to conduct the interview. All sessions lasted an hour and a half: about twenty minutes to answer the questionnaire, and the remaining seventy minutes dedicated to the interview. The principle of the interview was very simple: first, the interviewee would speak very freely of their overall impression of the questionnaire: how long it was, how difficult it felt to answer the questions, how clear the direction of the research was to the respondent, how balanced the choice of questions were...

Then, using both the *think-aloud* and the *verbal probing* methods (cf. *supra*), the interviewees detailed their impressions, and recommendations separating each part of the

questionnaire. For instance, there was a general consensus that the “font matching part”, primarily towards the end of the questionnaire, should be put first, after the individual variables (five interviewees out of six agreed on this idea). The arguments were to “*ease the people in the research by putting the easier questions first*” (Interviewee 6), “*start broad before going into technicalities*” (Interviewee 4), and create a “*funnel effect*” (Interviewees 2 and 4). All interviewees agreed that the questionnaire was quite lengthy, yet considering the amount of theories to verify, agreed that it would not be easy to make the questionnaire much shorter.

A few changes were made to the individual variables section as well, mainly based on cultural differences. For instance, while it is common, especially in France, to go to university and not complete a degree (because university is free), it is much less so in Japan, or in America (Interviewee 1, 5, and 6). Therefore, the option “Some college credits, no degree” was removed from the questionnaire. Following interviewee 5’s piece of advice, the “taste of typeface” and “personality of fonts” part were separated by other elements, since having these two long sections one after the other made the questionnaire tedious to fill up.

Simultaneously, Interviewees 1, 2, and 3, and with the close collaboration of Seinan Gakuin University professor 杉山 *Sugiyama*, the language and approach of the Japanese version of the questionnaire were corrected. Besides the linguistic corrections, Pr. Sugiyama also provided some enlightening input about how to formulate questions clearly to get some desired results, which Interviewee 4 greatly contributed to as well.

The interviews and corrections of the questionnaire took less than two weeks to complete. After this, the confirmatory study was ready to start.

## ii. The confirmatory study

The confirmatory study was conducted over two weeks. The questionnaire was built using Google Forms, and the sample size limited to 151 respondents by formLimiter (cf. *supra*). Once everything was set, the questionnaire was spread online. There were two privileged ways of diffusion: emails and SNS (Social Network Services) platforms.

The emails have the advantage of being more personalised, therefore having a greater chance of being answered (Ganassali, 2014). A mailing list of friends, contacts and connections who were fluent enough in English or Japanese to answer the questionnaire was built, and the

survey was sent with a tailored email, to avoid the email being discarded without being open, or read.

However, most of the respondents became acquainted with the current research through social networks. A first wave of diffusion was done through professional networks, such as LinkedIn and Viadeo. The questionnaire was posed both as a personal page post, and sent to “interest groups”, which gather professionals or amateurs around a similar topic. All interest groups about typography, letter design and semiotics were targeted. Last, a second wave of diffusion used Facebook as a distribution channel. Facebook in the West and in Japan has a very different aspect: in the West, it is a casual social network, where people become “friends”; the professional side of relationships is left to other platforms such as LinkedIn, where people can become “contacts”. In Japan, people do not use LinkedIn, but rather Facebook, for both casual and professional relationships (Riney, 2015). Therefore, to touch the Japanese audience, spreading the questionnaire through Facebook was a much more efficient task than trying to reach it through LinkedIn. Starting with professional pages and groups, such as 日本のタイポグラフィ協会 *Nihon no taipogurafī kyōkai*, the “Japan Typography Association”, the diffusion list trickled down to personal interest pages, and personal messages. As for the use of Facebook for the Western sample, the use of community pages turned out to be of a great help. There are community pages in France called *#Wanted* for each big city in France: Paris, Bordeaux, Lyon, etc. Posting the questionnaire on these pages provided the biggest, fastest turnout of the whole study. People were not only answering, but also became active participants by sharing it to others, and leaving comments about their impression of the study (cf. *infra*).

Within the set time of two weeks, the quota of respondents was attained. The results are analysed below, using statistical analysis tools such as Microsoft Excel (Version 2016) and IBM’s SPSS Statistics 24.

### c. Feedback from the respondents

This last part concerns the feedback that has been gathered during the confirmatory study. To keep with the house metaphor, this part would be the last meeting with all the professionals that have participated in the construction site, to debrief about their feelings during the process, and to hear their input.

i. Positive reviews

One of the benefits of using the internet as a mode of diffusion is the shroud of anonymity that communication through screens provide: a phenomenon that Suler (2004) refers to as the “*online disinhibition effect*”. Although it does have many disadvantages (cyber bullying, cyber terrorism), online anonymity in the framework of this study was a definite advantage. The reviews either took the form of comments on social media and emails.

Most of the positivity revolved around the topic: “*what an interesting subject*”, or “*I love typography, and I’m glad to see that there are some studies made around it*”, “*So, thanks to you, I found out there’s a type of font style that I’m drawn to, I thought that was pretty cool.*” were common answers. There also were good remarks on the questionnaire itself: “*I had fun filling this up*”, “*very interesting [...] I actually learned stuff I didn’t know I knew before*”, “よく勉強になりました” (“*This made me learn a lot*”) and other similar comments were regularly posted during the study.

At the end of the questionnaire, the respondents were offered to send an email, asking for the results of the study, should they find an interest in the study. Out of 302 respondents, an overwhelming majority of 189 people took the time to write an email, asking to be sent the results once this research is finished.

More than words, the most positive feedback that we enjoyed during this research was the rapidity of answers. Numerous respondents not only answered the questionnaire, but became active members of the field study by sharing and promoting the link to the questionnaire through posts such as the following ones:

“友人が博士課程の論文執筆のためアンケートを実施しています。とても興味深い内容で、私自身回答していて面白かったので、みなさんも是非!”

(“*My friend is conducting a questionnaire to complete his Ph. D. dissertation. The topic is very interesting, and so are the answers that you can provide, so please fill it up!*”)

“*Read below! Help my friend by completing this survey!*”

“【できれば、シェアプリーズ!】

おはようございます!

こちらはまた別のアンケートです。

これまた勤勉な芸術家の *Flavien Puel* がタイポグラフィー(活字書体)についてのアンケートをお願いしています。もう少しで博士! 芸術関連のアンケートになりますので、皆さんのセンスが問われます。ウフフ...

10~15分くらいで終わります。これは、もっと暇なてめえに答えてもらいたいです

安心してください。そんな私もさきほど回答しました。わら結構面白かったんで、斜に構えずにぜひともトライしてください!

リンクは以下の添付です、そこから飛んでください! フライアウェイ!!”

(“Please share if you can!

*Good morning! Here is another survey, once more created by hardworking artists like my friend Flavien Puel, who’s asking you to fill up this questionnaire about typography (the design of letters). He will soon become a doctor! The topic of the survey is strongly linked to art. It takes 10 to 15 minutes to complete, so please answer if you have a little time to spare!*

*Don’t worry, I have answered it before you. It was very interesting, and I strongly recommend you try and answer it! You will find the link attached below, so from now on, fly away my ducklings!”)*

*“Dear Flavien, thanks for the link! I will pass it round to the Design Cuts [an online advertising agency] team to see if they can help build those numbers for you and good luck with the dissertation”*

Thanks to these active respondents, all 300 questionnaires were filled within exactly 14 days, which was a set goal, but that was still impressive to witness. Overall, a very positive attitude surrounded this field study, and there were many more positive reviews, comments, and emails than negative ones.

ii. Negative comments

The reverse side of online anonymity is of course the freedom of giving negative reviews. Fortunately, there were very few of them, and none were unhelpful (“hate” comments). Most of the respondents who had something negative to say regretted the length of the questionnaire, saying that they started to lose interest because of the long list of items. This was a consequence to be expected, especially with questions as extensive as the “personality of type”, and “taste of typeface”, which respectively dealt with nine, and ten fonts, for each of which many variables were to be determined.

Few of the respondents also mentioned that the topic of typography was too intricate for them. When the questionnaire was spread on social networks, this was the headline that preceded the link on the Bordeaux and Paris pages of the Facebook group #Wanted:

*“Chers wantedien(ne)s,*

*Ancien bordelais, je vous écris depuis Fukuoka, au Japon (villes jumelles bonjour !), où je termine mon doctorat. Je suis actuellement en pleine étude terrain, et pour la finir, j'ai besoin de votre aide.*

*Mes recherches portent sur les typographies (les polices de caractères) européennes et japonaise ; cependant, aucune connaissance préalable en la matière n'est requise : ce qui m'intéresse, c'est votre opinion !*

*Le questionnaire est en anglais, et dure 10 à 15 minutes. Bien sûr, toutes les informations entrées sont strictement confidentielles et anonymes.*

*D'avance, merci beaucoup !”*

*(“Dear #Wanted members,*

*I am a former Bordeaux student, and I am writing to you from Fukuoka, Japan (Bordeaux’s sister city!), where I am finishing my Ph.D. I am currently conducting a field study, and to complete it, I need your help.*

*My research focus on Japanese and European typography (fonts); however, no prior knowledge about the topic is necessary to complete the survey: what I need is your opinion!*

*The questionnaire is in English, and takes 10 to 15 minutes to fill up. Of course, all information entered is strictly confidential and anonymous.*

*Thank you very much in advance!”)*

Some of the respondents wrote as a comment that the “*no prior knowledge*” statement was not entirely true, and that their own lack of knowledge in the field of typography prevented them from properly answering the questions, or even completing the survey. Some of them commented on this topic by saying that because they did not know enough about the topic, they might have chosen answers that did not match their actual opinions, thus creating biases in the answers.

Lastly, there were remarks about the questionnaire display, especially for the first part, font matching. Some of the respondents regretted that the Japanese fonts were “*too small*”, or “*unclear*”. However, this last point is, unfortunately, up to the design of Google Forms, and there is not much that can be done to correct it, besides using another ASP.

\*

Now that the study is complete, that the questionnaire has been modified according to the input gathered during the exploratory study before being released into the world through the internet throughout the confirmatory study, it is essential to review the results. The outcomes of the confirmatory study will allow us to assess the conceptual model created before, and answer the research questions, by either validating or rejecting them.

#### **IV. Results analysis**

##### **a. The influence of individual variables**

In this first part, we will put the individual variables (gender, age, education background and language proficiency, international exposure, and cultural background) to the test. The best way to assess the significance of a variable is the chi-square test; therefore, all individual variables will undergo a chi-square-based series of analyses to evaluate their significance. Chi-squared test (more specifically here, Pearson’s chi-squared test) is a statistical test applied to sets of definite data to evaluate how probable it is that any observed alteration between the sets arose by chance.

##### *i. The impact of gender and age in responses*

Let us first go over the research questions about age and gender:

Hypotheses / Variables	Questions
Gender	Q 1.1: Gender has an influence over the apprehension of typography as a semiotic mode.
	Q 1.2: Men are more prone to grasp letterform details.
Age	Q 1.3: Age has an influence over the apprehension of typography as a semiotic mode.

Our samples show a very different repartition of gender: the Japanese sample is composed of 62 men (41.1%) and 88 women (58.3%), but the Western sample is much less equal: 125 women (82.8%) and 26 men (17.2%). It should be noted here that one person in the

Japanese sample identified as “other” (hence 0.7% of the sample). Overall, 213 women answered the survey (70.5%), and 88 men (29.1%). The person who identified as “other” (0.3% of the overall sample) will not be retained in the analysis of gender, since the “other” entry is not significant enough to be considered a factor of influence in the answers.

To analyse and compare the samples, a Mann-Whitney U test is conducted. The Mann-Whitney U test is a non-parametric test that can be used in place of an unpaired t-test. It is used to test the null hypothesis that two samples come from the same population (i.e. have the same median) or, alternatively, whether observations in one sample tend to be larger than observations in the other. Although it is a non-parametric test it does assume that the two distributions are similar in shape. Let us suppose we have a sample of  $n_x$  observations  $\{x_1, x_2, \dots, x_n\}$  in one group (i.e. from one population) and a sample of  $n_y$  observations  $\{y_1, y_2, \dots, y_n\}$  in another group (i.e. from another population). The Mann-Whitney test is based on a comparison of every observation  $x_i$  in the first sample with every observation  $y_j$  in the other sample. The total number of pairwise comparisons that can be made is  $n_x n_y$ . If the samples have the same median then each  $x_i$  has an equal chance (i.e. probability  $\frac{1}{2}$ ) of being greater or smaller than each  $y_j$ .

- So, under the null hypothesis  $H_0 = P(x_i > y_j) = \frac{1}{2}$
- and under the alternative hypothesis  $H_1 : P(x_i > y_j) \neq \frac{1}{2}$

In the framework of this study, we will focus on the  $p$  value of the test. The  $p$  value or probability value is the probability that, when the null hypothesis  $H_0$  is verified, the statistical summary (such as the sample mean difference between two compared groups) would be the same as or more extreme than the actual observed results. It answers the following question: If the groups are sampled from populations with identical distributions, what is the chance that random sampling would result in the mean ranks being as far apart (or more so) as observed in this experiment? In the field of communication, it is traditionally settled that if the value of the asymptotic significance  $p$  is less than .05, then the statistic is thought to be *significant* (meaning that the researcher can be 95% confident that the relationship between the two variables is not due to chance) (Little, 2010). Therefore, any  $p$  value inferior to .05 will reject the null hypothesis  $H_0$  and confirm the fact that there is a significant difference between the two samples.

During our tests on the personality of font, gender does only seem to be a significant variable at a very marginal level. The table underneath summarizes all the tests by displaying

only the value of the asymptotic significance  $p$ . The values in bold are the occurrences where  $p$  is significant ( $p < .05$ ):

	Childish	Elegant	Artistic	Mechanical	Friendly	Professional
Font 1	.490	.510	.080	.115	<b>.010</b>	.057
Font 2	.613	.050	<b>.005</b>	.076	.928	<b>.007</b>
Font 3	.153	.580	.351	.536	.087	.201
Font 4	<b>.001</b>	.108	.434	.816	<b>.023</b>	<b>.007</b>
Font 5	.511	<b>.001</b>	.127	<b>.004</b>	<b>.001</b>	.418
Font 6	.893	.073	<b>.005</b>	.467	.095	.080
Font 7	.835	.915	.995	.874	.185	.125
Font 8	.758	.209	.219	<b>.008</b>	.434	<b>.004</b>
Font 9	<b>.005</b>	<b>.001</b>	<b>.020</b>	<b>.017</b>	.625	<b>.000</b>

Font 9 is the only one where gender had the most significant impact on personality identification (in five categories out of six). In this case, a significant  $p$  means that people of different gender attributed different personalities to given fonts.

The second part of the study exploring typography as a semiotic mode, the part focusing on kerning (spacing, cf. *supra*) follows the same direction, seeing gender as a very marginal variable in considering typography as a semiotic mode. Below are the values of  $p$ . There are two pairs of text to assess: T1 is the Japanese text, T2 the Latin one. The four questions Q1, Q2, Q3 and Q4 from the questionnaire are the following:

- Q1: Spacing affects readability: if I had to read the content of the text, the properly spaced text would be easier to read
- Q2: Spacing affects my impression of the text
- Q3: Spacing affects the aesthetics of the text
- Q4: Spacing affects the professional aspect of the text

	T1			
	Q1	Q2	Q3	Q4
$p$	<b>.001</b>	.169	.433	.057

	T2			
<i>p</i>	.133	.408	.350	.465

Therefore, besides concerning the readability of the Japanese lorem ipsum, gender is not a significant variable.

The last part of the study trying to assess typography as a semiotic mode concerns the “taste” of typefaces. For the record, the respondents had a series of ten fonts, to which they had to give an overall taste impression by ranking taste-related adjectives (sweet, sour, bitter, and salty). Besides, they had to express their overall appreciation of the font. The results are the following:

	Sweet	Sour	Bitter	Salty	Appreciation
Font 1	.570	.267	.481	.464	.518
Font 2	.710	.596	.804	.685	.801
Font 3	.067	.668	.542	.467	.407
Font 4	.733	.508	.052	.877	.737
Font 5	.309	.611	.222	.616	.644
Font 6	.508	.861	.562	.460	.512
Font 7	.307	.281	.648	<b>.017</b>	.780
Font 8	.840	.184	.933	.195	.560
Font 9	.575	.905	.405	.439	.201
Font 10	.539	.480	.864	<b>.029</b>	.650

This test allows us to deduct that the significance of the variable of gender is only very marginal.

Therefore, we can say that **the research question “Q 1.1: Gender has an influence over the apprehension of typography as a semiotic mode” does not produce enough significant results, and therefore, is rejected.**

Let us now consider whether the question Q 1.2: “Men are more prone to grasp letterform details” is true. Abramov (2012) considers that women see colour better, but men

have a better grasp of details (cf. *supra*). Since the Takagi matrix is based on matching typefaces that look alike, in terms of structure and aesthetics, men should be more prone to get the “right” match between Latin and Japanese letterforms. “Right” match here means the match that Takagi intended to create. Using the Excel =COUNTIFS() function, we can evaluate the results of everyone.

- Font 1: 38 men (43.18 % of the sample) have answered correctly by choosing the option 2. 63 women (29.57 % of the sample) have chosen this option.
- Font 2: 63 men (71.59 % of the sample) have answered correctly by choosing the option 3. 136 women (63,85 % of the sample) have chosen this option.
- Font 3: 49 men (55.68 % of the sample) have answered correctly by choosing the option 3. 104 women (48.83 % of the sample) have chosen this option.
- Font 4: 63 men (71.59 % of the sample) have answered correctly by choosing the option 3. 139 women (65.26 % of the sample) have chosen this option.
- Font 5: 32 men (36.36 % of the sample) have answered correctly by choosing the option 3. 83 women (38.97 % of the sample) have chosen this option.

It seems that for most cases (four out of five), **the research question Q 1.2: “Men are more prone to grasp letterform details” is validated.**

As for age, we have offered three options to the respondents: less than 24 years old, between 25 and 34 years old, and more than 35 years old. The Japanese sample shows a rather even repartition of age brackets: 33 people of less than 24 years old (21.9%), 52 people between 25 and 34 (34.4%) and 66 people over 35 years old (43.7%). The Western sample is much less even, with a big majority of respondents under 24 years old (82 people, or 54.3% of the sample), 58 people between 25 and 34 years old (38.4%), and 11 people over 35 (7.3%).

A Kurskal-Wallis test was performed to assess whether age influenced the answers to the Takagi classification system, and no recurrent relationship was found between age and type-matching: The Kurskal-Wallis test is a non-parametric method used for testing whether independent samples (more than two) come from the same population, or if at least one sample comes from a population different from the other ones. It is usually used as an alternative for the ANOVA method and the Mann-Whitney U test when the number of samples  $k$  is  $k > 2$ . A significant Kruskal-Wallis test indicates that at least one sample stochastically dominates one other sample.

The Kruskal-Wallis test is based on a null hypothesis  $H_0$  which states that all the samples, or all the population have identical characteristics, in the sense of position parameters (a concept that is close to the one of median, but the Kruskal-Wallis test encompasses more information in its positions than the sole concept of median). This means that for  $M_i$  the position parameter of the sample  $i$ , the null hypothesis  $H_0$  and the alternative hypothesis  $H_a$  are the following:

- $H_0: M_1 = M_2 = \dots = M_k$
- $H_a$ : there is at least one couple  $(i, j)$  stating that  $M_i \neq M_j$

In the framework of this study, we will focus on the  $p$  value of the test. The  $p$  value or probability value is the probability that, when the null hypothesis  $H_0$  is verified, the statistical summary (such as the sample mean difference between two compared groups) would be the same as or more extreme than the actual observed results. Here, the  $p$  value is calculated following the asymptotic method: the  $p$  value comes from an approximation of the K law using Khi-square at  $(k-1)$  degrees of freedom. If the  $p$  value is  $p < .05$ , then the null hypothesis  $H_0$  should be rejected, and this means that at least two of the samples are different (hypothesis  $H_a$ ).

In the assessment of age, the degree of freedom is  $df = 2$ , and the sample is  $N = 302$ . Below are all the values of  $p$ . All significant values ( $p < .05$ ) are in bold.

	Childish	Elegant	Artistic	Mechanical	Friendly	Professional
Font 1	.660	.319	<b>.010</b>	.563	<b>.006</b>	<b>.015</b>
Font 2	.723	<b>.010</b>	<b>.000</b>	<b>.020</b>	.629	<b>.000</b>
Font 3	.101	.435	.142	<b>.001</b>	.216	.935
Font 4	<b>.003</b>	<b>.027</b>	<b>.021</b>	<b>.011</b>	<b>.007</b>	<b>.011</b>
Font 5	.476	<b>.001</b>	<b>.000</b>	.102	<b>.000</b>	<b>.004</b>
Font 6	.071	<b>.005</b>	<b>.000</b>	<b>.001</b>	.459	<b>.000</b>
Font 7	.808	.992	.369	.948	.705	<b>.024</b>
Font 8	.250	<b>.024</b>	<b>.003</b>	.336	.320	<b>.000</b>
Font 9	<b>.023</b>	<b>.001</b>	<b>.015</b>	<b>.037</b>	.346	<b>.010</b>

It appears that the fonts 4 and 9 have had a very different impact on our age groups. In this case, a significant  $p$  means that age groups attributed very different personalities to given fonts. Besides, when reading the table vertically, it appears that the conception of some personalities of type change with age. In our study, the personalities that gather the most significance are “artistic” and “professional”.

However, the second part of the study exploring typography as a semiotic mode, the part focusing on kerning (spacing, cf. *supra*) does not follow the same direction. Below are the values of  $p$ . There are two pairs of text to assess: T1 is the Japanese text, T2 the Latin one. The four questions Q1, Q2, Q3 and Q4 from the questionnaire are the following:

- Q1: Spacing affects readability: if I had to read the content of the text, the properly spaced text would be easier to read
- Q2: Spacing affects my impression of the text
- Q3: Spacing affects the aesthetics of the text
- Q4: Spacing affects the professional aspect of the text

		T1			
		Q1	Q2	Q3	Q4
$p$		<b>.008</b>	.148	.907	.361
		T2			
$p$		.990	.123	.329	.100

Therefore, besides concerning the readability of the Japanese lorem ipsum, age is not a significant variable. Interestingly, the study conducted above, using gender as a variable, produced the same result.

The last part of the study trying to assess typography as a semiotic mode concerns the “taste” and likeability of typefaces. The results are the following:

	Sweet	Sour	Bitter	Salty	Appreciation
Font 1	.203	.932	.834	.619	.111
Font 2	<b>.006</b>	.543	.233	.680	<b>.000</b>
Font 3	<b>.005</b>	.811	.173	<b>.021</b>	.159
Font 4	.805	.857	.206	.277	<b>.001</b>

Font 5	.466	.454	.088	.075	.234
Font 6	.098	.445	.153	.148	.353
Font 7	<b>.003</b>	.488	.483	.063	.142
Font 8	.053	.258	.717	.292	<b>.005</b>
Font 9	<b>.030</b>	<b>.035</b>	.472	<b>.049</b>	.962
Font 10	<b>.020</b>	.821	<b>.021</b>	<b>.033</b>	.436

Besides a minor relevance in the evaluation of fonts 9 and 10, the significance of the variable of age is marginal, yet more important than the variable of gender.

Therefore, we can say that **the research question “Q 1.3: Age has an influence over the apprehension of typography as a semiotic mode” is partially validated.**

ii. *Too cool for school? Language proficiency and educational background as influential factors*

The research questions about language proficiency and educational background are the following:

Hypotheses / Variables	Questions
Level of education	Q. 1.4: A higher level of education enables a better apprehension of typography as a semiotic mode.
Foreign languages proficiency	Q 1.5: Proficiency in a foreign language influences the viewer’s perception of typography as a semiotic mode in his/her own language.
	Q 1.6: Proficiency in a foreign language influences the viewer’s perception of typography as a semiotic mode in a foreign language.

Let us first consider the repartition of levels of education of our sample. The respondents could choose among six options: “high school graduate”, “bachelor’s degree”, “master’s degree”, “postgraduate degree/ doctorate degree”, “professional degree” and “other” (cf. *supra*).

The repartition of each category is rather uneven between the Japanese and the Western samples:

- 18 people in the Japanese sample (11.9 %) have studied until high school. 13 people of the Western sample (8.6 %) have the same qualification. Overall, 31 people (10.3 % of the whole sample) have studied until high school.
- 94 people in the Japanese sample (62.3 %) have a bachelor's degree. 62 people of the Western sample (41.1 %) have the same qualification. Overall, 156 people (51.7 % of the whole sample) have completed their education with undergraduate studies.
- 19 people in the Japanese sample (12.6 %) have completed a master's degree. This category is the one that is the most different between the two samples, since 63 people (41.7 %) in the Western sample have the same qualification. Overall, 82 people (21.2 % of the whole sample) have completed graduate studies.
- 10 people in the Japanese sample (6.6 %) have completed post-graduate studies. 7 people in the Western sample (4.6 %) have the same qualification. Overall, 17 people (6.2 % of the whole sample) have a Ph.D. or equivalent.
- 7 people in the Japanese sample (4.6 %) have completed a professional, or technical degree. 3 people in the Western sample (2 %) have the same qualification. Overall, 10 people (3.3 % of the whole sample) have a technical degree.
- 3 people in the Japanese sample (2 %) have answered "other" to this question. Similarly, 3 people in the Western sample (2 %) have the same qualification. Overall, 6 people (2 % of the whole sample) have answered "other" to the question.

To assess whether educational background is a significant variable when assessing typography as a semiotic mode, the Kurskal-Wallis test will be applied to all questions confronting typography to semiotics: the classification matrix, the personality of typeface, spacing, and the "taste" of typefaces.

During our tests on the personality of font, the educational background does only seem to be a significant variable at a very marginal level. The table underneath summarizes all the tests by displaying only the value of the asymptotic significance  $p$ . The values in bold are the occurrences where  $p$  is significant ( $p < .05$ ):

	Childish	Elegant	Artistic	Mechanical	Friendly	Professional
Font 1	.266	<b>.001</b>	.707	.150	<b>.002</b>	<b>.021</b>
Font 2	.178	<b>.003</b>	<b>.006</b>	.196	.266	<b>.000</b>

Font 3	.231	.472	.208	.185	.584	.196
Font 4	.729	.176	<b>.011</b>	.104	.173	<b>.001</b>
Font 5	.329	<b>.041</b>	.111	<b>.007</b>	<b>.033</b>	.82
Font 6	<b>.003</b>	<b>.047</b>	.099	<b>.006</b>	<b>.047</b>	<b>.000</b>
Font 7	.386	.119	<b>.029</b>	.657	.197	.117
Font 8	.934	.315	<b>.002</b>	.789	.482	<b>.000</b>
Font 9	.617	<b>.000</b>	<b>.049</b>	.187	.243	.097

This study reveals that there are no constant relationships between educational background and selected personality of typem except in the case of font 6. It would also seem that the consideration of elegance, artistry and professionalism might change according to one's educational background. In this case, a significant  $p$  means that people of different educational backgrounds attributed different personalities to given fonts.

Similarly, the second part of the study exploring typography as a semiotic mode, the part focusing on kerning follows the same direction, seeing educational background as a very marginal variable in considering typography as a semiotic mode. Below are the values of  $p$ . There are two pairs of text to assess: T1 is the Japanese text, T2 the Latin one. The four questions Q1, Q2, Q3 and Q4 from the questionnaire are the following:

- Q1: Spacing affects readability: if I had to read the content of the text, the properly spaced text would be easier to read
- Q2: Spacing affects my impression of the text
- Q3: Spacing affects the aesthetics of the text
- Q4: Spacing affects the professional aspect of the text

		T1			
		Q1	Q2	Q3	Q4
$p$		.222	.713	.519	.845
		T2			
		$p$		.903	.154

Here, educational background is not a significant variable.

The last part of the study trying to assess typography as a semiotic mode concerns the “taste”, and overall appreciation of a series of ten given typefaces. The results are the following:

	Sweet	Sour	Bitter	Salty	Appreciation
Font 1	<b>.009</b>	.088	.671	<b>.036</b>	.151
Font 2	.397	.162	.715	.517	<b>.021</b>
Font 3	.425	.417	.674	.092	.347
Font 4	.265	.300	.916	<b>.021</b>	.374
Font 5	.736	.696	.971	.661	.361
Font 6	.440	.062	.233	.372	.780
Font 7	<b>.024</b>	.339	.187	.206	.238
Font 8	.777	.374	.612	.178	.550
Font 9	.634	.543	.714	.402	.810
Font 10	<b>.001</b>	.555	.844	.218	.236

The Kurskal-Wallis test allows us to deduct that the significance of the variable of education is only very marginal, with only six scattered significant variables out of fifty.

Therefore, we can say that **the research question “Q. 1.4: A higher level of education enables a better apprehension of typography as a semiotic mode.”** does not produce enough meaningful results, and therefore, **is rejected.**

Let us now consider the questions Q1.5 and Q1.6. To answer these questions, a slightly different approach must be used. Taking each sample separately, we will conduct chi-square tests on every question that assesses typography as a semiotic mode, and separates Japanese and Western fonts. Then, by comparing the results between samples, we will be able to understand whether proficiency is a determining variable in the perception of typography as a semiotic mode, in a language that is either his/her own, or foreign.

Let us first consider the repartition of language proficiency. As it was mentioned before, there is no common framework of language proficiency evaluation between Japanese and English, the way the CEFRL works in the EU. Therefore, we are comparing the JLPT levels

for the Japanese proficiency of the Western sample, and the 英検 for the English proficiency of the Japanese sample.

- In the Western sample, 108 people (71.5 %) have never studied Japanese. Therefore, the answers will be only based on the answers of 43 people (28.5 % of the sample).
  - o 18 people (39.1 %) consider their level as “beginner (up to JLPT N5 level)”
  - o 14 people (30.4 %) consider their level as “pre-intermediate (JLPT N5-N4 level)”
  - o 9 people (19.6 %) consider their level as “intermediate (JLPT N3 level)”
  - o 4 people (8.7 %) consider their level as “advanced (JLPT N2 level)”
  - o 1 person (2.2 %) considers his/her level as “fluent (JLPT N1 level)”
- In the Japanese sample, 1 person (0.7 %) has never studied English. Therefore, the answers will be based on the remaining 150 people (99.7 %).
  - o 9 people (6 %) consider their level as “beginner (up to 英検 5 level)”
  - o 30 people (20 %) consider their level as “pre-intermediate (英検 3-4 level)”
  - o 52 people (34.7 %) consider their level as “intermediate (英検 2 level)”
  - o 39 people (26 %) consider their level as “advanced (英検 preparation 1 level)”
  - o 17 people (11 %) consider their level as “fluent (over 英検 1 level)”
  - o 3 people (2 %) consider their level as “other” (generally meaning they feel that they have forgotten everything)

It should be noted here that, of course the great difference in sample size might hinder providing very accurate results. It should also be said that the respective levels of the JLPT and the 英検 are quite different, since the latter has been designed by and for Japanese people, it is thought to be much more accessible than the JLPT for foreigners.

- The Western sample

Let us first start to evaluate the answers of the Western sample on the “type matching” question.

- Font 1 (*serif with stroke contrast*):  $\chi^2 (12, N = 46) = 10.19, p = .60$ .
- Font 2 (*sans serif, less stroke contrast*):  $\chi^2 (8, N = 46) = 10.15, p = .26$ .

- Font 3 (*sans serif with stroke contrast*):  $\chi^2 (12, N = 46) = 17.54, p = .53$ .
- Font 4 (*analogue*):  $\chi^2 (8, N = 46) = 19.71, p = .01$ .
- Font 5 (*semi-serif, with stroke contrast*):  $\chi^2 (12, N = 46) = 13.26, p = .35$ .

This analysis tells us that proficiency is only a significant variable in the case of Font 4, the “analogue” (handwritten) font ( $p < .05$ ).

In the next question, evaluating the personality of fonts, the lines in grey represent the Japanese fonts. The lines in white represent the Latin fonts.

	Childish	Elegant	Artistic	Mechanical	Friendly	Professional
Font 1	<b>.001</b>	.399	.133	<b>.000</b>	.616	.504
Font 2	<b>.009</b>	.257	<b>.000</b>	.416	.352	.724
Font 3	.388	.415	.927	.508	.412	.216
Font 4	.907	.870	.828	<b>.000</b>	.797	.231
Font 5	.270	.354	.252	.966	.253	.601
Font 6	.857	.800	.973	.718	.414	.943
Font 7	.592	.779	.973	.918	.772	.742
Font 8	.645	.512	<b>.008</b>	.521	.365	.142
Font 9	.195	.562	.312	<b>.017</b>	.810	<b>.007</b>

This analysis informs us that there is no constant significant difference between the Japanese and the Latin fonts. The last part of the evaluation of whether language proficiency affects the viewers’ perception of typography as a semiotic mode in their own language, or a foreign language is the evaluation of kerning. Similarly, a Pearson’s chi-squared test will be conducted. Below are the values of  $p$ . There are two pairs of text to assess: T1 is the Japanese text, T2 the Latin one. The four questions Q1, Q2, Q3 and Q4 from the questionnaire are the following:

- Q1: Spacing affects readability: if I had to read the content of the text, the properly spaced text would be easier to read
- Q2: Spacing affects my impression of the text
- Q3: Spacing affects the aesthetics of the text

- Q4: Spacing affects the professional aspect of the text

	T1			
	Q1	Q2	Q3	Q4
<i>p</i>	.054	<b>.039</b>	.129	.643
	T2			
<i>p</i>	.345	.789	.423	.343

This analysis informs us that in the Western sample, language proficiency is not a significant variable in the evaluation of the importance of kerning.

- The Japanese sample

Let us first start to evaluate the answers of the Japanese sample on the “type matching” question.

- Font 1 (*serif with stroke contrast*):  $\chi^2 (10, N = 150) = 6.78, p = .75$ .
- Font 2 (*sans serif, less stroke contrast*):  $\chi^2 (10, N = 150) = 18.72, p = .44$ .
- Font 3 (*sans serif with stroke contrast*):  $\chi^2 (15, N = 150) = 20.07, p = .17$ .
- Font 4 (*analogue*):  $\chi^2 (15, N = 150) = 18.46, p = .24$ .
- Font 5 (*semi-serif, with stroke contrast*):  $\chi^2 (15, N = 150) = 20.40, p = .16$ .

This analysis tells us that proficiency is not a significant variable ( $p < .05$ ).

In the next question, evaluating the personality of fonts, the lines in grey represent the Japanese fonts. The lines in white represent the Latin fonts.

	Childish	Elegant	Artistic	Mechanical	Friendly	Professional
Font 1	.557	.222	.080	.902	<b>.024</b>	.412
Font 2	.278	.422	<b>.037</b>	<b>.000</b>	.390	.104
Font 3	.054	.966	.837	.532	.672	.685
Font 4	.085	.605	.121	.460	.167	.506
Font 5	.938	.393	.484	.256	.161	.259

Font 6	.225	.334	.337	<b>.041</b>	.270	.357
Font 7	.642	.121	.823	.360	.108	.110
Font 8	.579	.574	.115	.826	.274	<b>.014</b>
Font 9	<b>.011</b>	.362	.884	.095	.889	.197

This analysis informs us that there is no constant significant difference between the Japanese and the Latin fonts in the Japanese sample either. The last part of the evaluation of whether language proficiency affects the viewers' perception of typography as a semiotic mode in their own language, or a foreign language is the evaluation of kerning. Similarly, a Pearson's chi-squared test will be conducted. Below are the values of  $p$ . There are two pairs of text to assess: T1 is the Japanese text, T2 the Latin one. The four questions Q1, Q2, Q3 and Q4 from the questionnaire are the following:

- Q1: Spacing affects readability: if I had to read the content of the text, the properly spaced text would be easier to read
- Q2: Spacing affects my impression of the text
- Q3: Spacing affects the aesthetics of the text
- Q4: Spacing affects the professional aspect of the text

		T1			
		Q1	Q2	Q3	Q4
$p$		.145	.846	.291	.354
		T2			
$p$		.289	.716	.793	.427

This analysis informs us that in the Japanese sample, language proficiency is not a significant variable in the evaluation of the importance of kerning.

The analyses of both sample separately allow us to consider that language proficiency is not a significant variable when the respondents must evaluate typography as a semiotic mode. Therefore, the research questions **“Q 1.5: Proficiency in a foreign language influences the viewer's perception of typography as a semiotic mode in his/her own language.”** and **“Q 1.6: Proficiency in a foreign language influences the viewer's perception of typography as**

**a semiotic mode in a foreign language.”** are both **rejected**. To confirm this opinion, the very same process has been applied to the question “Besides your mother tongue, how many languages do you speak?”, and none of the variables turned out to be significant.

iii. *The impact of international exposure*

The research question regarding the international exposure is:

Hypotheses / Variables	Questions
Exposure to internationalisation	Q 1.7: Exposure to internationalisation influences the viewer’s perception of typography as a semiotic mode.

Interestingly, in both samples, the amount of people who have had international experiences is very similar:

- In the Japanese sample, 80 people (53 %) have had international experiences: through school exchanges, or work experiences abroad. The remaining 71 (47 % of the sample) have not. In the Western sample, 81 people (53.6 %) mention having studied or worked abroad, while 70 people (46.4 %) have not. Therefore, overall, 161 people (53.3 % of the complete sample) have been abroad, and 141 people (46.7 %) have not.

Within the sample of people who have been abroad, we obtain the following results:

- 18 people of the Japanese sample who have been abroad (22.5 %) were out of their country for less than 6 months. 23 people of the Western sample (28.4 %) were in the same situation. Therefore, overall, 41 people (25.4 % of the complete sample of people who have been abroad) have been abroad for less than six months.
- 29 people of the Japanese sample who have been abroad (36.3 %) were out of their country for 6 months to a year. 32 people of the Western sample (39.5 %) were in the same situation. Therefore, overall, 61 people (37.9 % of the complete sample of people who have been abroad) have been abroad for 6 months to a year.

- 12 people of the Japanese sample who have been abroad (15 %) were out of their country for one to three years. 13 people of the Western sample (16 %) were in the same situation.

Therefore, overall, 25 people (15.5 % of the complete sample of people who have been abroad) have been abroad for one to three years.

- Lastly, 21 people of the Japanese sample who have been abroad (26.2 %) were out of their country for more than three years. 13 people of the Western sample (16 %) were in the same situation.

Therefore, overall, 34 people (21.1 % of the complete sample of people who have been abroad) have been abroad for more than three years.

To understand the impact of international exposure on the perception of typography as a semiotic mode, the Mann-Whitney U test will be applied to all questions confronting typography to semiotics: the classification matrix, the personality of typeface, spacing, and the “taste” of typefaces.

During our tests on the personality of font, the educational background does only seem to be a significant variable at a very marginal level. The table underneath summarizes all the tests by displaying only the value of the asymptotic significance  $p$ . The values in bold are the occurrences where  $p$  is significant ( $p < .05$ ):

	Childish	Elegant	Artistic	Mechanical	Friendly	Professional
Font 1	.380	.207	.128	.991	.805	.420
Font 2	.767	.758	.638	.316	.072	.201
Font 3	.943	.674	.800	.150	.992	.456
Font 4	.894	.542	.643	.826	.893	.456
Font 5	.542	.174	.738	.074	.536	<b>.020</b>
Font 6	.708	.905	.729	.632	.643	.523
Font 7	.259	.715	.318	.944	.917	.154
Font 8	.229	.816	<b>.034</b>	.256	.523	.232
Font 9	<b>.039</b>	.074	.685	.411	.451	<b>.039</b>

The kerning study shows an even clearer result, seeing international exposure an insignificant variable in considering typography as a semiotic mode. Below are the values of  $p$ .

	T1			
	Q1	Q2	Q3	Q4
$p$	.821	.797	.526	.504
	T2			
$p$	.408	.703	.498	.811

Therefore, international exposure is, in this case, not a significant variable.

The last part of the study trying to assess typography as a semiotic mode concerns the “taste” of typefaces. For the record, the respondents had a series of ten fonts, to which they had to give an overall taste impression by ranking taste-related adjectives (sweet, sour, bitter, and salty). Besides, they had to express their overall appreciation of the font. The results are the following:

	Sweet	Sour	Bitter	Salty	Appreciation
Font 1	.533	.592	.680	.740	.925
Font 2	.114	.660	.850	.289	.122
Font 3	.899	.140	.119	<b>.014</b>	.876
Font 4	.540	.254	.684	.548	.731
Font 5	.659	.420	.249	.224	.476
Font 6	.287	.302	.615	.305	.570
Font 7	.284	.290	.978	.116	.964
Font 8	.452	.628	.828	.143	.109
Font 9	.705	.396	.758	.375	.679
Font 10	.965	.067	.565	<b>.032</b>	.982

This test allows us to deduct that the significance of the variable of international exposure is so peripheral that it cannot be retained as determining.

The results are so strong that further study of the group who did go abroad is not necessary to conclude that **the research question “Q 1.7: Exposure to internationalisation influences the viewer’s perception of typography as a semiotic mode.”** does not produce enough significant results, and therefore, **is rejected.**

iv. The intercultural viewpoint: comparing the Japanese and the Western samples

This part of the research is central, since this paper is written following an intercultural communication perspective. Comparing the Japanese and the Western samples enables us to understand whether being Japanese, or being a Westerner, has an impact on the vision one might have of typography, or to consideration of typography as a semiotic mode. The research question regarding this framework is:

Hypotheses / Variables	Questions
Cultural background	Q. 1.8: Japanese people and Westerners have a similar approach to typography as a semiotic mode.

Of course, in this study, both the Japanese and the Western samples are of the same size: 151 people each. To understand the significance of cultural background on the perception of typography as a semiotic mode, the Mann-Whitney U test will be applied to all questions confronting typography to semiotics: the classification matrix, the personality of typeface, spacing, and the “taste” of typefaces.

During our tests on the personality of font, the educational background does only seem to be a significant variable at a very marginal level. The table underneath summarizes all the tests by displaying only the value of the asymptotic significance  $p$ . The values in bold are the occurrences where  $p$  is significant ( $p < .05$ ):

	Childish	Elegant	Artistic	Mechanical	Friendly	Professional
Font 1	<b>.000</b>	<b>.000</b>	.202	.065	<b>.000</b>	<b>.000</b>

Font 2	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.005</b>	.064	<b>.000</b>
Font 3	<b>.000</b>	<b>.008</b>	.109	<b>.003</b>	<b>.000</b>	<b>.000</b>
Font 4	<b>.000</b>	<b>.020</b>	<b>.007</b>	<b>.002</b>	<b>.000</b>	<b>.000</b>
Font 5	.503	.117	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>
Font 6	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.008</b>	<b>.000</b>	<b>.000</b>
Font 7	<b>.000</b>	<b>.006</b>	<b>.000</b>	.064	.095	<b>.000</b>
Font 8	.860	<b>.010</b>	<b>.000</b>	.535	<b>.000</b>	<b>.000</b>
Font 9	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	.051	<b>.000</b>

For the record, the lower  $p$  is, the more significant it is. Of all the chi-square tests conducted, 34 out of 54 come up with an asymptotic significance  $p = .000$ , and a crushing majority of 44 values  $p$  are lower than .05. In other terms meaning that the cultural background could not be more determining than it is. The fonts 4 (Commercial Script BT) and 6 (Helvetica) seem to be considered very differently on all aspects by the two samples, for all personalities of the font reveal a  $p < .05$ . Fonts 1, 5, 7, and 8 seem to be the ones that are the most consensual, for they are the only ones producing more than one  $p > .05$ . When the table is read vertically, it appears that in none of the cases the samples agreed on the conception of “professionalism” in typography, since all values are equal to 0. It is safe to say that, for this study, the variable of cultural background is significant.

The kerning study shows a less striking result, making the cultural background only marginally significant when considering typography as a semiotic mode. Only the first couple of texts, ergo the Japanese texts, seems to be a matter of varied interpretations, providing lower values of  $p$  (cf. table below).

	T1			
	Q1	Q2	Q3	Q4
$p$	<b>.000</b>	<b>.001</b>	.117	<b>.049</b>
	T2			
$p$	.096	.945	.496	.130

Therefore, cultural background is, in this case, a partially significant variable, valid only on the first sample.

The last part of the study trying to assess typography as a semiotic mode concerns the “taste” and overall appreciation of a series of ten typefaces, in a food packaging environment. The results are the following:

	Sweet	Sour	Bitter	Salty	Appreciation
Font 1	<b>.008</b>	<b>.000</b>	<b>.003</b>	<b>.000</b>	.062
Font 2	<b>.045</b>	<b>.028</b>	<b>.021</b>	.433	<b>.000</b>
Font 3	<b>.025</b>	.153	.273	<b>.000</b>	.668
Font 4	.783	.312	.975	<b>.000</b>	<b>.006</b>
Font 5	.083	<b>.001</b>	<b>.033</b>	<b>.000</b>	.771
Font 6	.105	<b>.000</b>	<b>.005</b>	<b>.015</b>	.909
Font 7	<b>.000</b>	<b>.020</b>	<b>.000</b>	<b>.000</b>	<b>.035</b>
Font 8	.251	.426	.187	<b>.013</b>	.275
Font 9	.688	<b>.002</b>	<b>.030</b>	<b>.002</b>	1.000
Font 10	<b>.000</b>	.610	.395	<b>.000</b>	.256

This test allows us to deduce that cultural background is a determining variable, since 29 values of  $p$  out of the 50 tested are inferior to .05. Examining the table closer allows us to say that the fonts 1, 2, 7, and 9 are the ones where the variable of cultural background was the most significant in the variations of answers. Reading the table vertically shows that the conception of saltiness is the most culturally dependent.

To strengthen the results that the variable of cultural background is indeed a significant one, we will conduct a Pearson’s chi-squared test on another part of the questionnaire, dedicated to the SFG approach: the client/typeface matching, here to account for the ideational metafunction of typography. Here, the chi-squared test compares the proportion of common results between the Western and Japanese samples.

- Client 1 (“A law firm”):  $\chi^2(3, N = 302) = 34.84, p = .00$ .
- Client 2 (“A SF movie poster”):  $\chi^2(3, N = 302) = 40.01, p = .00$ .

- Client 3 (“A wedding planner”):  $\chi^2(3, N = 302) = 7.13, p = .07$ .
- Client 4 (“A kindergarten”):  $\chi^2(3, N = 302) = 40.63, p = .00$ .
- Client 5 (“A jewellery shop”):  $\chi^2(3, N = 302) = 9.04, p = .03$ .
- Client 6 (“A baby food line product”):  $\chi^2(3, N = 302) = 15.62, p = .00$ .
- Client 7 (“A college textbook”):  $\chi^2(3, N = 302) = 17.34, p = .00$ .
- Client 8 (“An engineering company logo”):  $\chi^2(3, N = 302) = 13.72, p = .00$ .

In seven out of eight cases,  $p$  is significant, which clearly means that the variable is of some certain importance. Therefore, we can safely say that **the research question “Q. 1.8: Japanese people and Westerners have a similar approach to typography as a semiotic mode.”** does produce enough significant results, and consequently, **is validated**.

Our study of the individual variables show that, for the most part, they do not have influence over the apprehension of typography as a semiotic mode: Q 1.1, 1.4, 1.5, 1.6, and 1.7 have been rejected. These inform us that individual characteristic might not influence our judgement, but the consideration of typography is culturally dependent, since Q 1.8 has been validated. We will put these results to the test in the next part, by analysing the theories detailed in the first section of this research.

## b. Putting the theories to the test

Now that the individual variables have been examined, let us focus on the results gathered about the theories explained during the Section one of this paper, and assessed during the field study. Although five main theories had been retained (cf. *supra*), they will be gathered into three parts: the classification matrix elaborated by Takagi (2014), the apprehension of typography as a semiotic mode, which will gather the “taste of typeface”, the “personality of fonts”, and a study of spacing, and to conclude, the evaluation of the SFG approach.

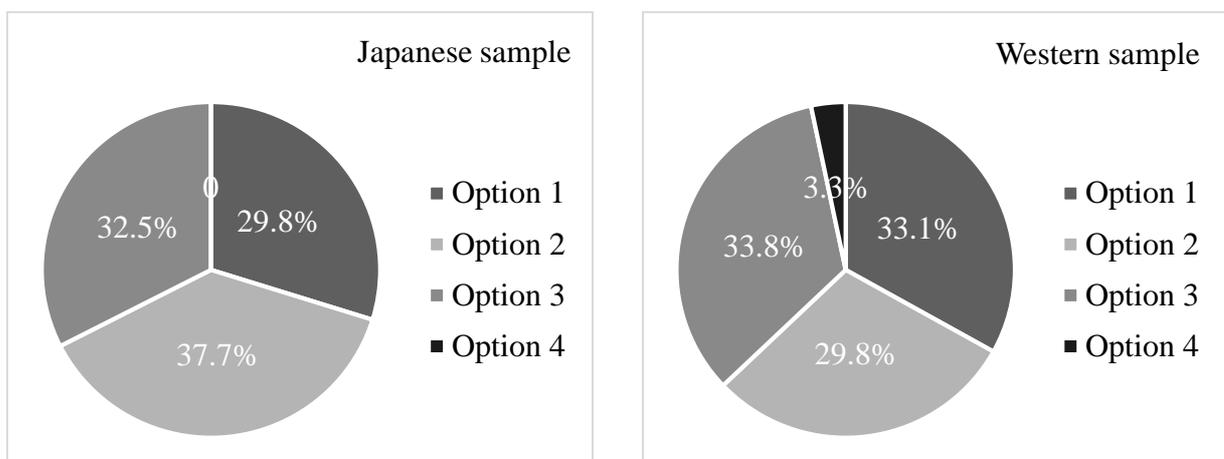
### i. The Takagi classification system

The results of the evaluation of the Takagi classification system are the easiest to understand, since there are “right” and “wrong” answers. The “right” answers would suppose that the theory is right, and that there are significant enough relationships between some given fonts to establish a global classification matrix. Let us first consider the overall results. If the descriptive statistics present a significative difference between the results of the various samples, a chi-square will be performed to assess the difference.

The first font offered was Bodoni (the story of which was detailed above) (cf. Appendix p. 454-455). According to Takagi (2013b), the type family 岩田明朝 *Iwataminchō* had Bodoni as an inspiration for the look, and overall feel of the font. This means that the option 2, which displayed a 岩田明朝 font, is the right answer. Out of 302 people in our sample, 102 people have answered “correctly”, or 33.8 % of the sample. It is far from an overwhelming majority, so let us consider the answers given to the other options.

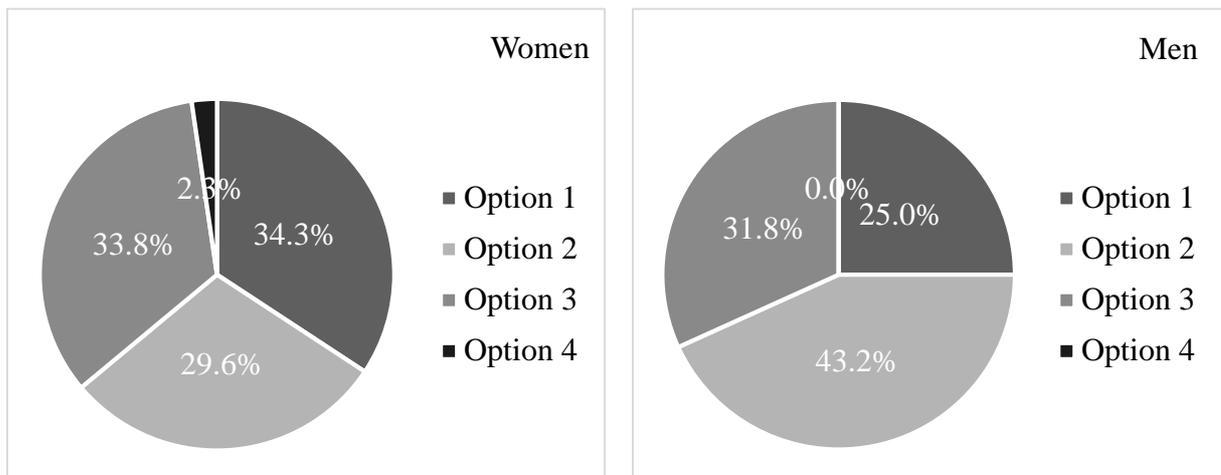
- Option 1: 95 answers (31.5 % of the sample)
- Option 3: 100 answers (33.1 % of the sample)
- Option 4: 5 answers (1.7 % of the sample).

Although the option 2 was the one gathering the most answers, options 1 and 3 have received their fair share of support. All options 1, 2, and 3 presented fonts with a similar characteristic: stroke contrast. The only difference was that option 1 was a sans serif with contrast, option 2 was a serif with contrast, and option 3 a semi serif with contrast. To understand which part of the sample was most prone to being correct, let us refine the analysis of the answer. Below are the answers repartition per sample:



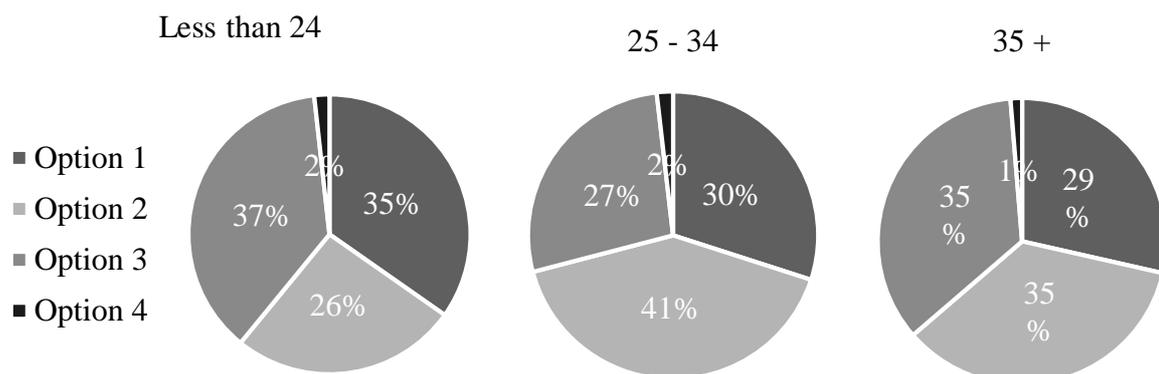
Therefore, for this first match, the Western sample seems to be the one with the most difficulty matching the two correct typefaces. However, the chi-square test informs us that the difference is not significative ( $\chi^2 = 2.13$ ,  $df = 1$ ,  $p = .144$ ). To have results as complete as

possible, let us consider the other individual variables that have not been completely rejected: gender and age.



A chi-square study corroborates the argument that **there is a significant difference** among the number of “correct” answers between the male sample and the female sample ( $\chi^2 = 5.17$ ,  $df = 1$ ,  $p = .022$ ).

The result difference between the two charts is partly due to the fact that the Western sample was mostly composed of women (82.8 %, against 58.3 % on the Japanese sample). Therefore, if the sample with the least “right” answer was the Western one, it makes statistical sense that women mostly chose the wrong answer. This test corroborates the result we had found before, arguing that men are more prone to distinguish letterform details than women (research question Q 1.2).



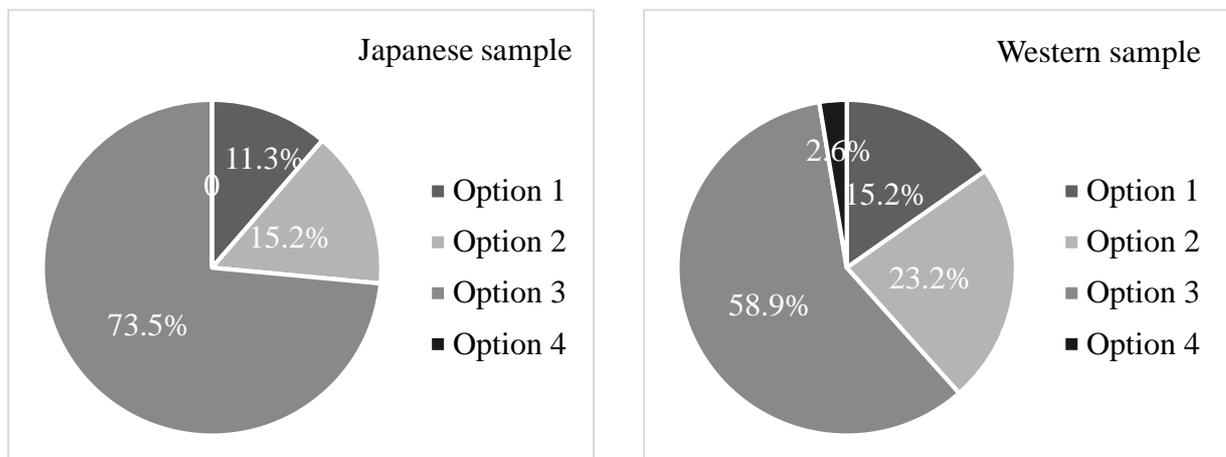
By comparing the three age groups, it seems that the people between 25 and 34 were the most prone to answer correctly. By crossing the data, we can see that out of all 31 men who are between 25 and 34 (theoretically the most prone to answer correctly), 17 of them (58.8 %) have answered “correctly”, a score much better than the average so far, which corroborates the

results we have for the matching test 1. From the perspective of the chi-square test however, the difference is not significant:  $\chi^2 = 1.16$ ,  $df = 2$ ,  $p = .560$ .

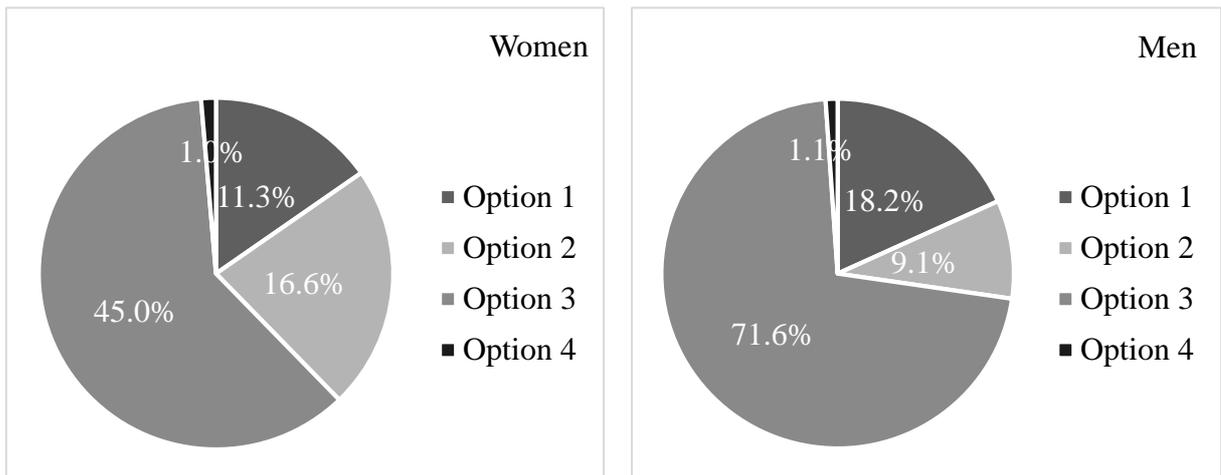
The second font offered was Helvetica (the story of which was also detailed above). (cf. Appendices p.456) This font is a sans serif, without contrast font, matching a Japanese Gothic font, meaning option 3 was the “correct” one. Out of 302 people in our sample, 200 people have answered “correctly”, or 66.2 % of the sample. Compared to the first test, these are very encouraging figures. Let us now consider the answers given to the other options.

- Option 1: 40 answers (13.2 % of the sample)
- Option 2: 58 answers (19.2 % of the sample)
- Option 4: 4 answers (1.3 % of the sample).

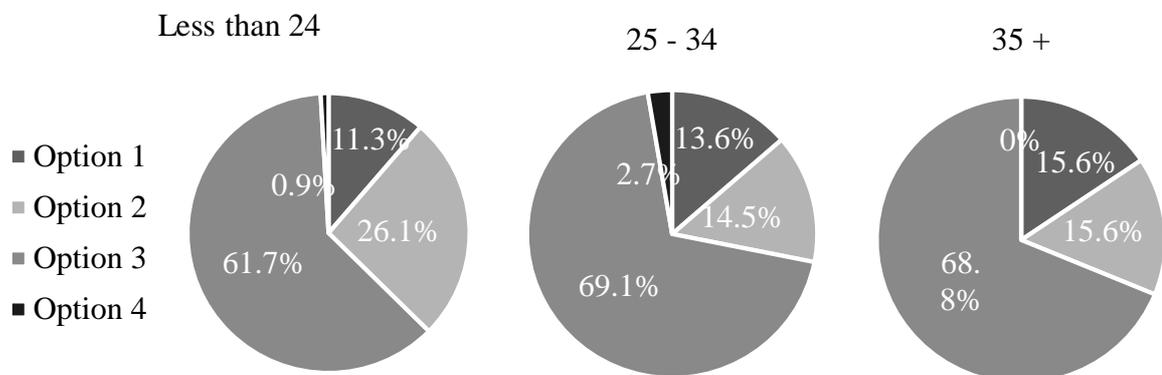
The “right” answer 3 gathers the most responses, followed by option 2, which is also a low contrast font, but displays semi serifs. To understand which part of the sample was most prone to being correct, let us refine the analysis of the answer. Below are the answers repartition per sample:



For the second match as well, the Western sample seems to be the one with the most difficulty matching the two correct typefaces. The significance of the discrepancy between the answers provided by the two samples is **confirmed** when applied to the chi-square test:  $\chi^2 = 7.17$ ,  $df = 1$ ,  $p = .007$ . Let us consider the other individual variables that have not been completely rejected: gender and age.



Like for the test 1, the result difference between the two charts is partly due to the fact that the Western sample was mostly composed of women (82.8 %, against 58.3 % on the Japanese sample). Therefore, if the sample with the least “right” answer was the Western one, it makes statistical sense that women mostly chose the wrong answer. Yet, the chi-square test shows that, although there is a difference, it is not significant:  $\chi^2 = 1.67$ ,  $df = 1$ ,  $p = .197$ . This test corroborates the result we had found before, arguing that men are more prone to distinguish letterform details than women (research question Q 1.2).

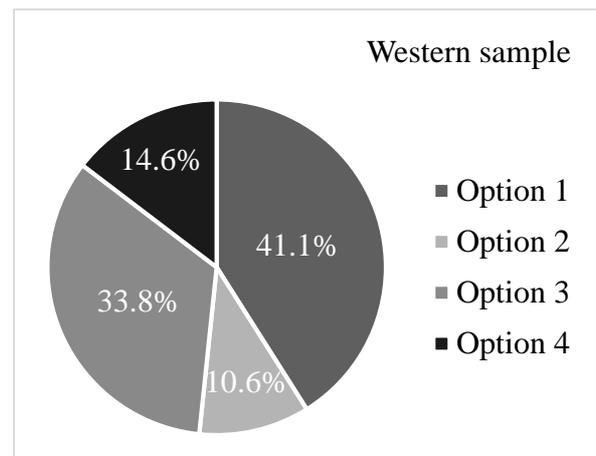
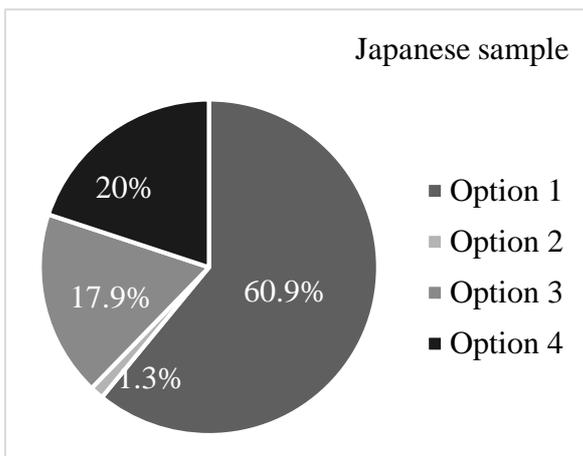


Comparing the three age groups, it seems that the people between 25 and 34 were the most prone to answer correctly. By crossing the data, we can see that out of all 31 men who are between 25 and 34 (theoretically the most prone to answer correctly), 23 of them (74.2 %) have answered “correctly”, a score much better than the average so far, which corroborates the results we have for the matching test 1. However striking the differences may seem, they are not significant from a chi-square test perspective ( $\chi^2 = 1.671$ ,  $df = 2$ ,  $p = .434$ ).

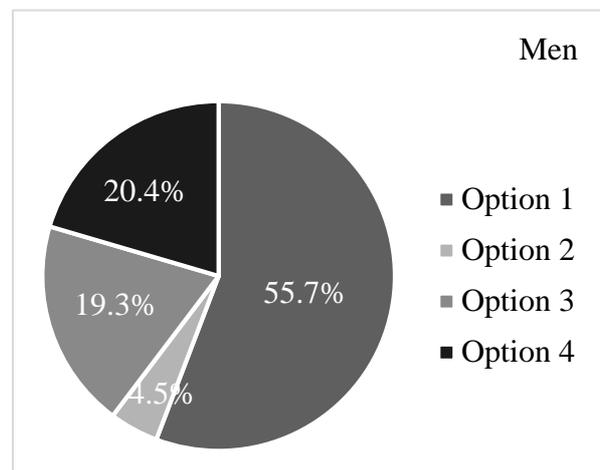
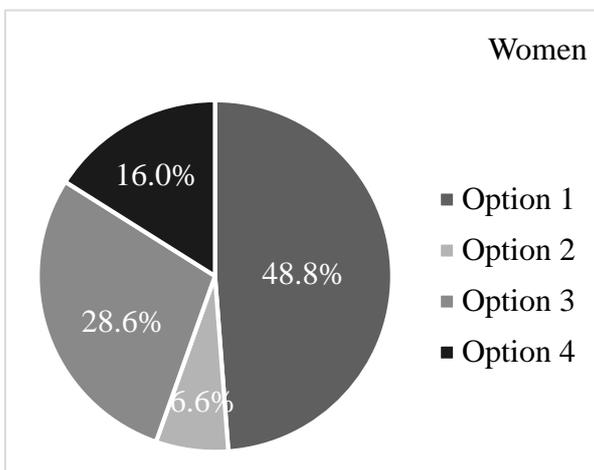
The third font offered was Times Sans Serif, eloquently sans serif, but with contrasted strokes (cf. Appendices p. 457). The matching Japanese font was the option 1. Out of 302 people in our sample, 154 people have answered “correctly”, or 50.1 % of the sample, which still represents most of the answers. Let us now consider the answers given to the other options.

- Option 2: 18 answers (6 % of the sample)
- Option 3: 78 answers (25.8 % of the sample)
- Option 4: 52 answers (17.2 % of the sample).

The “right” option 1 gathers the most responses, followed by option 3, also a sans serif font, but that displays low stroke contrast. To understand which part of the sample was most prone to being correct, let us refine the analysis of the answer. Below are the answers repartition per sample:

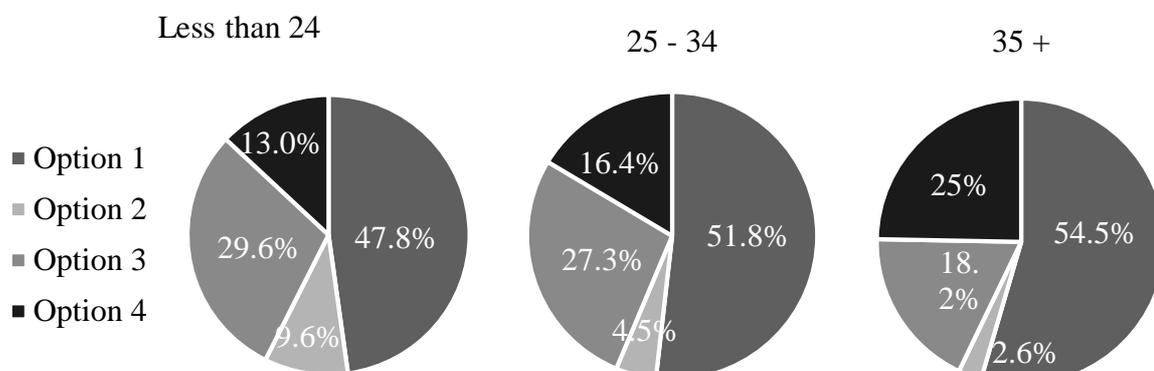


For the third match as well, the Western sample seems to be the one with the most difficulty matching the two correct typefaces. The difference is **very significant**, as the chi-



square test confirms:  $\chi^2 = 11.926$ ,  $df = 1$ ,  $p = .001$ . Let us consider the other individual variables that have not been completely rejected: gender and age.

Like for the test 1 and 2, the result difference between the two charts is partly due to the fact that the Western sample was mostly composed of women (82.8 %, against 58.3 % on the Japanese sample). Therefore, if the sample with the least “right” answer was the Western one, it makes statistical sense that women mostly chose the wrong answer. This test corroborates the result we had found before, arguing that men are more prone to distinguish letterform details than women (research question Q 1.2). Nevertheless, the difference is not significant:  $\chi^2 = 1.17$ ,  $df = 1$ ,  $p = .279$ .

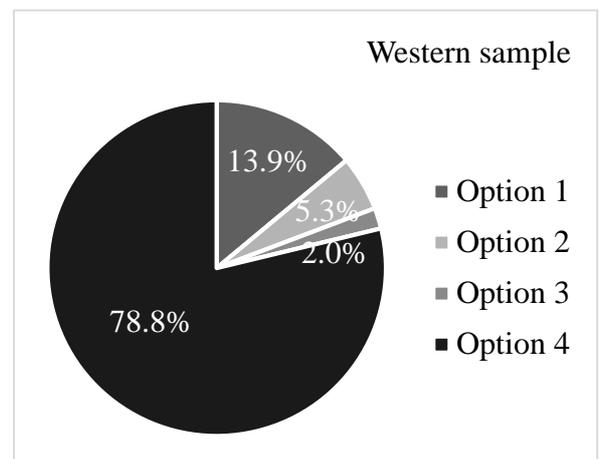
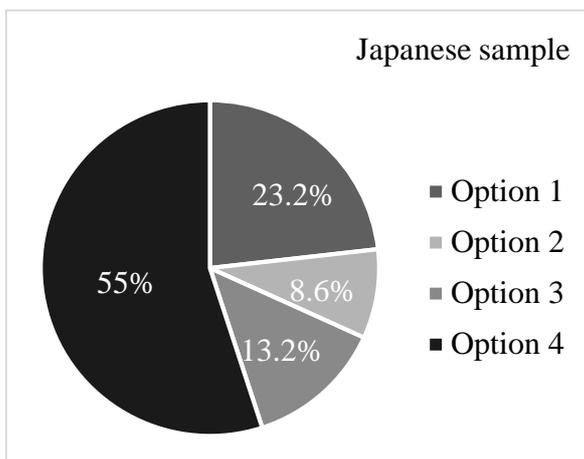


Comparing the three age groups, it seems that the people over 35 were the most prone to answer correctly. By crossing the data, we can see that out of all 32 men who are over 35 (theoretically the most prone to answer correctly), 15 of them (48.9 %) have answered “correctly”, a score surprisingly slightly lower than the average. The chi-sqrz test reveals that the differences between the results is not significant ( $\chi^2 = 0.88$ ,  $df = 2$ ,  $p = .644$ ).

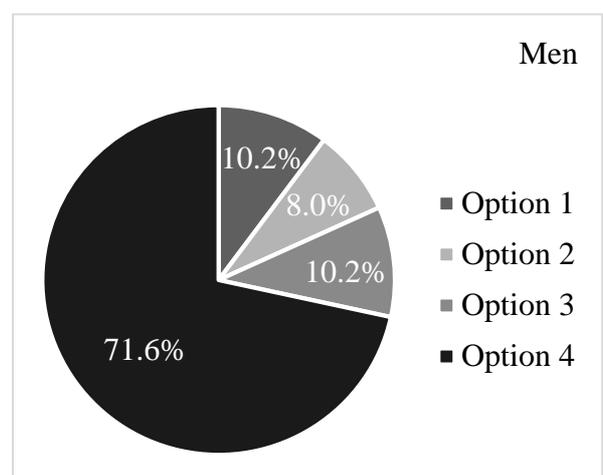
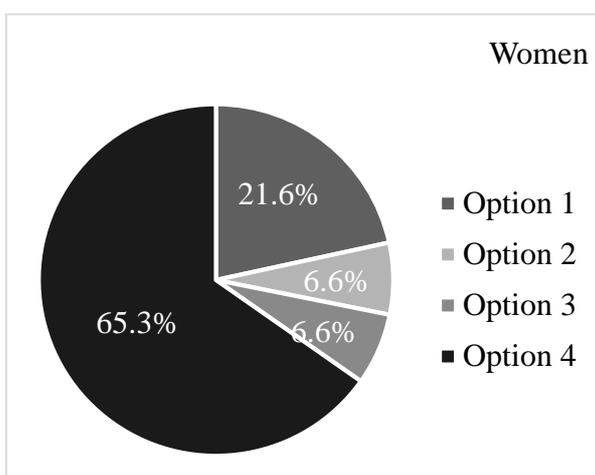
The fourth font offered was Radiohead, a font imitating handwriting, classified in the Takagi matrix as “*analogue*” (cf. Appendices p. 458). The matching Japanese font was the option 4. Out of 302 people in our sample, 202 people have answered “correctly”, or 66.9 % of the sample, the best result so far. Let us now consider the answers given to the other options.

- Option 1: 56 answers (18.5 % of the sample)
- Option 2: 21 answers (7 % of the sample)
- Option 3: 23 answers (7.6 % of the sample).

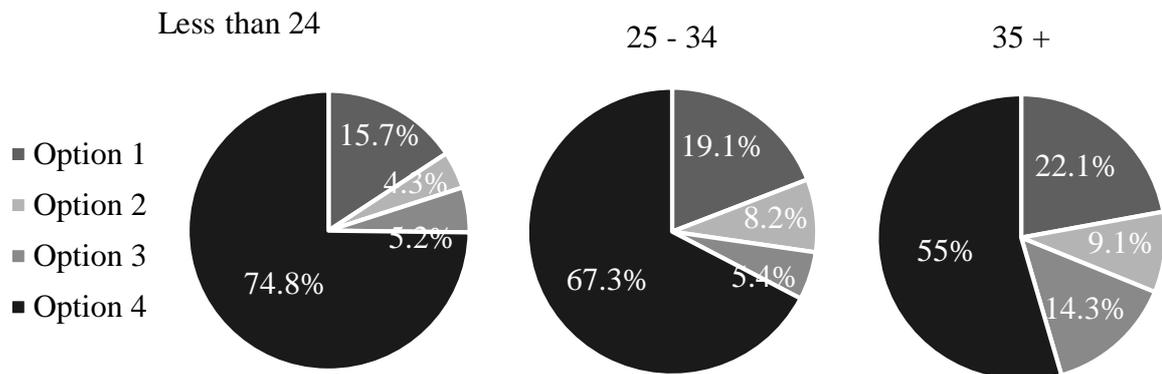
The “right” option 4 gathers the most responses, followed by option 1, which is also a semi serif font with low stroke contrast. The confusion between options 1 and 4 might come from the fact that the handwriting style of the Radiohead font is manuscript more than cursive (meaning the letters are not connected, giving the font a more modern aspect of what handwriting looks like). To understand which part of the sample was most prone to being correct, let us refine the analysis of the answer. Below are the answers repartition per sample:



For the first time, the Western sample overwhelmingly offers majority of “right” answers. The chi-square test confirms this **striking significant difference**:  $\chi^2 = 19.38$ ,  $df = 1$ ,  $p = 1.073^{-5}$ . Let us consider the other individual variables that have not been completely rejected: gender and age.



Still confirming the research question Q 1.2 there is a difference between men and women. For this particular case, since the Western sample was the one gathering the most correct answers, there is not link between the gender repartition in each sample and the final answers. A chi-square test also informs us that there is no significative difference:  $\chi^2 = 1.131$ ,  $df = 1$ ,  $p = .288$ . Let us now consider the age groups.

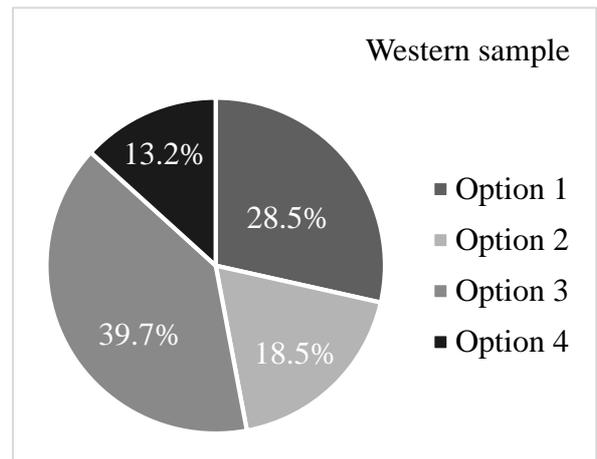
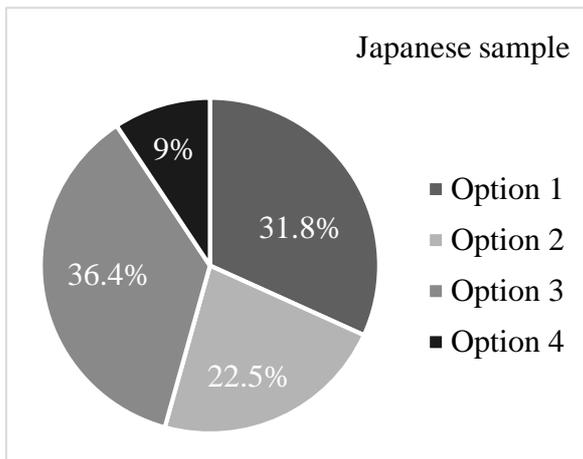


Comparing the three age groups, it seems that the people under 24 were the most prone to answer correctly. By crossing the data, we can see that out of all 25 men who are under 24 (theoretically the most prone to answer correctly), 21 of them (84 %) have answered “correctly”, a very high score. The **striking difference** between the results is confirmed by the chi-square test:  $\chi^2 = 8.54$ ,  $df = 2$ ,  $p = .014$ .

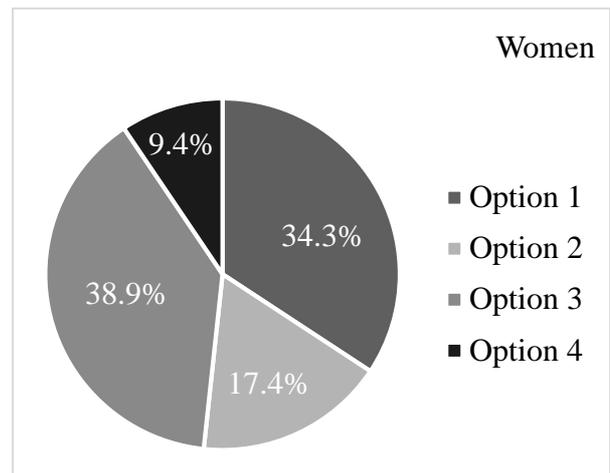
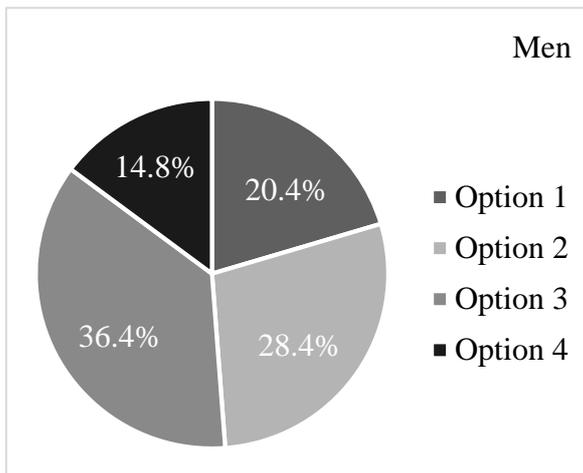
The fifth and last font offered was Roti Semi Serif, a semi serif font with stroke contrast (cf. Appendices p. 459). The matching Japanese font was the option 3. Out of 302 people in our sample, 115 people have answered “correctly”, or 38.1 % of the sample. Let us now consider the answers given to the other options.

- Option 1: 91 answers (30.1 % of the sample)
- Option 2: 62 answers (20.5 % of the sample)
- Option 4: 34 answers (11.3 % of the sample).

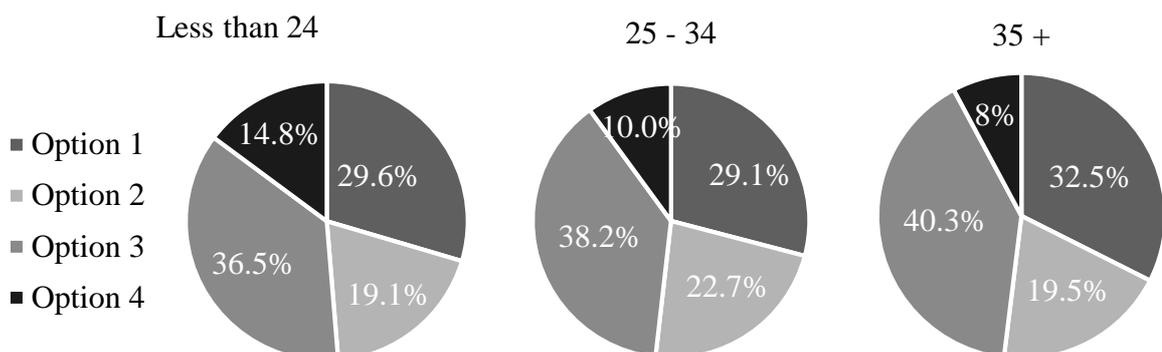
The “right” option 3 is still the one that gathers the most responses, followed closely by option 1, a sans serif, with low stroke contrast font. To understand which part of the sample was most prone to being correct, let us refine the analysis of the answer. Below are the answers repartition per sample:



Here too, the Western sample offers more “right” answers than the Japanese one. However, a chi-square test informs us that the difference is not significant:  $\chi^2 = 0.352$ ,  $df = 1$ ,  $p = .553$ . Let us consider the other individual variables that have not been completely rejected: gender and age.



Still confirming the research question Q 1.2 there is a difference between men and women. For this particular case, since the Western sample was the one gathering the most correct answers, there is not link, nor significant difference between the gender repartition in each sample and the final answers (chi-square  $\chi^2 = 0.18$ ,  $df = 1$ ,  $p = .673$ ). Let us now consider the age groups.



Comparing the three age groups, it seems that for this fifth matching case, experience comes with age. As the age category goes up, the answers are increasingly “correct”, or at least correspond more to what Takagi aimed at showing. However, the chi-square test does not acknowledge the difference as significant ( $\chi^2 = 0.27$ ,  $df = 2$ ,  $p = .872$ ). Yet, by crossing the data, we can see that out of all 45 women who are over 35 (theoretically the most prone to answer correctly), 19 of them (42.2 %) have answered “correctly”, a very satisfactory figure.

This study allows us to confirm that the Takagi classification matrix is relevant, both in the West and in Japan. On all five tests, the expected answer was the one winning a majority of votes, however slight said majority was. This test also informs us that, although all the “correct” answers prevailed, individual variables such as age, gender, and cultural background greatly influenced the results. These results corroborate the validation of question Q 1.2, partial validation of question Q 1.3, and the rejection of question Q 1.8 (cf. *supra*). As for the current research questions put to the test, the research question **“Q 2.1: Type can be classified following an international, common matrix, regardless of the writing system that is in use (Japanese or Latin characters)”** can definitely be **validated**. As for the supplementary question **“Q 2.2: Understanding a writing system affects the viewer’s perception of the structure of characters.”**, it can only be **partially validated**. The fact that neither the Western, nor the Japanese sample have had most “correct” answers all through the test prevents us from either completely validating or rejecting the question. It can be argued in favour of the validation of the research question Q 2.2 that for the fonts 1 to 3, the most classic ones, and the ones that are used and seen every day online or in print, the Japanese sample had an advantage. This could be due to the gender repartition of the sample, or simply the fact that, because Japanese characters are more intricate, the Japanese viewers are more used to paying attention to slight details, such as the presence or absence of serifs, or the stroke contrast.

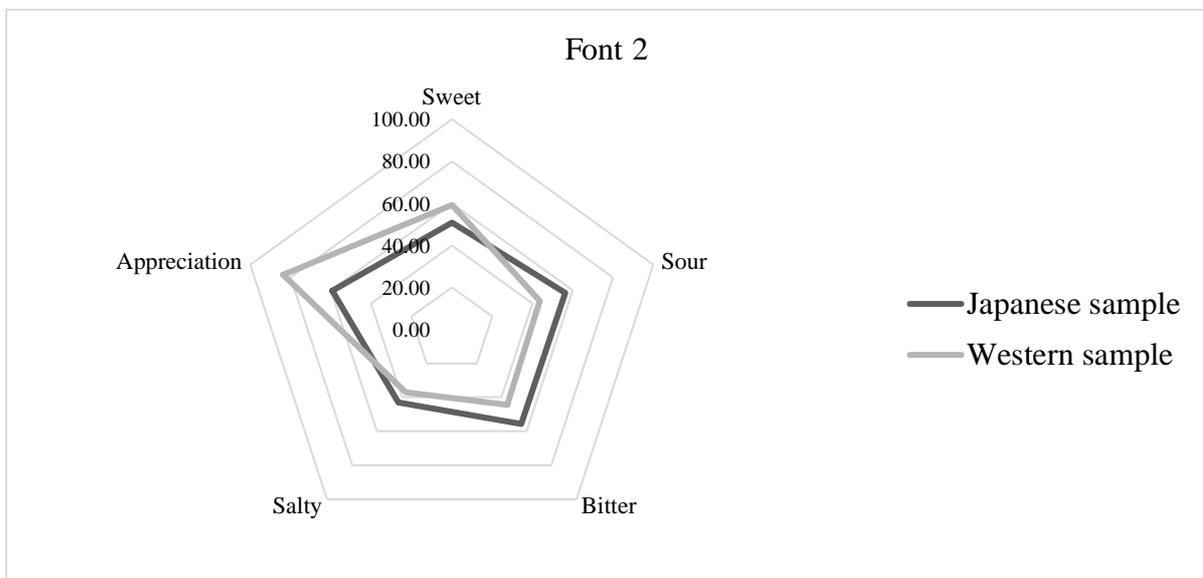
## ii. *Typography as a semiotic mode*

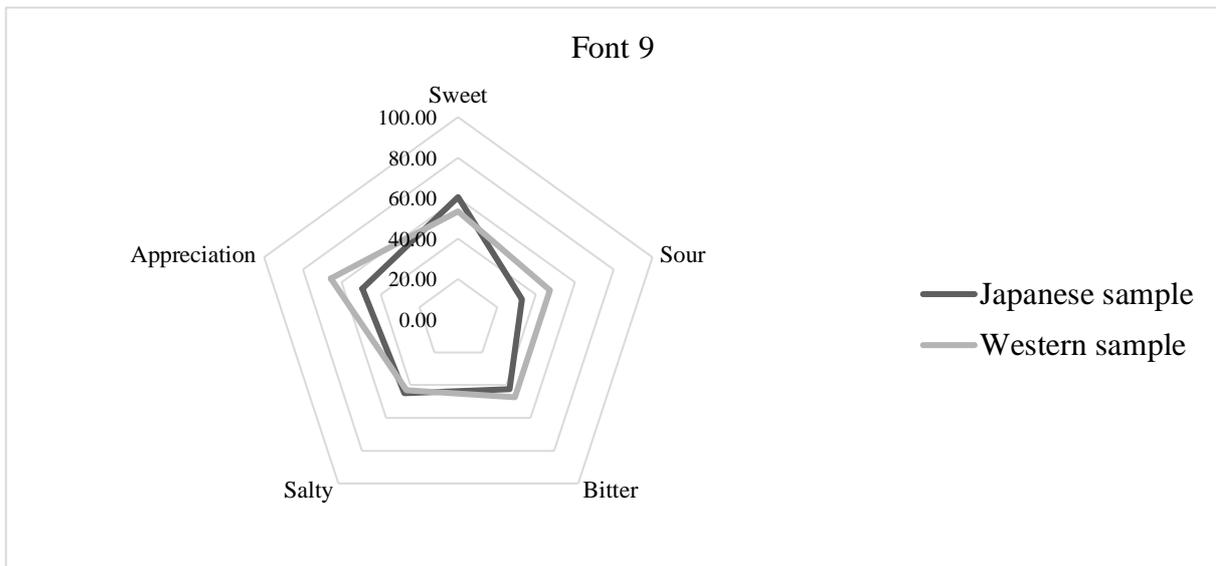
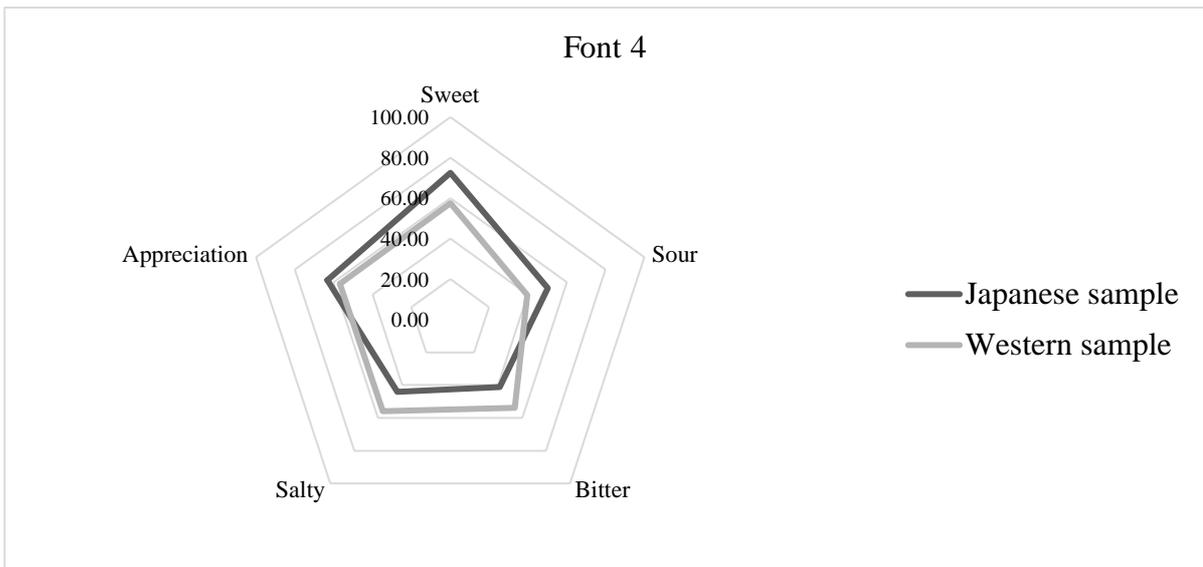
The study of our results concerning typography as a semiotic mode is divided in three parts: first, we will examine the results of the “taste of typeface” test, to evaluate the internationality of the 2015 articles written by Velasco et al. Then we will focus on the metaphorical aspect of type, through the “personality of type” test. Lastly, we will assess the results regarding the meaning of kerning.

- The taste of typefaces

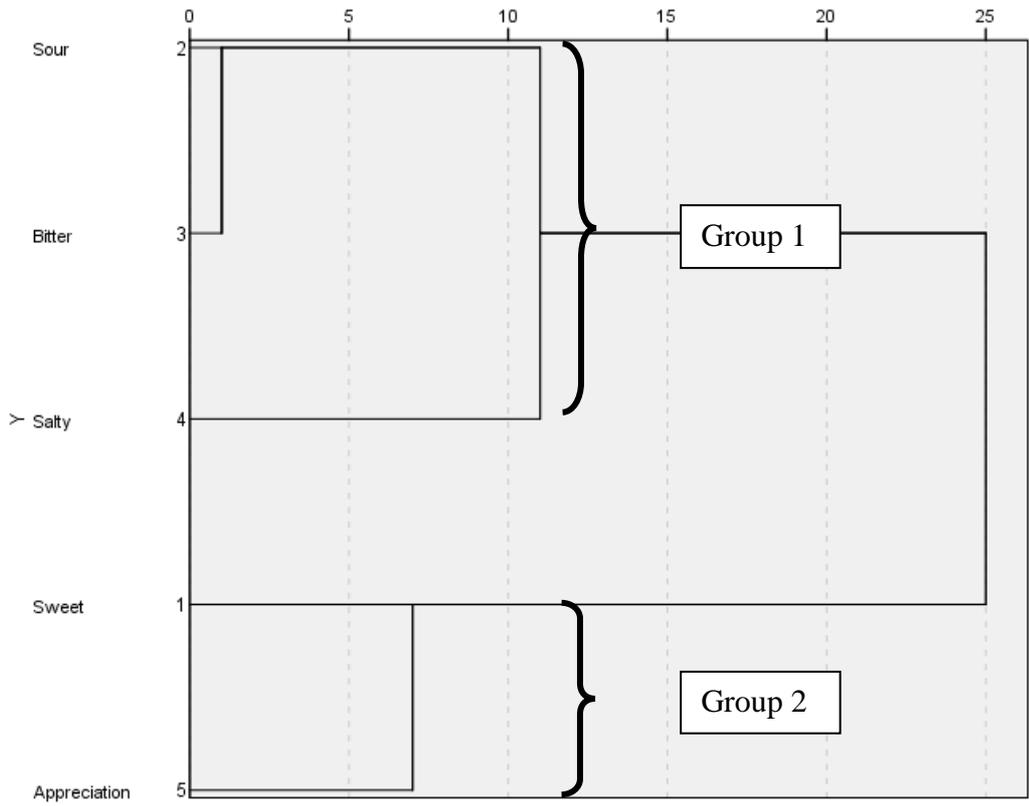
For the record, each respondent had to examine a series of ten fonts, and give them a “taste”, choosing from four adjectives: sweet, sour, bitter, and salty and ranking them using Likert scales. They also had to give their overall appreciation of the typeface. Velasco et al.’s theories were that sweetness and roundness are linked, sweetness and positive appreciation (what they refer to as the “*hedonic dimension*”) are linked, and people do not really make a difference between sourness, bitterness, and saltiness.

The roundest fonts were the fonts 2, 4, and 9. Below are radar charts of the overall tastes of those three typefaces.

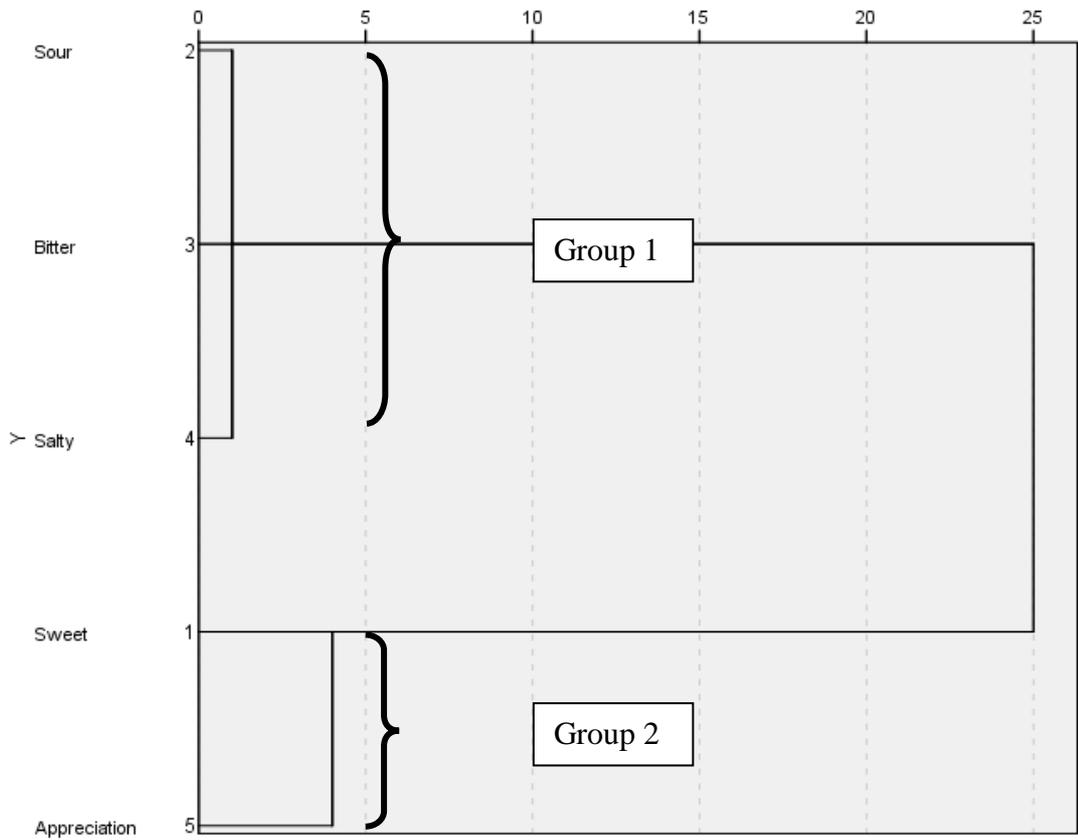




For all three fonts, and for both samples, both sweetness and appreciation are the values that have obtained the highest scores, proving that there is a clear link between the two variables. To further test the theories, and show a better overview of the whole samples' answers, the participants were divided into subgroups using a cluster analysis based on Ward's method and using the Euclidean distance (the horizontal axis). In the framework of this study, we have divided the answers by taste adjective and appreciation (the vertical axis).



*Answers collected from the Japanese sample*

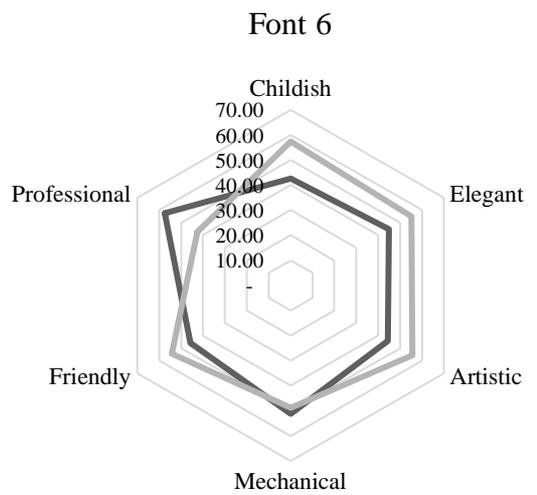
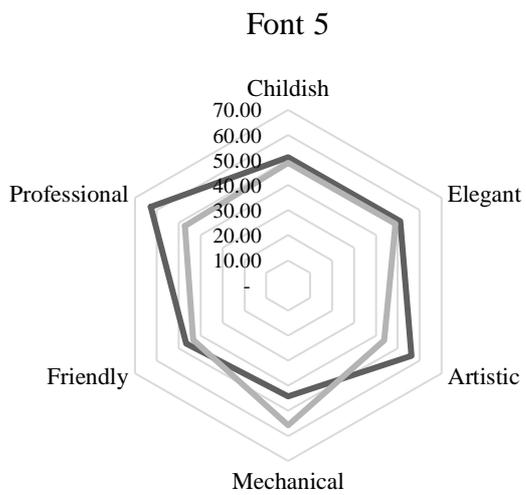
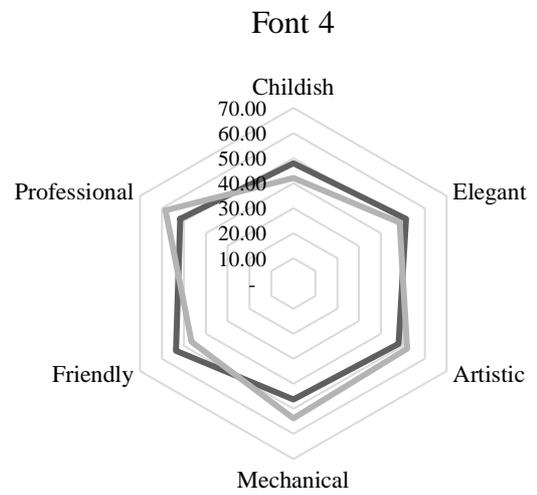
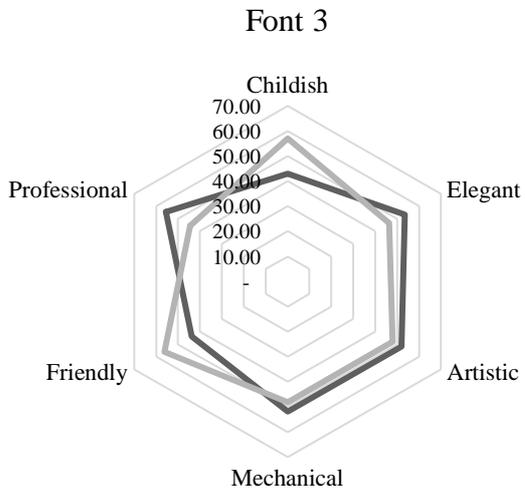
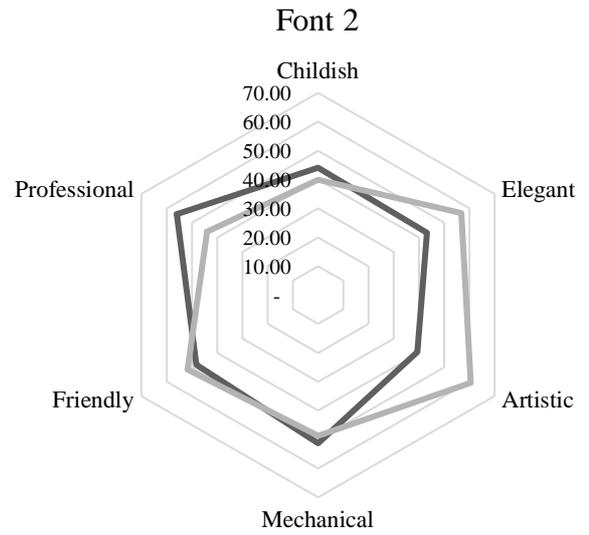
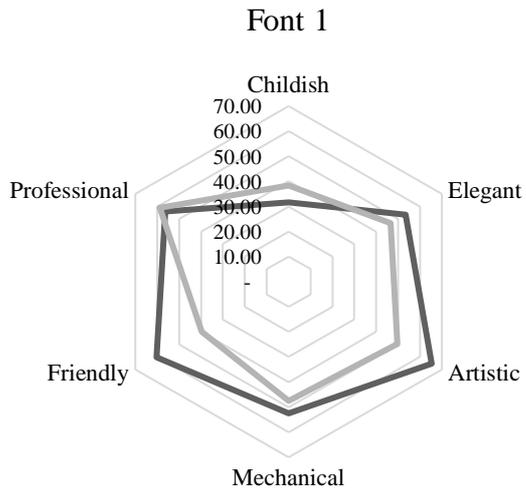


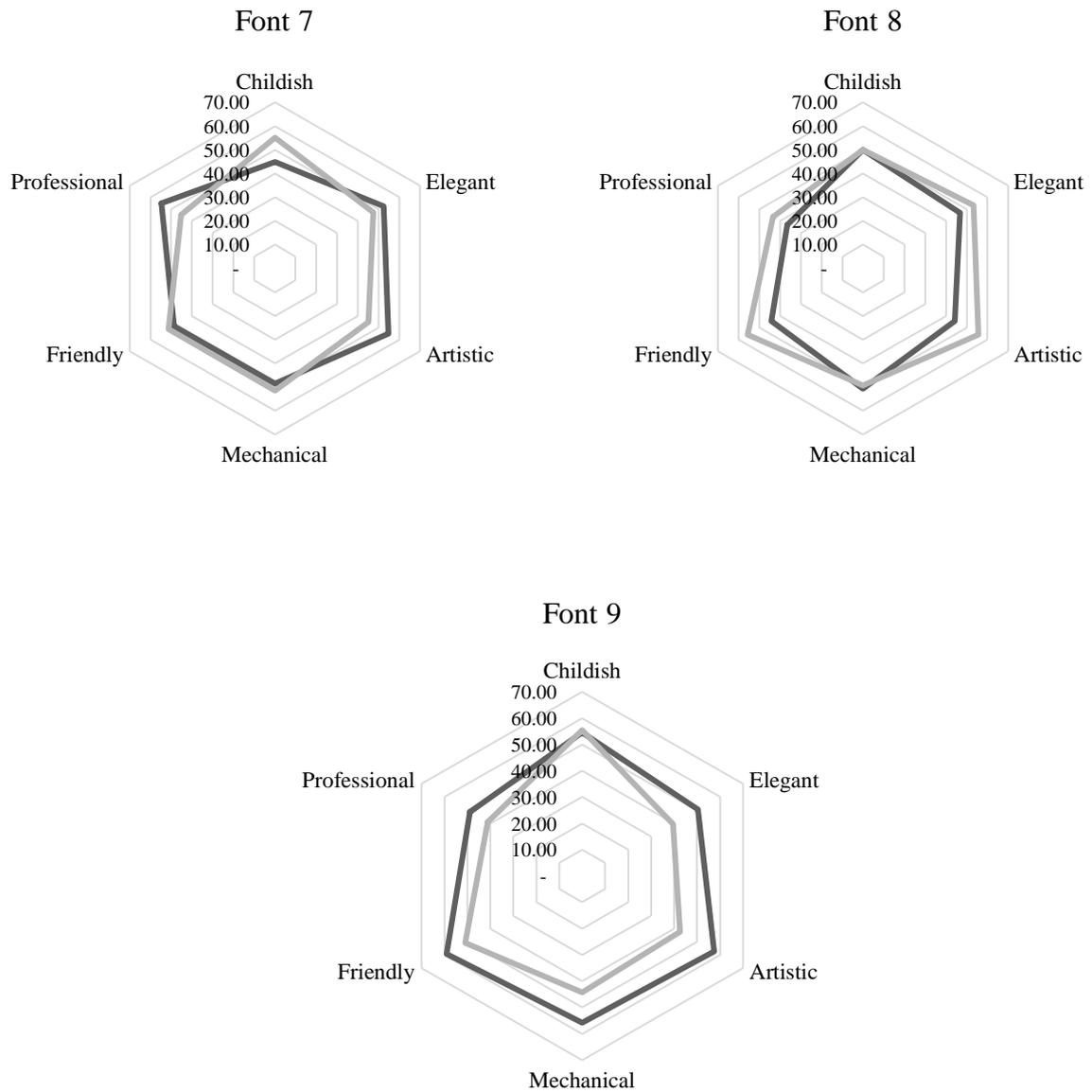
*Answers collected from the Western sample*

The data clustered together have been named Group 1 and Group 2. The clusters clearly show that there is a strong relationship between sweetness and appreciation, or in the words of Velasco et al., hedonism. Besides, as it is particularly clear in the second graph, there is no clear differentiation between saltiness, sourness, and bitterness, therefore validating all of Velasco et al.'s theories. Therefore, the research questions **“Q 3.1: Round character design conveys a sweet connotation both in Japan and in the West”** and **“Q 3.2: Round character design conveys a hedonic connotation both in Japan and in the West”** have been validated.

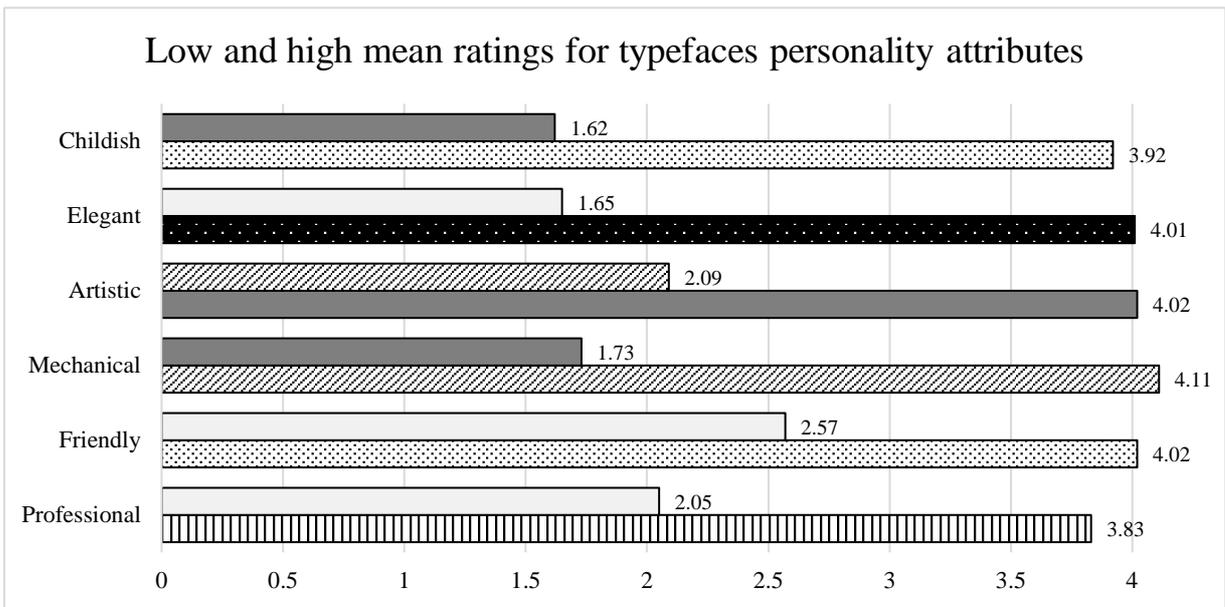
- The personality of fonts

Let us now focus on the metaphorical aspect of type, through the research of Mackiewicz about the personality of typefaces (2004). For the record, the samples were given a series of nine fonts (four Latin, and five Japanese ones), and had to give them a personality choosing from six adjectives: *“childish”*, *“elegant”*, *“artistic”*, *“mechanical”*, *“friendly”*, and *“professional”*, ranking the strength of each adjective using a Likert scale. In the great tradition of personality tests (for human beings), let us start with radar graphs to help visualise the personality of each font. As before, the darker line represents the answers of the Japanese sample, and the lighter grey lines the answers of the Western sample.





The radar graphs clearly show that both samples could define a personality for each font, meaning that there is indeed a metaphorical aspect to type. However, this justification is a bit dry, so let us delve further into the result analysis. Looking at the graphs, there clearly are differences between the answers provided by each sample, as it had been proven in the chi-square analysis. This informs us that the apprehension of a letterform personality is culturally dependent. To provide information as complete as possible, and to follow Mackiewicz's research process, the answers have also been modelled in a bar chart, providing the extreme mean ratings for each personality trait. This graph allows us to assess what fonts were identified with and against.



*Legend:*



Since there are a lot of variables to handle (six personalities for nine fonts), let us divide the fonts using (loosely) the Takagi classification system, since it was validated (cf. *supra*). The fonts 2 and 5 are similar fonts: both are serif fonts, with stroke contrast (they are Times New Roman and MS Mincho). In the Mackiewicz article (2004), Times New Roman received the highest “*formal and professional*” attribute. The researcher interpreted the result saying “*It is possible that [the respondents] had often seen and used Times New Roman in documents at work and at school and that they associated such documents with formality*”. The bar graph shows a very similar result: Times New Roman (the Font 2) has the highest mean ranking for “professional” (mean = 3.83). Interestingly, the Japanese sample focused more on the sole professional aspect of Times New Roman, while the Westerners embraced a broader amount of personality aspects. This, as Mackiewicz notes, might be since “[a] vast amount of informal writing that takes place at school and work, such as email and some memos” are also written in Times New Roman in the West. The reverse experience is done with the Mincho typeface: the Western sample focused on the professional and mechanical aspects of the type, while the Japanese sample, used to seeing Mincho used in all sorts of documents, answered with a broader number of traits. The bar graph informs us that the font 9 is considered the least professional (mean = 2.05). This also goes along with the result proposed by Mackiewicz: her research shows that most people consider handwriting-inspired fonts “*unprofessional*”.

The fonts 1, 4, 8, and 9 are what Takagi referred to as “analogue”. Fonts 1 and 4 imitate calligraphy, font 8 is inspired by the world of machinery and robotism, and font 9 imitates handwriting. Fonts 1 and 4 provoked rather similar impact on both samples, apart from a few differences. Neither of the two fonts received a high score in the “childish” section, but received more votes concerning their “friendly”, and “artistic” aspects. The friendliness of calligraphic type must express its humane dimension, since the font imitates the strokes drawn by a human hand. There are of course differences due to familiarity with the writing system: Westerners generally expressed stronger opinions on the Latin font, and Japanese people on the Japanese one. Westerners expressed an interesting opinion on the artificial aspect of typography imitating calligraphy, by ranking the “mechanical” side of the font quite high. The Japanese font (Font 1), however, did not reflect artificiality, since it has the lowest mean ranking for this trait in the bar graph (mean = 1.73). This can objectively be explained by the fact that the Font 1 displays very irregular characters, written in 行書体 *gyōshotai*, cursive style (cf. *supra*), that go against the traditional conception of computer-assisted letter design. It is perhaps this very humanistic touch that provided Font 1 the highest mean ranking for “artistic” (mean = 4.02). Although slightly more computerised, the Font 4 earned the highest ranking for its “elegant” aspect (mean = 4.01). The Font 8, very futuristic, gathers three of the lowest mean rankings: “professional” (mean = 2.05), “elegant” (mean = 1.65), and “friendly” (mean = 2.57). This unfortunate ranking might be due to the very cold aspect of this purely technical, robotic letterform. Lastly, the Font 9 is a handwritten font, and the one with the highest mean rankings for the attributes “childish” (mean = 3.92) and “friendly” (mean = 4.02). In Mackiewicz’s 2004 the study of the font mimicking handwriting produced the following results:

*“[A] typeface that mimics print handwriting, Bradley Hand, received a high mean rating on the friendly attribute (5.55). This mean rating contrasts sharply with Bradley Hand’s low mean ratings on the professional (2.12) and technical (2.23) attributes”*

Although the rating on Font 9 for the “mechanical” aspect (our closest variation to Mackiewicz’s “*technical*”) is quite high, the impact of friendliness on professionalism is the same between “*Bradley’s Hand*” and Font 9. Interestingly, the Japanese sample rated the “mechanical” attribute for font 9 much higher than the Western one, probably because Japanese people do write those characters by hand daily. Therefore, they can easily point out the artificial part of the font, whereas Westerners who do not use this writing system (especially since 71.5 % of our Western sample has never studied Japanese) cannot make the same separation.

Font 3 is sort of a hybrid between analogue and sans serif fonts. Unrepresented in the bar chart, it has received a cool welcome. The interesting feature of this font is how differently it was apprehended by the Japanese and the Western sample. Where the Japanese people saw a “professional” typeface, the Westerners saw a “childish” and “friendly” one. A result that goes against Mackiewicz’s note about friendliness and professionalism “*It seems that the friendly personality of this typeface suppresses any technical or professional tone it could convey*” (2004). One more proof that perception of type might be heavily culturally dependent.

Lastly, fonts 6 and 7 are both sans serif fonts. Font 6, Helvetica, has received the highest mean ranking for “mechanical” (mean = 4.11), and the lowest mean average for “artistic” (mean = 2.09), in complete match with Mackiewicz’s research. She wrote:

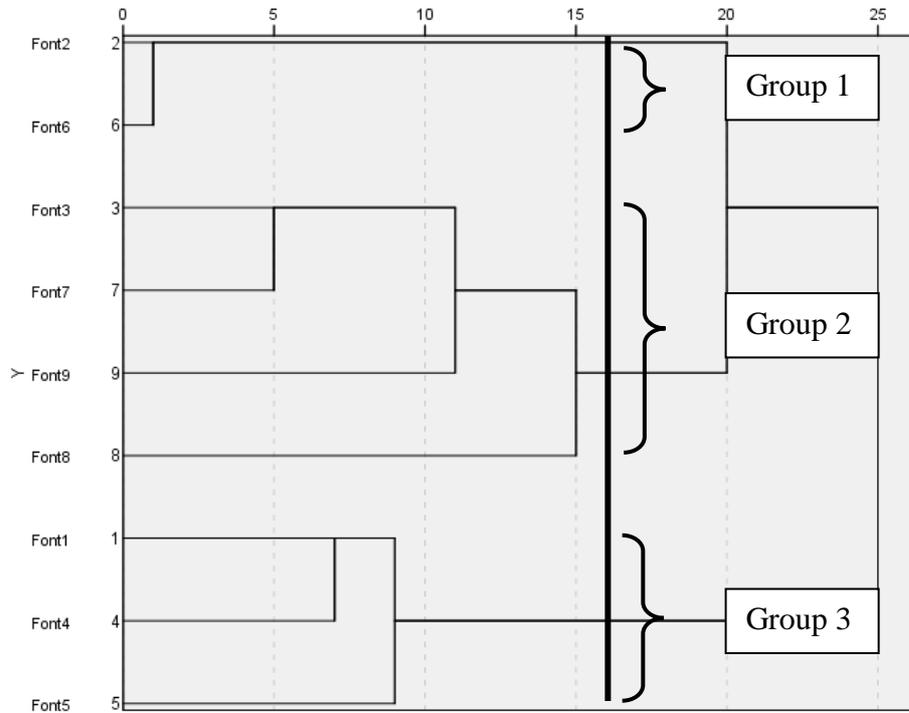
*“students rated Helvetica [...] highly on the technical attribute”*

*“On the opposite end of the artistic and dramatic spectrums was Helvetica [...]. It received the lowest mean ratings on the artistic (1.92) and the dramatic (2.35) attributes.”*

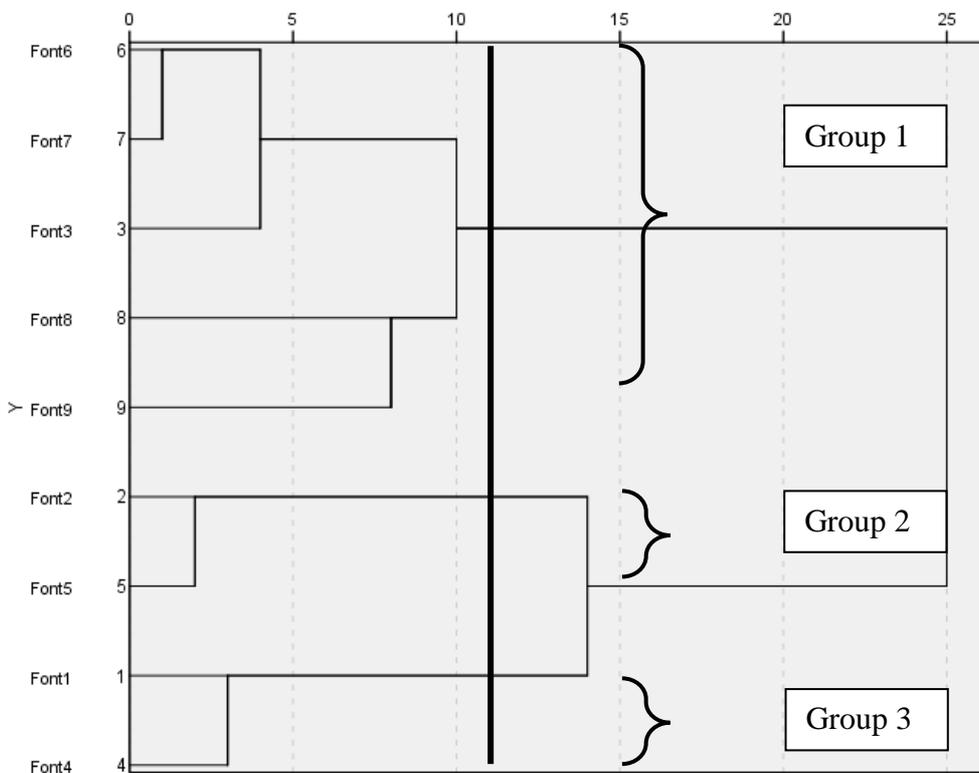
One parallel that can be made between the two fonts is that Westerners considered Helvetica more “artistic” and “elegant” than Japanese people, while the Japanese sample thought the Yu Gothic (Font 7) was more “elegant”, and more “artistic” than the Westerners did.

As a conclusion for this part, it is very interesting to consider that the study conducted by Mackiewicz in 2004 on students in writing classes (therefore, people with some knowledge in the field of typography) provided results similar to the ones that are displayed here. It is a proof that prior knowledge is not a key element to assessing the personality of a typeface. However, the many differences between the answers provided by the Japanese sample and the Western one confirm that, at least in the framework of typeface personality, cultural background is a significant variable.

As a confirmatory study, the answers provided by both samples have been assembled and separated into groups using the cluster analysis based on Ward's method, using the Euclidean distance. This study permits to show how the samples have divided the nine fonts through their answers. The fonts have been divided into three groups.



*Answers provided by the Japanese sample*



*Answers provided by the Western sample*

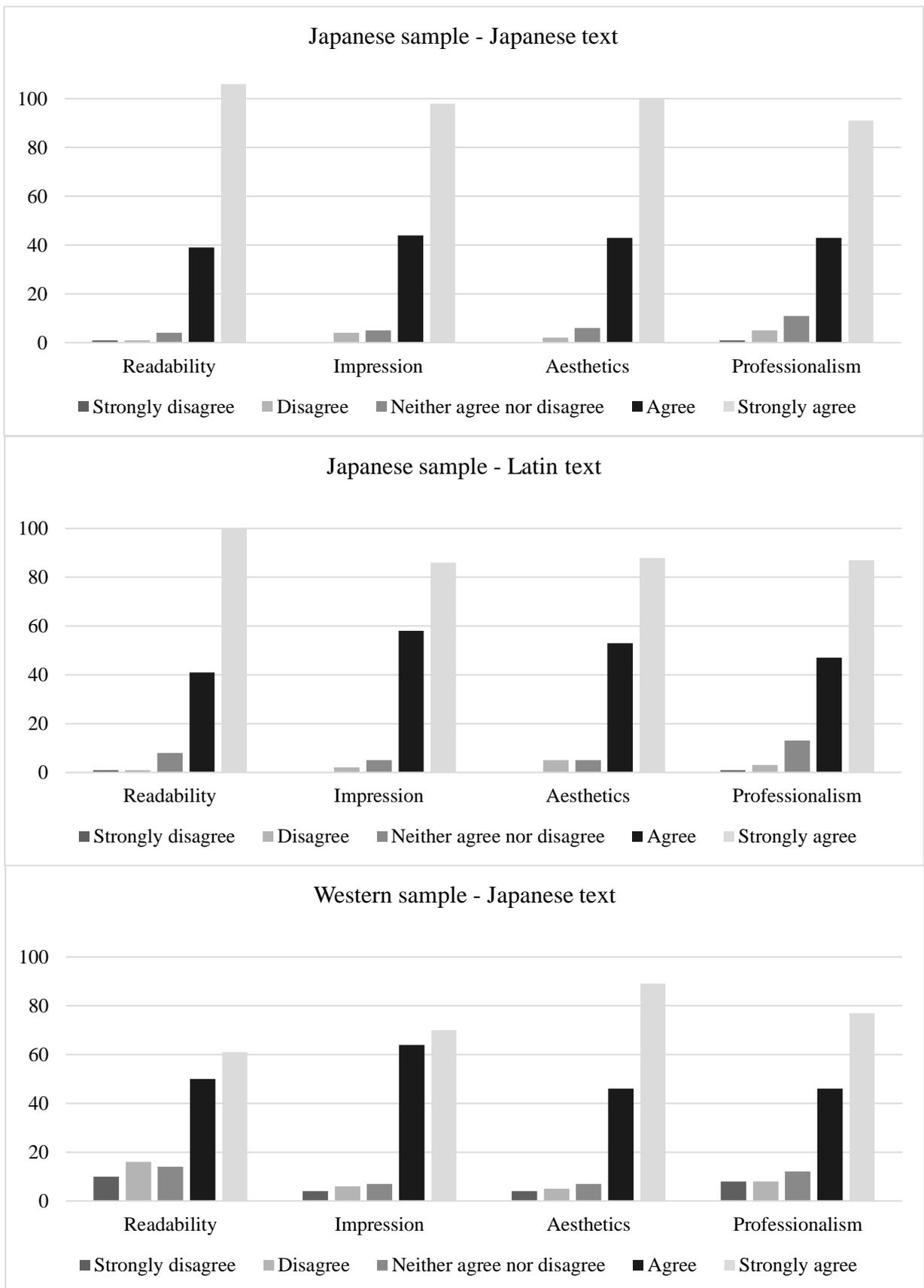
For the Japanese sample, the first group gathers the fonts 2 and 6 (Times New Roman and Helvetica), the second group clusters the fonts 3, 7, 8, and 9, and last group contains the fonts 1, 4, and 5. The Group 1 contains the most common Western fonts. The Group 2 contains the analogue fonts, and the Yu Gothic font (Font 7), which could all be linked to their “mechanical” aspect to the eyes of the Japanese sample. Lastly, Group 3 contains the fonts that directly derive from calligraphy, since even though Mincho is now the most used font in Asia, it has been designed to imitate handwritten characters (cf. *supra*).

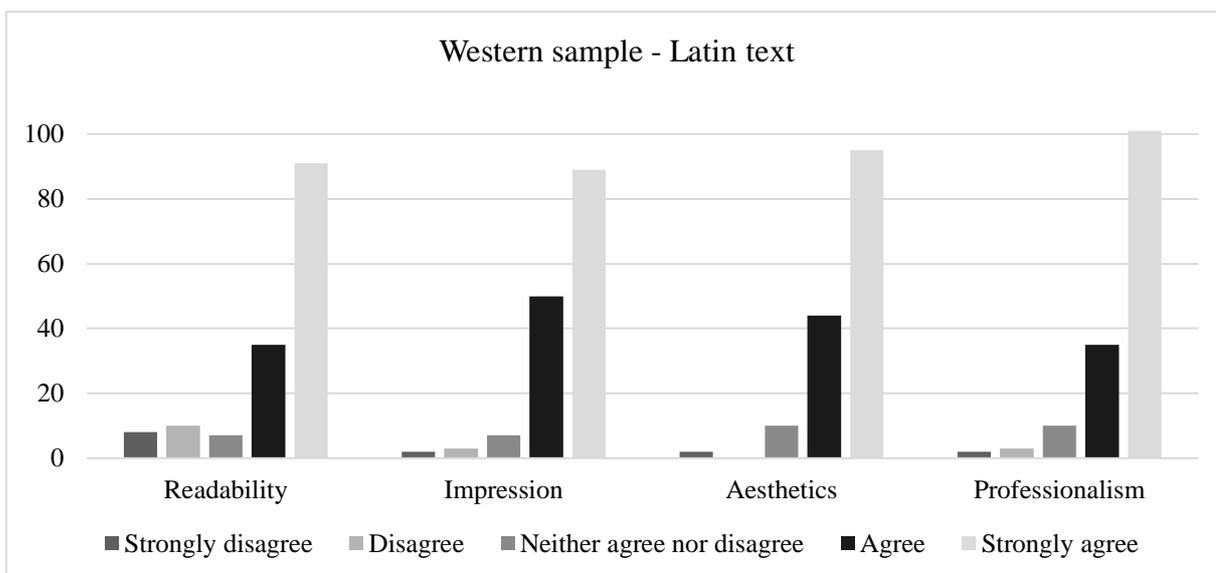
The groups provided by the Western sample are slightly different. Group 1 gathers Fonts 3, 6, 7, 8, and 9, hence all fonts that appear more “mechanic”, with the exception of Font 9. This could derive from the fact that Japanese handwritten style is mostly unknown in the West, so the Western audience might have been less receptive to the “human” aspect of the font. Group 2 gathers Fonts 2 and 5, which are the corresponding fonts according to the Takagi classification system (cf. *supra*). Lastly, Group 3 encompasses Fonts 1 and 4, both imitating calligraphy. Therefore, while the Japanese clusters seem to be organised along categories separated by perception of type, the Western sample appears to have created groups of fonts that display the same structural criteria.

- The meaning of spacing

Both the analysis of taste and personality of letterform concern the microtypography level of the Stöckl model (cf. *supra*, appendix 233). To assess the mesotypography level, and give a more comprehensive view of typography as a semiotic resource, a study of spacing was also conducted. The respondents were presented with two pairs of lorem ipsum: the first pair was a Japanese one, and the second pair an English one. Each pair was built the same way: the left-hand text as a correctly spaced and kerned text, the right-hand one displayed bad kerning, and bad spacing in general. Then respondents had to answer four questions for each pair,

ranking on a Likert scale whether the correctness of spacing affected the readability, the reader's impression, the aesthetics, and the professionalism of the excerpt.





The graphs show a majority of strong agreement to a significant impact of correct, or incorrect spacing on the lorem ipsum (79.1 % of all answers of all samples for both texts were either “agree” (26.9 % of all answers), or “strongly agree” (52.2 % of all answers). These results alone suffice to prove that spacing is literally a significant part of typography, meaning that it has a meaning potential. However, since there are slight discrepancies in the results, let us focus on those.

When faced with the Japanese excerpt, the Western sample gave a highest agreement ranking to the proposition “*Spacing affects the aesthetics of the text*” (58.9 % of the answers), while the Japanese sample focused most on “readability” (70.1 % of the answers). This proves that, when faced with a writing system that is completely unknown (since so many of the Westerners in the sample have never studied Japanese), viewers rely more on the visual aspect of a text, a deduction that gives all its importance to the current research. As for the Latin text, the Western sample attached more importance to the “professional” aspect of the lorem ipsum. This might be due to the fact that the instructions asked the respondents to think like a professional:

*“You are a managing designer, and one of your employees hands you these two versions of two different texts; the content is the same, but the spacing is different. Answer the following questions without paying attention to the content of the texts.”*

As for the Japanese sample the respondents seem to have focused on the “readability” attribute of the lorem ipsum. This reveals that, for the sample, legibility of a text is always the priority, as Bringham (2004) stated (cf. *supra*).

The study of the importance of micro- and mesotypography allow us to confirm that typography can be considered a semiotic resource for both samples. Therefore, the research questions “**Q 4.1: Typography can convey meaning in a language that is understood and/or familiar**” and “**Q 4.2: Typography is considered a meaning-making element even if the language is not understood/is unfamiliar**” are **validated**. However, it is important to note that the answered offered by each sample, although pointing in a general same direction, were quite different. This entails that typography as a semiotic mode is a culturally dependent variable.

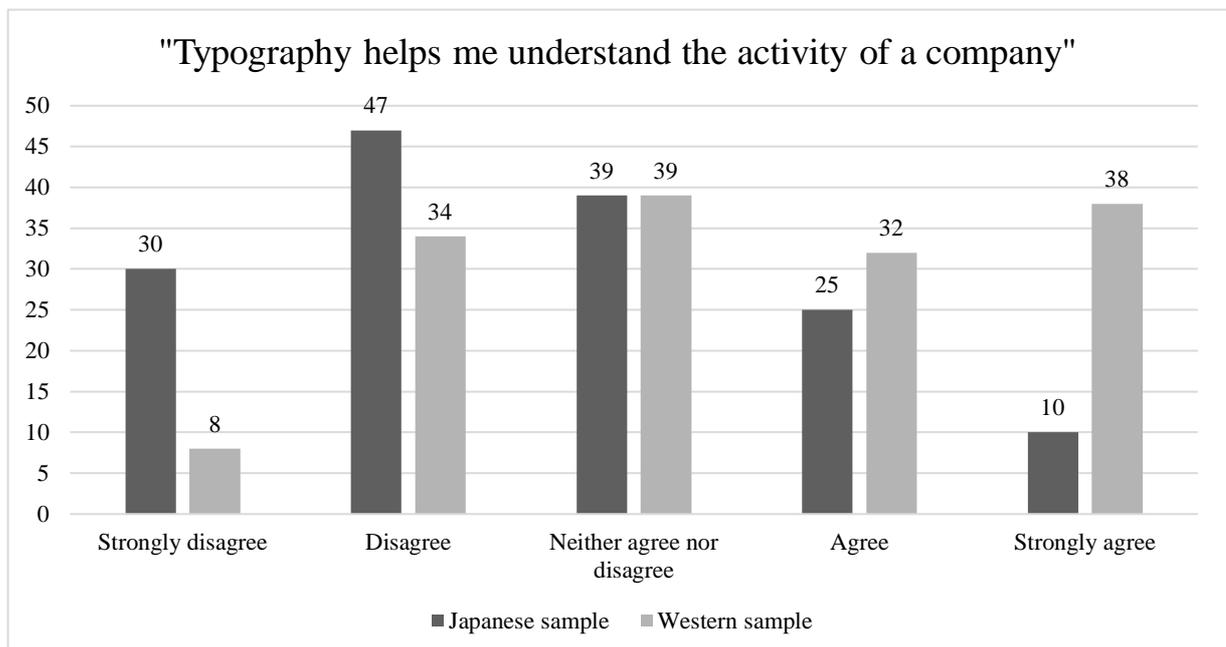
iii. The SFG approach

The last theory to analyse is the adaptation of the Hallidayan theory of SFG (Systemic Functional Grammar) (1978) to typography. There are three metafunctions to explore and analyse.

- The ideational metafunction

The study of the ideation metafunction is divided in two parts: first, some general questions which were answered to using Likert scales, and a more in-depth study.

The first part consisted of evaluating three propositions, using Likert scales. The respondents were shown the logos of three different companies: Walt Disney, Subway, and Apple. Next to those three logos were another logo suggestion, using the same name, and the same colour codes, but with a different font. Using the scales, the respondents had to assess



whether typography is an important part of corporate branding and imagery, and how it conveyed this imagery to the customer base. Answering these questions, the sample evaluates how much typography participates in construing their environment. The first proposition, *“Typography helps me identify the company”* received many positive answers: 76.8 % of the Western sample, and 78.1 % of the Japanese sample “strongly agree” with the statement. The second statement is less clear, which is why the responses are not quite as frank: *“Typography helps me understand the image of the company”* gathered 51.7 % strong agreement (84.8 % if both “agree” and “strongly agree” are merged) in the Western sample, and 41.7 % of strong agreement (82.1 % with simple agreement) in the Japanese sample. This question was harder to answer simply because it is more theoretical, and would imply that the respondents have already thought about corporate imagery before answering the questionnaire. The third and last claim, *“Typography helps me understand the activity of the company”* received different answers, and in fact divided the samples, as the graph below shows.

The Japanese sample tends to disagree (31.1% of the answers are contained in the opinion column “disagree”). The recent changes happening in the Japanese society could explain this tendency: the marketing agency Edelman issues every year a report called the “Trust barometer” (Edelman, 2016). In this year’s edition, the report states that Japanese people show very little trust in the company they work for. Therefore, if Japanese people cannot trust the company, they might find it difficult to understand the activities it is involved in through typography. The Western sample, on the other hand, tends to agree, although mildly, with the statement. The lack of enthusiasm for this proposition can be explained by the fact that it is, out of the three, the most theoretical one. To allow the samples to have a better experience of what the ideational metafunction stands for, a more empirical study has been conducted.

In this new part, the respondents have been asked to act on the other side of the equation, and instead of being the final customers, act as the content providers:

*“Here is a sample of a few fonts. As a designer, try to match them with potential products or clients.”*

Choosing between four sets of fonts (each set being a ready-made mix of Japanese and Latin fonts), the respondents had to match these four with a list of eight customers, ranging from *“a law firm”* to *“an engineering company logo”*. To visualise the repartition of clients according to the fonts, a chi-squared-based analysis of correspondence will be conducted. *“Correspondence analysis is a method of data analysis for representing tabular data graphically. Correspondence analysis is a generalization of a simple graphical concept with which we are all familiar, namely the scatterplot”* (Greenacre, 2007). The foundation of

correspondence analysis is to reduce a set of data to as many salient dimensions as possible (Hoffman and Franke, 1986), or, to quote Härdle and Simar (2007): “*The graphical relationships between the rows and the columns of the table X that result from correspondence analysis are based on the idea of representing all the row and column categories and interpreting the relative positions of the points in terms of the weights corresponding to the column and the row*”.

In the same book, Härdle and Simar explain the conception of mass (or, as they call it, “*weight*”), between the row elements (in our study, the clients), and the column elements (here, the fonts): “*The proximity of a particular row to a particular column indicates that this row (column) has a particularly important weight in this column (row). In contrast to this, a row that is quite distant from a particular column indicates that there are almost no observations in this column for this row (and vice versa)*”. Weight is a value that is calculated so as to have a sum of all weights equal to 1 (meaning each entry in the preliminary table will be divided by the total of entries). There are subdivisions of weight in rows and columns, creating row masses (or row weights), and column masses (or column weights).

*Inertia* is also a central term in correspondence analysis. It is defined by the total mass applied to the square distance to the gravity centre (Greenacre, 2007). Inertia is defined as the total Pearson Chi-square for the two-way divided by the total sum.

Before we draw a scatterplot graphs, some preliminary analyses are necessary. Let us begin with the Japanese sample. First, let us consider the use of each type for each client. The data in bold represent the most used font per client. Active margins represent the totals of each row and column.

	Font 1	Font 2	Font 3	Font 4	<i>Active Margin</i>
Law Firm	14	6	<b>67</b>	64	<i>151</i>
SF movie poster	<b>104</b>	15	16	16	<i>151</i>
Wedding planner	7	13	<b>116</b>	15	<i>151</i>
Kindergarten	30	<b>105</b>	2	14	<i>151</i>
Jewellery shop	18	7	<b>109</b>	17	<i>151</i>
Baby food line product	20	<b>90</b>	6	35	<i>151</i>
College textbook	8	11	39	<b>93</b>	<i>151</i>

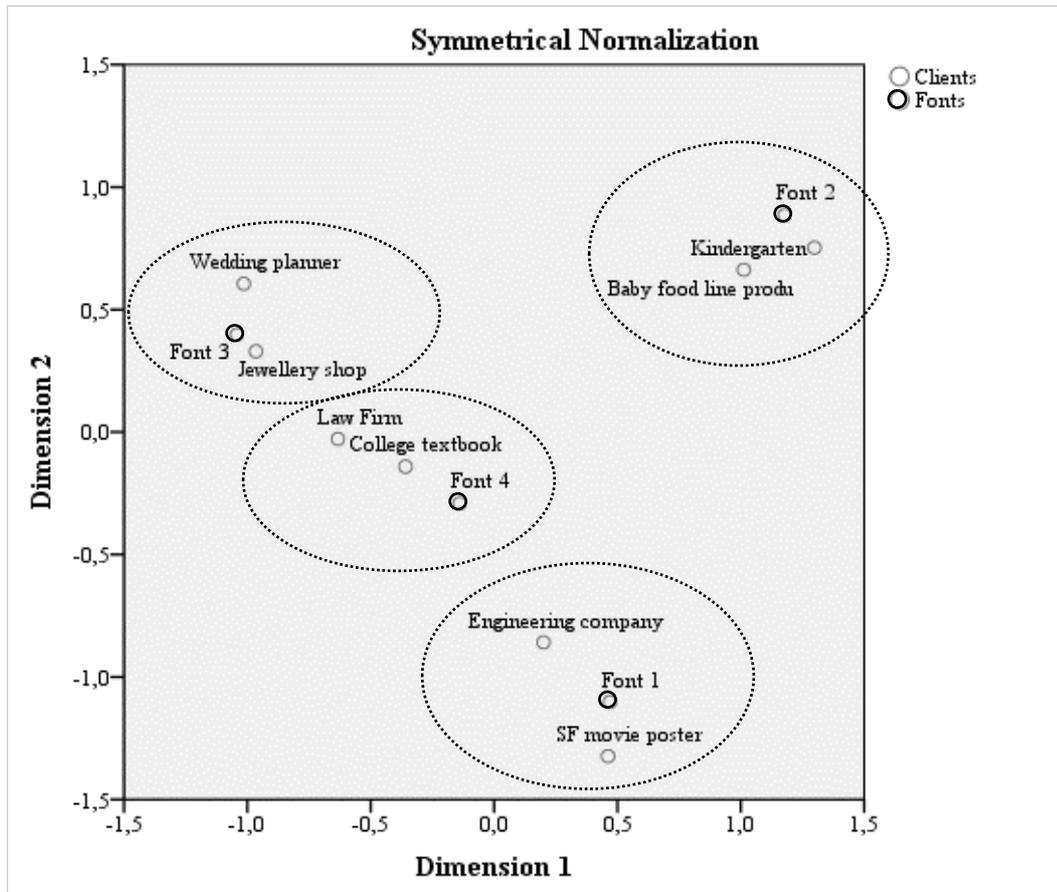
Engineering company logo	56	14	12	<b>69</b>	151
<i>Active Margin</i>	257	261	367	323	1208

Every client seems to have a preferred typeface. To confirm this theory, a chi-square analysis was conducted, to understand whether there is a significant relationship between rows (the clients) and columns (the fonts). As it has been done before, a chi-square test will be proven significant if the asymptotic significance  $p$  is inferior to .05. The results of the analysis of the Japanese sample's answers are as follow:

Dimension	Singular Value	Inertia	Chi Square	Sig.	Proportion of Inertia		Standard Deviation
					Accounted for	Cumulative	
1	0,682	0,465			0,521	0,521	0,019
2	0,499	0,249			0,279	0,799	0,028
3	0,423	0,179			0,201	1,000	
Total		0,892	1077,84	,000 <sup>a</sup>	1,000	1,000	

<sup>a</sup> degree of freedom = 21

Therefore, we have  $\chi^2 = (21, N = 1208) = 1077.84, p = .00$ . It is now proven that there is a significant relationship between rows and columns ( $p < .05$ ), which means that there are correspondences to analyse. Besides, one other key information for the rest of our analysis is the strength of height (.892). As Greenacre (2007) stated "*The symmetric map functions well when total inertia is high, but it is problematic when total inertia is small because the profile points in principal coordinates are too close to the origin for easy labelling*". We now know that there is a highly significant relationship between row and column data, and that the use of the map is highly relevant. To illustrate our analyses, here is the map:



The proximity of the data points on the map allows for making interpretations about the association between the examined variables, the relative proximity of fonts to clients yields an interesting picture of the extent to which each font’s semiotic potential is sufficiently differentiated from the rest. The map shows clearly that, for the Japanese sample, the Font 1 is associated with “*Engineering company*” and “*SF movie poster*”, Font 2 with “*Kindergarten*” and “*Baby food product line*”, Font 3 to “*Jewellery shop*” and “*Wedding planner*”, and Font 4 to “*Law firm*” and “*College textbook*”. The distance between the font spot and the client spot reflects how strong a connection the sample considered there was between the font and the client. For instance, the respondents though that Font 4 was closer related to “*College textbook*” than “*Law firm*”.

Let us now focus on the Western sample, starting with the repartition of use of each type for each font. As it was done previously, the highest data are displayed in bold.

	Font 1	Font 2	Font 3	Font 4	<i>Active Margin</i>
Law Firm	6	6	26	<b>113</b>	151
SF movie poster	<b>144</b>	5	2	0	151

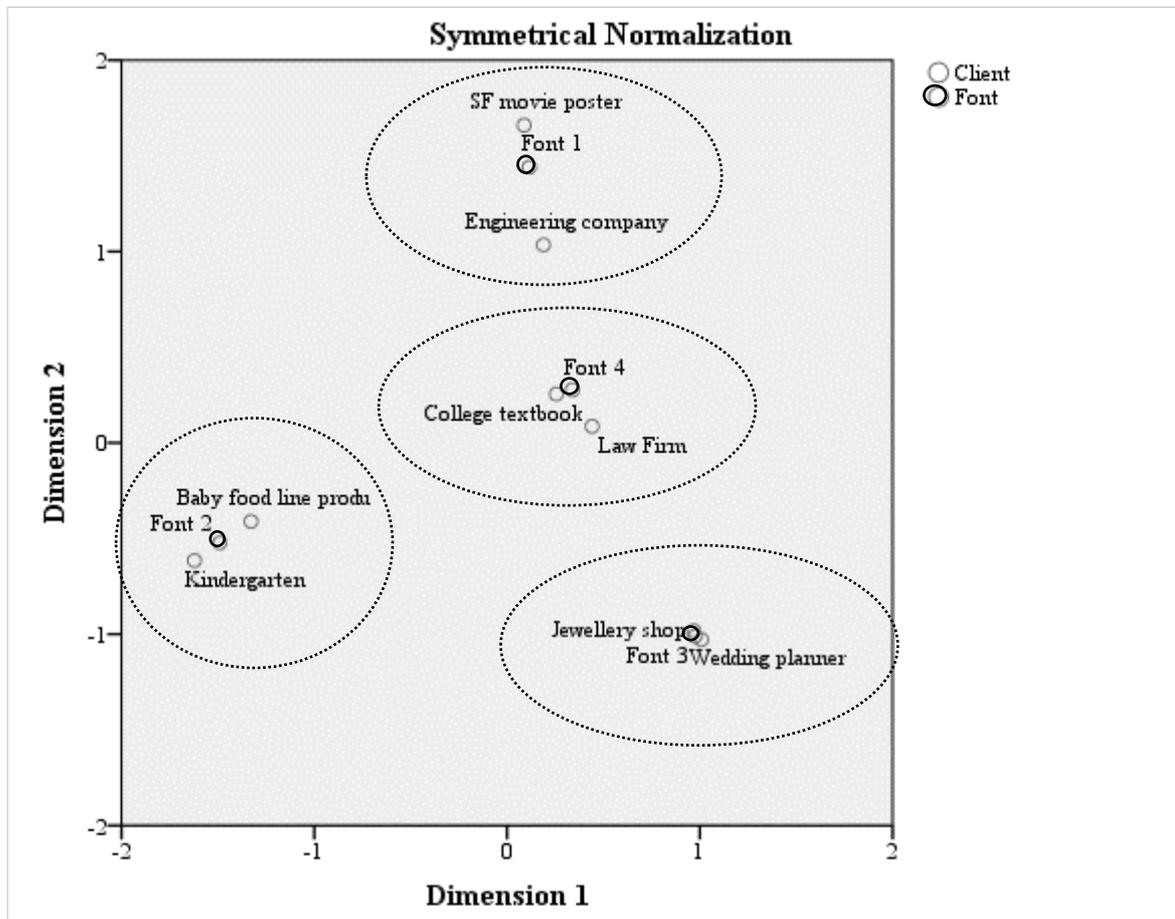
Wedding planner	5	4	<b>132</b>	10	151
Kindergarten	3	<b>141</b>	6	1	151
Jewellery shop	5	5	<b>127</b>	14	151
Baby food line product	10	<b>120</b>	6	15	151
College textbook	13	13	12	<b>113</b>	151
Engineering company logo	<b>79</b>	6	2	64	151
<i>Active Margin</i>	265	300	313	330	1208

Every client seems to have a preferred typeface, even more so than in the case of the Japanese sample. To confirm this theory, a chi-square analysis was conducted, to assess whether there is a significant relationship between rows (the clients) and columns (the fonts). As before, a chi-square test will be proven significant if the asymptotic significance  $p$  is inferior to .05. The results of the analysis of the Western sample's answers are as follow:

Dimension	Singular Value	Inertia	Chi Square	Sig.	Proportion of Inertia		Standard Deviation
					Accounted for	Cumulative	
1	0,831	0,691			0,388	0,388	0,017
2	0,809	0,654			0,367	0,755	0,016
3	0,660	0,436			0,245	1,000	
Total		1,781	2151,378	,000 <sup>a</sup>	1,000	1,000	

<sup>a</sup> degree of freedom = 21

Therefore, we have  $\chi^2 = (21, N = 1208) = 2151.38, p = .00$ . It is now proven that there is a very significant relationship between rows and columns ( $p < .05$ ), which means that there are indeed correspondences to analyse. Besides, one other key information for the rest of our analysis is the impressive height of inertia (1.781). We now know that there is a highly significant relationship between row and column data, and that the use of the map is highly relevant. Therefore, to illustrate our analyses, here is the map:



The proximity of the data points on the map allows for making interpretations about the association between the examined variables, the relative proximity of fonts to clients yields an interesting picture of the extent to which each font’s semiotic potential is sufficiently differentiated from the rest. The map shows clearly that, just like the Japanese sample, the Western sample considers that the Font 1 is associated with “*Engineering company*” and “*SF movie poster*”, Font 2 with “*Kindergarten*” and “*Baby food product line*”, Font 3 to “*Jewellery shop*” and “*Wedding planner*”, and Font 4 to “*Law firm*” and “*College textbook*”.

Even though the two samples have made the same associations, there are differences, in the distance between the font and client spots for instance. This means that, for the Western sample (where the spot groups generally cluster in a smaller area) there is a stronger

significance between fonts and designated clients. The location of the clusters on the symmetric map is related to a different inertia, and different repartition of answers within the sample.

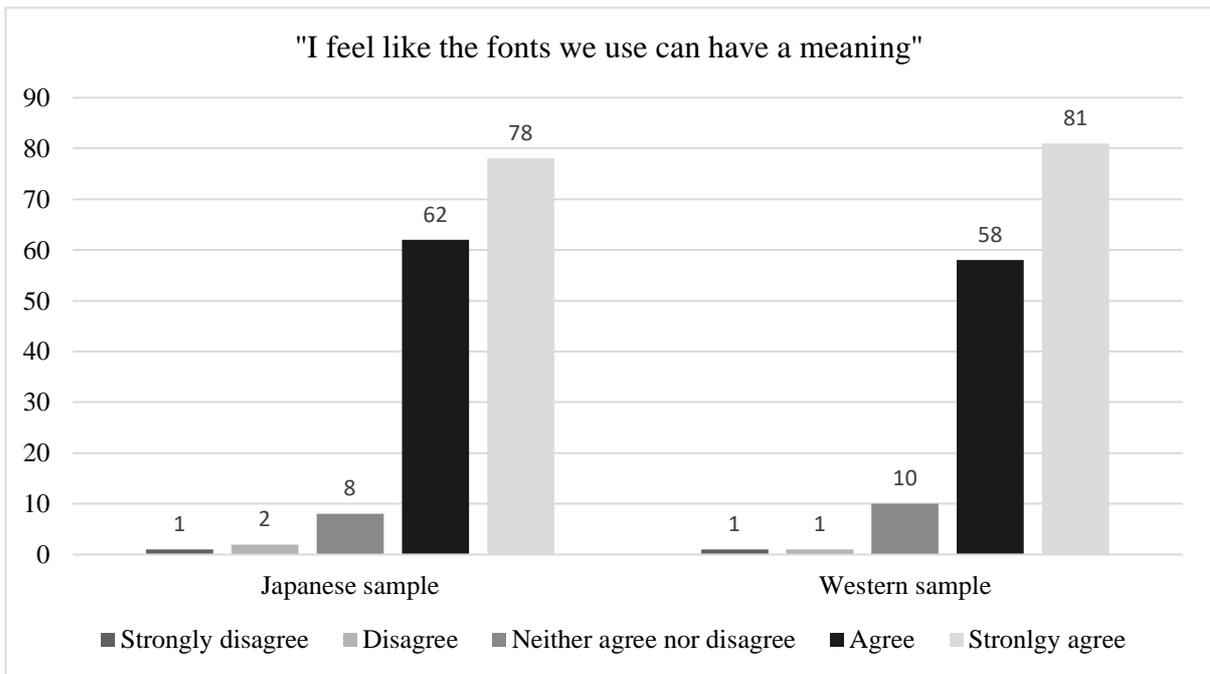
Besides these minor differences, both samples have come up with similar answers. This proves that there is indeed a global dynamic that exists, and that people, may they be Westerners or Japanese consider that the same fonts take part in the construction of the same ideas, or same concepts. We can also argue that the ideational metafunction of typography is not entirely culturally dependent, but most importantly, that it exists, which **validates** the research question **“Q 5.1: Both Western and Japanese typographies have an ideational metafunction”**. Let us here remind that the advantage of thinking about type as a set of systems instead of finite rules is that it accepts variables such as culture. To quote Halliday (1985), *“human beings do not all mean alike, and [...] their unconscious ways of meaning are among the most significant manifestations of their culture”*. The slight alterations between the Japanese and the Western samples’ answers only corroborate the founder of the SFG.

- The interpersonal metafunction

As it was explained earlier, assessing the interpersonal metafunction of typography is very hard in a quantitative study, since qualitative approaches generally support in-depth analysis of human reflexion. The interpersonal metafunction evaluation has already started in the assessment of the “personality of type”. Indeed, this metafunction imitates the function of language that regulates the establishment of social exchanges and display attitudes towards what is being signified. One of the lexicogrammatical resources for the former is the grammar of *mood*, a domain closely linked to personality. This first test gives us an encouraging start to continue the analysis of the interpersonal metafunction of typography.

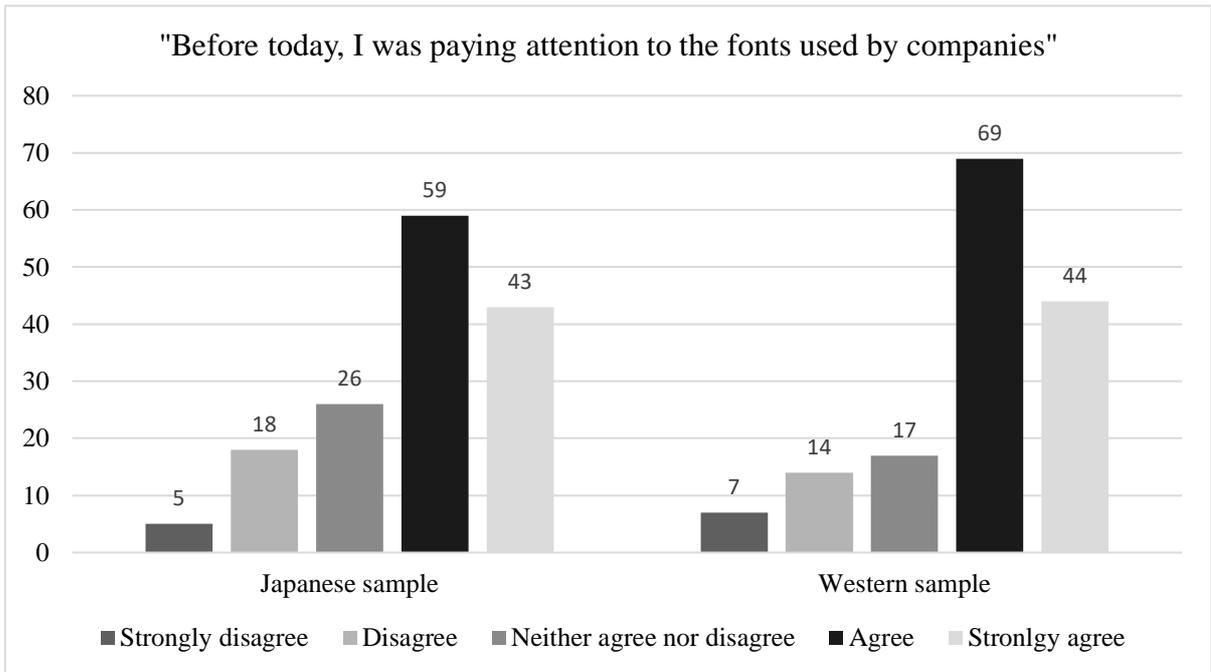
To further evaluate the communicative impact of typography, three general statements were given to the samples, and the respondents had to weigh their answer using a Likert scale. These three statements loosely follow Jakobson’s functions of language (2016): there is an “*addresser*”, an “*addressee*”, a “*message*”, a “*channel*” and a “*code*”.

The first statement was *“I feel like the fonts we use can have a meaning”*. It is indeed very broad, but before we can evaluate the discourse between companies and consumers through typography, it is necessary to make sure that the respondents assume that there is a discourse to assess, and that this discourse is communicated through a particular medium. Here are the answers:



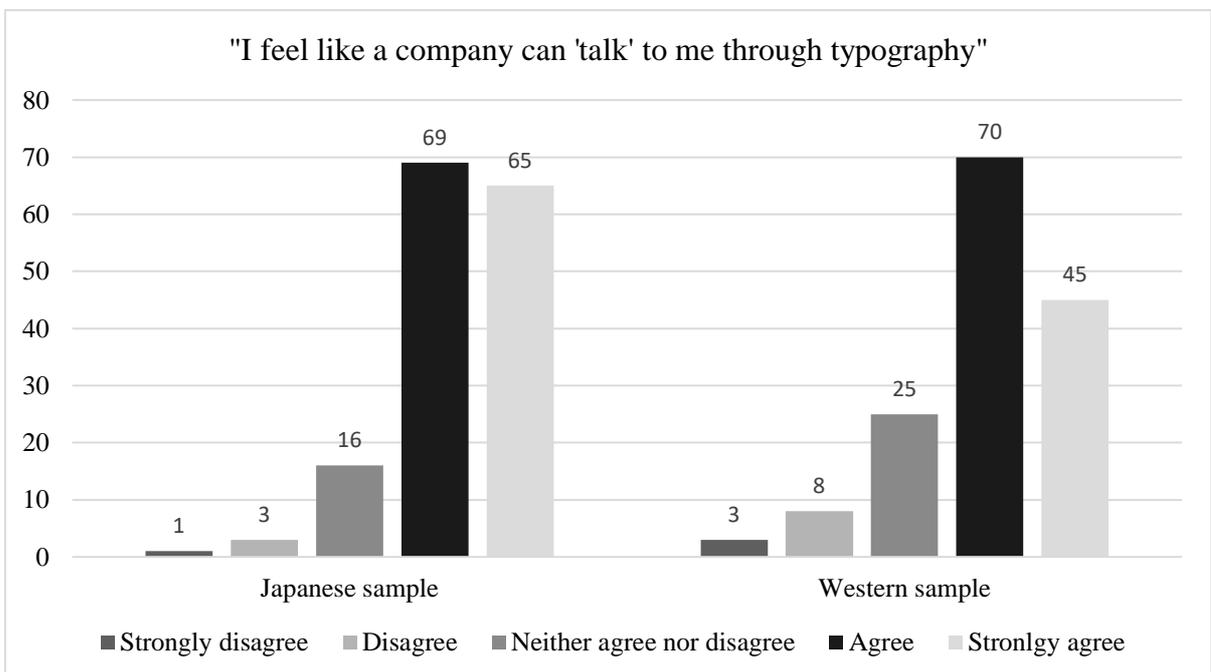
Both samples have essentially answered with a very strong agreement (51.7 % of the Japanese sample, and 53.6 % of the Western sample), with very little variation between the two. This result is first very reassuring, since most of the respondents seem to believe that there is such a thing as using typography as a means of communication, may it be for companies in B2C or B2B business, or for any user of a word processing tool. Therefore, we have here addressed the Jakobson functions of “*channel*”, and “*code*”.

Then, the interviewees had to evaluate the following statement: “*Before today, I was paying attention to the fonts used by companies*”. Answering this question entails that not only there is an acknowledgement that there is indeed a means of communication (typography), but that there are potential interlocutors (here, the companies), trying to convey a message, and catch the attention of passers-by. Here are the answers:



Here too, agreement is very strong (in the Japanese sample, 28.5 % “strongly agree”, and 39.1 % “agree”, in the Western sample, 29.1 % “strongly agree”, and 45.7 % “agree”), although slightly less so than agreement to the previous statement. However, the overall positive feedback lets us believe that, so far, there is a general acknowledgement that there is a means of communication, and an “*addresser*”, in Jakobson’s terms.

The last statement was the most closely related to the interpersonal metafunction *per se*. Through their answer to “*I feel like a company can 'talk' to me through typography*”, the respondents gave their opinion on the last essential piece of all communication: now that there is a medium and an interlocutor, there needs to be a “*message*”, and the recognition that the respondent is the “*addressee*” of this message. Here are the answers:



Similarly, some slight differences aside, the tendency goes strongly towards the acknowledgement of the communicative message (43 % of the Japanese sample “strongly agrees” with the statement, and 29.8 % of the Western sample does, too). This means that for 35.9 % of all the respondents, the three statements (and the functions of Jakobson induced with those statements) are concepts they “strongly agree” with, and no less than 77.5 % who either “agree”, or “strongly agree” with the claims.

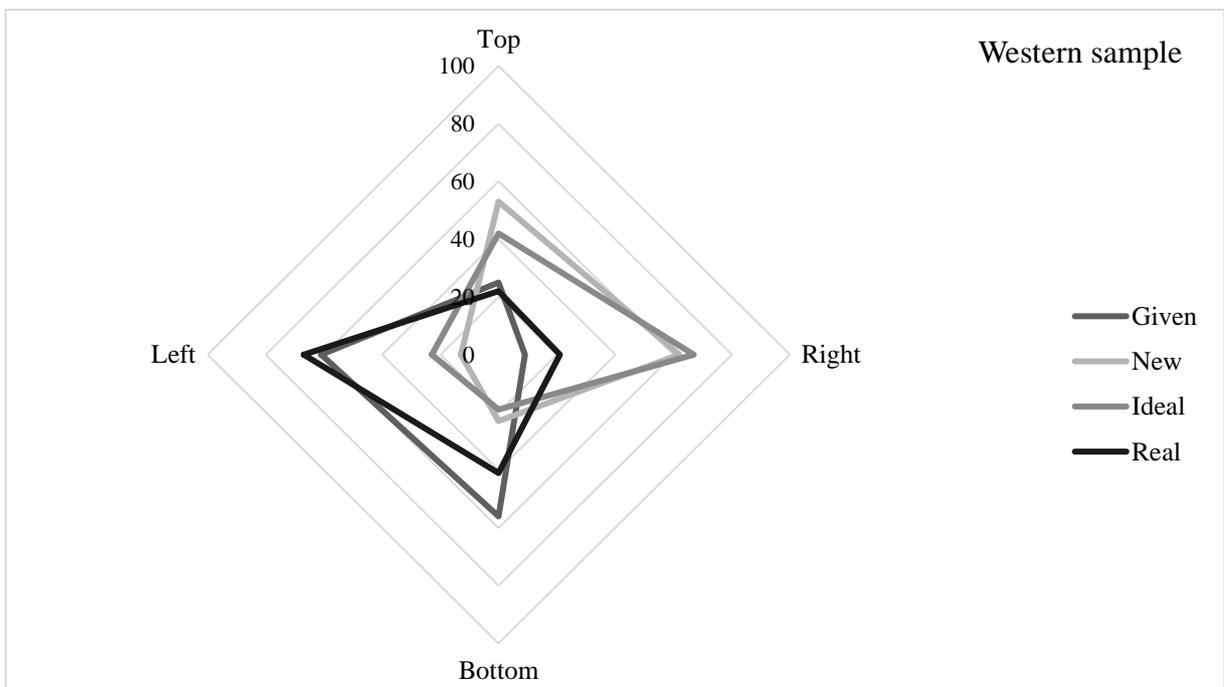
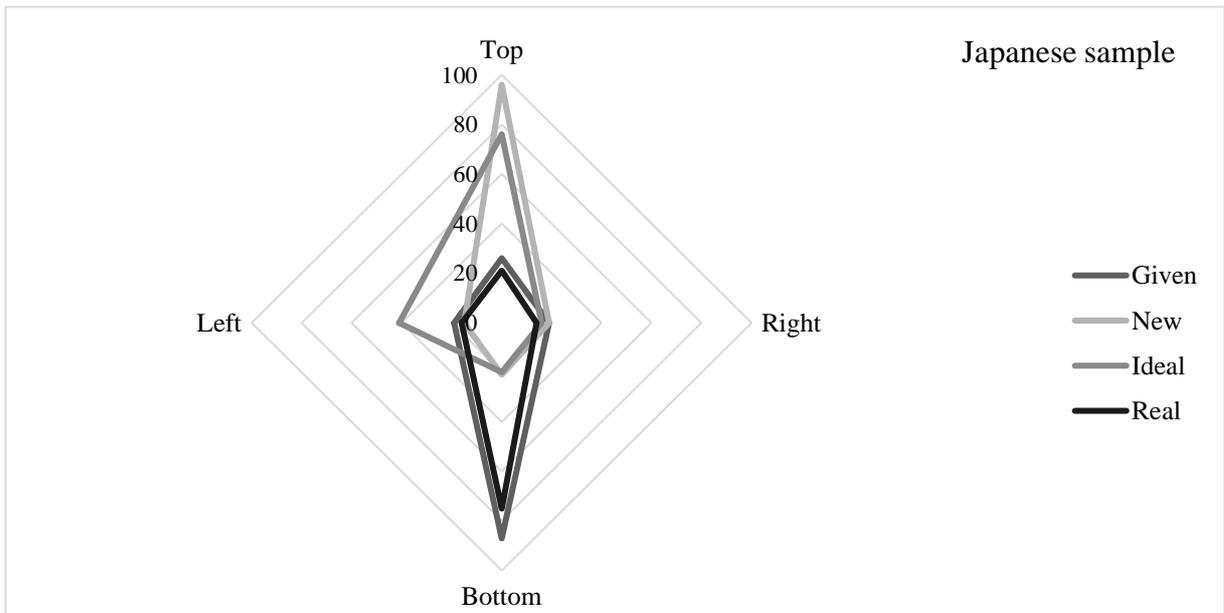
These figures, associated with the previous research about the personality of fonts, allow us to consider that the research question “**Q 5.2: Both Western and Japanese typographies have an interpersonal metafunction**” is **validated**. As for the ideational metafunction, cultural background seems to be a variable of certain influence, but not strong enough to change the overall tendency of the results.

- The textual metafunction

Kress and Van Leeuwen (1996) consider that the textual metafunction of typography can be found in layout. The previous study about kerning (cf. *supra*) confirms that the respondents consider that mesotypography does convey meaning, which gives this last study favourable grounds.

Two key features of the theory of layout can be evaluated: the *Given/New* aspect, and the *Real/Ideal*. In the first aspect, Kress and Van Leeuwen have estimated that generally, advertisers tend to place “*given*” elements (i.e. elements that are already known by everyone) on the left-hand side of advertisements, while the “*new*” elements, the characteristics or functions that only the product can provide) are placed on the right. These follow the cultural Western tendency to consider time as a line stretching from left (the past) to right (the future). The *Real/Ideal* opposition states that elements that deal with the real world, that show real objects, or write words linked to reality (product characteristics, legal disclaimers) are usually written on the bottom half of advertising supports. On the other hand, elements that deal with dreams and ideals tend to be displays on the upper part of the posters.

To be as visual as possible, we used radar graphs to display the samples' answers:



The textual metafunction is then definitely influenced by the cultural background of the respondents. While Japanese people clearly think in terms of verticality (69.9 % of the answers were either “top” or “bottom”), the Westerners conceive elements of layout more along a horizontal line (53.5 % of the answers were either “left” or “right”). Let us break down the elements of answers using the graphs, and the table below.

	Japanese sample				Western sample			
	Given	New	Real	Ideal	Given	New	Real	Ideal
Top	26	<b>96</b>	21	<b>76</b>	25	53	22	42
Bottom	<b>87</b>	21	<b>75</b>	20	56	23	41	19
Left	19	15	41	16	<b>61</b>	13	<b>67</b>	23
Right	19	19	14	39	9	<b>62</b>	21	<b>67</b>

Let us start with the *given – new* opposition. To Kress and Van Leeuwen (1996), this opposition is definitely a left / right one, since we traditionally and conventionally consider our timeline as a horizontal line. However, the “left” option only gathered 27.2 % of the Japanese answers, and so did “right”. On the Western side, “left” was the preferred value (40.7 %), and so was “right”, with 41.1 % of the answers. The *real – ideal* configuration finds great echo in the Japanese mindset: 49.7 % of the Japanese people would put the “real” elements at the “bottom” of their document, and 50.3 % of them would put the “ideal” element on the “top”. On the Western side, the dichotomy top / bottom was much less famous, with 27.8 % of answers for a relation between “ideal” and “top”, and 27.2 % for “real” and “bottom”. Ironically, the Western sample gave many more answers taking verticality into account in the *given – new* category.

The Western timeline imagery can explain these core differences, and so can the Japanese writing system: even nowadays, it is still very much a vertical one (cf. *supra*). This means that in Japan, the perception of space, especially a space dedicated to print (therefore, where characters will be written), is very different than in the West.

Even though the results do not follow the theories created by Kress and Van Leeuwen (1996), the high degree of accordance of answers within the samples separately suggests that the principles are justifiable: it is only the results that need revising. There surely is a pattern that emerges in those answers, and people within given cultures seem to agree on where they would place each element. As Van Leeuwen wrote “[T]his work has only just begun, and not yet reached a stage in which conclusions can be drawn. This paper should therefore be relatively open-ended, inviting others to join in the enterprise, rather than presenting a finished product” (2006), really representing the spirit of the current paper. Therefore, the research question “**Q 5.3: Both Western and Japanese typographies have a textual metafunction**”

is **partially validated**: the reasoning is confirmed, but not the results that were issued before this study.

### c. Summary of the analysis

Below is the research question table built beforehand, to which were added the fallouts of the results analysis.

Hypotheses / Variables	Questions	Result
Gender	Q 1.1: Gender has an influence over the apprehension of typography as a semiotic mode.	Rejected
	Q 1.2: Men are more prone to grasp letterform details.	<b>Validated</b>
Age	Q 1.3: Age has an influence over the apprehension of typography as a semiotic mode.	<b>Partially validated</b>
Level of education	Q. 1.4: A higher level of education enables a better apprehension of typography as a semiotic mode.	Rejected
Foreign languages proficiency	Q 1.5: Proficiency in a foreign language influences the viewer's perception of typography as a semiotic mode in his/her own language.	Rejected
	Q 1.6: Proficiency in a foreign language influences the viewer's perception of typography as a semiotic mode in a foreign language.	Rejected
Exposure to internationalisation	Q 1.7: Exposure to internationalisation influences the viewer's perception of typography as a semiotic mode.	Rejected
Cultural background	Q. 1.8: Japanese people and Westerners have a similar approach to typography as a semiotic mode.	<b>Validated</b>
Typography can be framed in a global	Q 2.1: Type can be classified following an international, common matrix, regardless of the writing system that is in use (Japanese or Latin characters)	<b>Validated</b>

classification system	Q 2.2: Understanding a writing system affects the viewer's perception of the structure of characters.	<b>Partially validated</b>
Typography obeys international metaphorical codes, regardless of the writing system	Q 3.1: Round character design conveys a sweet connotation both in Japan and in the West	<b>Validated</b>
	Q 3.2: Round character design conveys a hedonic connotation both in Japan and in the West	<b>Validated</b>
Regardless of the writing system, typography can convey meaning	Q 4.1: Typography can convey meaning in a language that is understood and/or familiar	<b>Validated</b>
	Q 4.2: Typography is considered a meaning-making element even if the language is not understood/is unfamiliar	<b>Validated</b>
The rules of the Western 'grammar' of typography can be applied to Japanese typography	Q 5.1: Both Western and Japanese typographies have an ideational metafunction	<b>Validated</b>
	Q 5.2: Both Western and Japanese typographies have an interpersonal metafunction	<b>Validated</b>
	Q 5.3: Both Western and Japanese typographies have a textual metafunction	<b>Partially validated</b>

## DISCUSSION OF THE RESULTS

The results show us that, for the most part, individual variables have little impact in the study of typography as a semiotic mode. The two specific characteristics that stand out are gender and cultural background. The current study confirms the previous works of Abramov et al. (2012) stating that men have a better grasp of details at least in the framework of typography, since the male population was more predisposed to link the fonts as Takagi (2014) intended to when she created her classification system. As for the cultural background, it is clear being a Westerner or being a Japanese person influenced a lot of the data gathered in this study.

The Takagi classification matrix is also a theory that is confirmed by this paper: there seems to be a general agreement on how to classify typefaces following the presence or absence of serifs, and the contrast in stroke design. However, this result needs to be qualified by the fact that neither of the samples have consistently proposed had most “correct” answers all through the test. This prevents us from confidently stating whether understanding a writing system affects one’s perception of it or not.

All theories linked to the metaphorical, indexical, and iconic dimensions of typeface are confirmed. Velasco et al.’s (2015; 2015b) works have been confirmed on the Western sample, and expanded to the Japanese sample as well. The study states that, no matter for which sample, there is a clear and significant relationship between roundness of type, impression of sweetness, and positive appreciation of the letterform. The analysis of the works of Mackiewicz (2004; 2005) presents a slightly different kind of answer: there is a general agreement that typefaces do have personalities, but the attribution of specific characteristics and traits to fonts is inherently culturally dependent. Japanese and Western respondents grouped their typefaces differently, and with unlike strength in their answers.

The metaphorical aspects of type, linked to the confirmation that spacing is a meaningful part of typography confirm the model designed by Stöckl in 2005, and the research of Van Leeuwen (2005; 2006) considering typography not only as a semiotic medium, but also as a discrete semiotic mode.

The last part of our results confirms the works of Kress and Van Leeuwen (1996) on the grammar of visual design, and the 2006 paper of Van Leeuwen considering an application of SFG to typography. All three metafunctions (ideational, interpersonal, and textual) of the SFG are applicable to typography, not only Western, but also Japanese. This greatly expands the scope of the research to date. However, the results regarding the apprehension of typography

through an SFG perspective reveal that, although all metafunctions are recognised by the two populations, they are considered slightly differently: for instance, the Japanese sample considers the textual metafunction (defined in the organisation of a document layout) in a very vertical manner, while the Westerners had a much more horizontal approach. This proves that the writing system has a strong impact on the perception of space design.

Overall, the results have been very positive, and confirm all theories. This means that typography can be assessed through the perspective of SFG, and considered a semiotic mode, both in Japan and in the West.

## **I. Limitations and perspectives of the study**

Finally, our study will focus on the few limits that have restricted our study. There were two main categories of limitations: methodological, and theoretical. Then, we will branch out to potential future perspectives for this research.

### **a. Methodological limitations**

Our study comprises various methodological limitations. First, the sample, although calculated to be sound despite its rather small size ( $N = 302$ ) is still quite narrow, and might hinder a proper generalisation of the results to the populations of all Japan, and all the Western world. Besides, our “Western” sample is an aggregate of many Western cultures: European and North American, which all have their specificities, and would deserve to be treated separately.

Besides, all our questionnaire (besides the ones administered during the exploratory study) were self-administered. The absence of the researcher while the respondent is answering the questions might lead to biases, misinterpretation, or misunderstandings that influences the answers of the respondents, without the researcher knowing about those, or being able to rectify them. The field study was conducted over two weeks, which is a rather limited window of time, and could have biased the answers. The unequal repartition of gender might also have influenced the final answers, especially considering that previous works (Abramov et al., 2012) had hinted that gender might have an impact on design understanding, which it did in this study. Therefore, a new study, conducted over a longer period of time, and with a more representative sample might be needed in the future.

## b. Theoretical limitations

There also are some theoretical limitations to this study. The field of semiotics applied to typography is a very recent one, and the literature on the topic is still scarce, especially out of the Western typography framework. Besides the works conducted by Takagi (2013; 2013b; 2015), no research in English has been done, to our knowledge, about Japanese typography, or Asian typography in general. Therefore, the two main goals of this paper were to confirm the results found previously in the West on our Western sample, and try to expand the scope on the Japanese population. As Van Leeuwen (2006) noted, this field is still in its infancy, which means that there is still a lot of trial and error to assess.

One other limitation is that the field of social semiotics, or applied semiotics, is usually considered as grounds for qualitative studies. Since there is little literature about quantitative approaches to semiotic studies, the current research was an attempt at exploring as many quantitative angles as possible to study semiotic questions.

Lastly, one last limitation is the cultural difference between the West and Japan (Azra, 2011). From a Westerner's point of view, the angle that was used here was the most appropriate, but it is reasonable to think that different approaches (a qualitative approach, or a case study for instance) would have led to different results.

## c. Perspectives

The overall positive outcome of this study opens various perspective for future. First, we advise that a similar study should be conducted on a larger, more representative sample. For instance, in the current study we had an undermined  $p$  the proportion of elements of the population of origin, meaning that arbitrarily,  $p = 0.5$ , and a margin of error  $e = 5.66\%$ , for a trust rate of  $95\%$ . To lower the margin of error to a more acceptable  $3\%$ , the sample size would need to be  $n = 1,835$  people. A bigger sample would allow to select the answers to get a sample that represents best the population of origin.

Besides, as it was mentioned earlier, semiotic studies are usually conducted using a qualitative approach. In further studies, using qualitative methods such as semi-directed interviews, in-depth interviews, or even case studies, of both professionals and amateurs, would

allow to refine the results, and present stronger conclusions. Moreover, the since the qualitative approach has been used extensively in this field, a more extensive literature is available to better anticipate the results, and ease the preparation of the study, indicating which biases or shortcomings can be avoided. All the theories evaluated in the study have been narrowed down to a few elements that could easily be assessed by the sample. For instance, the vertical axes of the Takagi classification (the structure of characters, cf. *supra*, and appendix 224) were not dealt with here. Since Abramov et al. (2012) were right about the male inclination to understand details better, the opposite should be conducted too, to assess whether women have a better understanding of colour. Since the study of colour is often referred to in the literature concerning typography as a semiotic mode (Nørgarrd, 2009; Stöckl, 2005; Van Leeuwen, 2006), research in this direction could strengthen (or redefine) the models experimented here (cf. appendices 232 and 233). Lastly, the SFG metafunctions, and the other functions of typography as semiotic mode were only approached through very specific angles, easily communicated through a questionnaire. Qualitative studies would remedy the issue, allowing for more encompassing, in-depth input.

Further studies comparing professionals and non-professionals could also be assessed, to estimate how much knowledge of typography impacts our vision of the field. Lastly, the intercultural communication viewpoint would be enriched if future research compared other cultures who possess yet completely different writing systems, such as the Arabic culture, or the Hebraic one.

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## CONCLUSION

As a first attempt to expand the field of social semiotics applied to typography beyond the framework of alphabetic scripts, this paper has been a success. Choosing two writing systems as different and immiscible as the Latin alphabet and the Japanese writing systems, constituted an ideal context to assess the meaning potential of letterform. The field study revealed that, although there is a general consensus from both populations that typefaces do convey meaning, the interpretation of said meaning is highly dependent on the culture linked to the writing system. Therefore, the Systemic Functional Grammar approach, and its consideration of language - in the present case of script as an ensemble of systems instead of a set of finite rules - is particularly fitting.

On both sides of the study (Japanese and the Western), there is a recognition of all three metafunctions of typography: ideational, interpersonal, and textual as first theorised by Halliday (1978), and applied to visual design by Kress and Van Leeuwen (1996). This proves that, to understand and assess global letterform, one must think in terms of open and flexible systems instead of trying to blindly apply the same rules from one script to another. The classification matrix system developed by Takagi (2014) which characterizes different writing systems according to serifs, stroke and structure, enable us to investigate the semiotics of typography in greater depth.

The recognition of typography as a semiotic mode, and not simply as a semiotic medium, is crucial in our globalised world. Understanding the meaning behind the font at use is highly important for global corporate communication, and for fields using typography daily, such as advertising. In a world where immediacy has become the new timeframe, clarity of motive and explicitness of image are key. Therefore, all efforts should be invested in conveying the clearest image in a minimum amount of time. The power of core features such as the choice of font, and the organisation of layout, need to be fully understood to be manipulated correctly, and efficiently.

Further research in the field is necessary to test other writing systems and their assimilation of systemic typography. These future works will contribute to eventually create a matrix of systems which enable us to fully assess global typography, regardless of the writing method.

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## APPENDICES

## APPENDICES



**Appendix 1.** Cave art found at Les Trois Frères, in the south of France. The signification of the P symbols is unknown. 17,000 – 12,000B CE



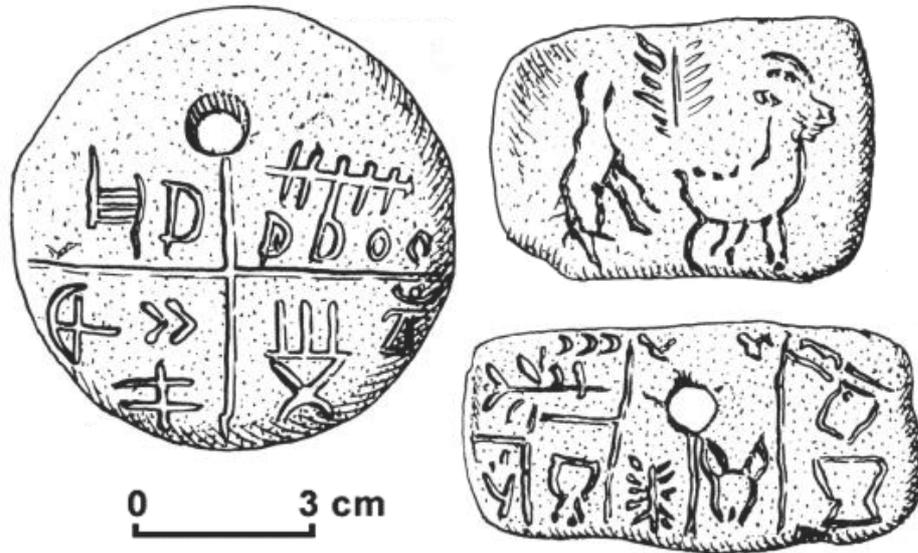
**Appendix 2.** Engraved eagle bones from Le Placard, Charentes, France, circa 13,500 BCE. The notches may be a lunar



**Appendix 3.** History of the Exploration, XVI<sup>th</sup> century. Peru. Inca man holding a quipu. Engraving from Felipe Guam.



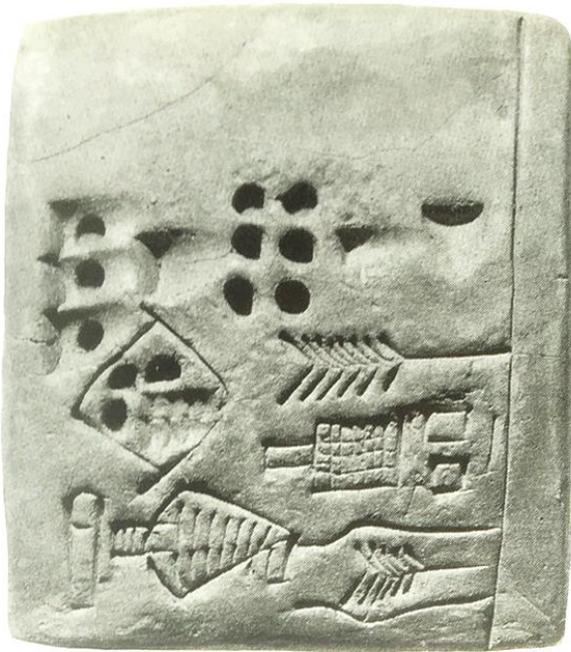
**Appendix 4.** Vinca incised symbols that appear on pottery from the settlements in Romania 5,300 – 4,300 BCE



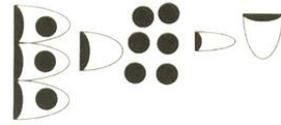
**Appendix 5.** Representation of some Vinca clay ‘tablets’. Some scholars state that they might have been manufactured later, not during the Vinca society



**Appendix 6.** A XXXI<sup>st</sup>-century B.C. clay tablet from Uruk, Sumer. Schøyen’s private collection. The tablet represents an order for 134,813 litres of barley to be delivered, over three years.



quantity of the product:



c. 135,000 litres

type of the product:

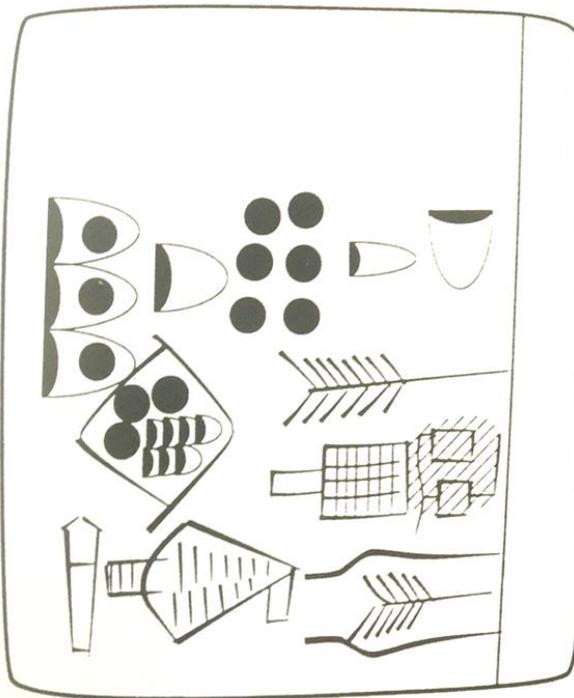


barley

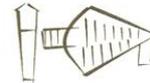
accounting period:



37 months

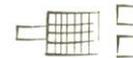


name of the responsible official:



Kushim

function of the document (?):



final account? (inscribed over a partially erased sign)

use of barley (?):



exchange (?)

**Appendix 7.** Early tablet from Uruk. The two signs in the corner may represent the official responsible for the transactions name. Retrieved from *The Story of Writing* (Robinson, 2007)



	I	II	III	IV	V	VI	VII	VIII
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

1. The Origin and Development of the Cuneiform System of Writing. A table showing the forms of eighteen representative signs from about 3000 B.C. to about 600 B.C.

**Appendix 11.** The origin and development of the Cuneiform system of writing

Retrieved from “The Origin and Development of the Cuneiform System of Writing”, from Kramer, *Thirty Nine Firsts In Recorded History* (1963). The meaning of the columns is the following:

- I. The first picture in each row represents the earliest known representation of a particular word.
- II. The scribes early on turned the tablet ninety degrees for convenience of writing so the tablet was often read with the sign in this position. This led to the sign being written that way.
- III. This is the 'archaic' versions of a sign usually seen in tablets from 2500-2350 BCE when written on clay tablets.
- IV. This is the same sign as in III but when written on stone or metal.
- V. This is the sign as it developed by 2350-2000
- VI. This is the later version of the sign in the same time period as V.
- VII. This column represents a sign in the first half of the second millennium (2000-1000 BCE) where many literary tablets were written.
- VIII. Simplified version of the signs used by the royal scribes of Assyria in the first millennium BCE

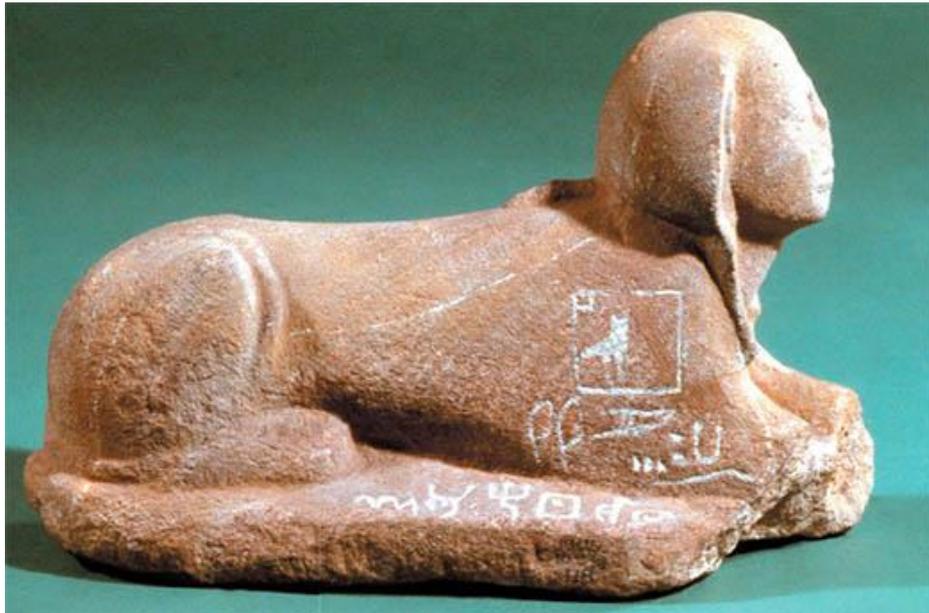
Row description of evolving cuneiform signs:

1. The star represents heaven, "an" in Sumerian. The same sign is used to represent the word "dinger" for "god".
2. It is thought this represents the "earth", "ki" but that is uncertain.
3. This likely represents a man, and is the world for man "lu"
4. This represents a woman, the word "munus"
5. This is a picture of a mountain, "kur" one meaning of which is mountain.
6. This represents the compound word 'mountain-woman' which means slave girl "geme" as it is from the mountainous region about them that the Sumerians obtained their slaves.
7. This is a picture of a head. The Sumerian word for head is "sag". To make the picture represent just a part on the head then it would be underlined.
8. The mouth is underlined here and represents "ka" mouth, and also to speak "dug", the context is used to decide which word to use.
9. This is a picture of a bowl for holding food, the word for food is "ninda"
10. This is a compound word of mouth and food and means "to eat"
11. This is a picture of a water stream. representing water, "a" generally. The same sound was used for "in", and slowly the sign changed to represent not the thing, but the sound itself, so that the final cuneiform can represent both "water" and "in".
12. This is a compound word of water and mouth to represent drinking.

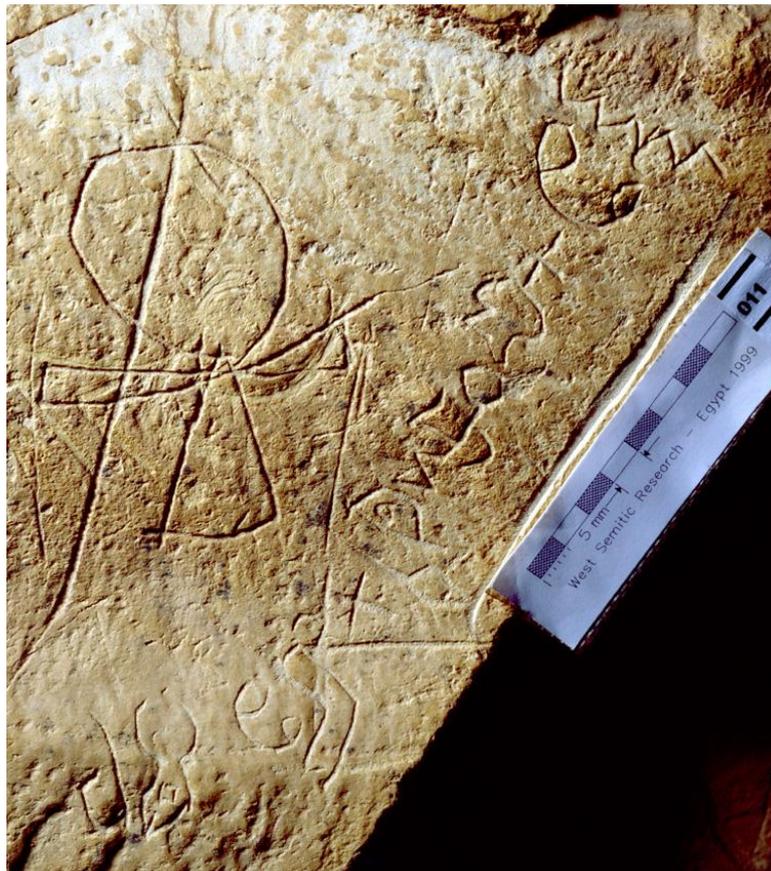
13. This is a picture of the lower leg and foot so it means “*du*”, “to go” and also “*gub*”, “to stand”.
14. It is a picture of a bird “*mushen*”
15. This is a fish with the sound “*ha*” which is the sound for both “fish” and for “may”. The scribes therefore used the sign for both meanings.
16. The picture of the head and horns of an ox. It represents “*gud*” the “ox”.
17. The picture of the head of a cow for “*ah*” the sound of the word for “cow”.
18. This is an ear of barley. It represents the word “*she*”, “barley”.

ʔa	b	g	ḥ (x)	d	h
w	z	ḥ (ḥ)	ṭ	y	k
š	l	m	ḏ (ð)	n	z (ḏ)
s	f	p	ṣ	q	r
ṭ (θ)	ḡ (γ)	t	ʔi	ʔu	s <sub>2</sub>

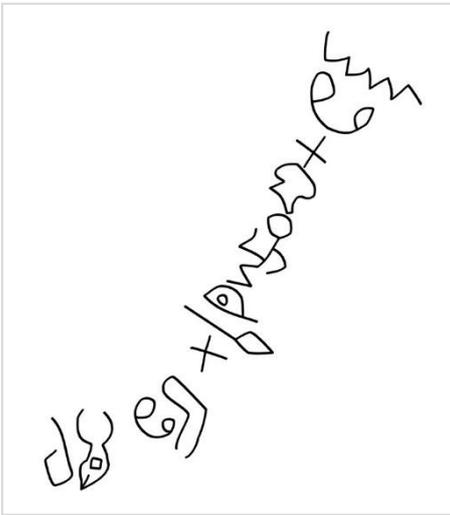
Appendix 12. Ugaritic alphabet



**Appendix 13.** Sandstone sphinx, Serabit el-Khadim, Sinai, XV<sup>th</sup> century BCE. British Museum



**Appendix 14.** Wadi el Hol Inscription Two (Photograph by Bruce Zuckerman and Marilyn Lundberg, West Semitic Research)



**Appendix 14b.** Wadi el Hol Drawing of Inscription Two (Drawing by Marilyn Lundberg, West Semitic Research)

Phonetic Value	Proto-Sinaitic	Egyptian Hieroglyphic	Phonetic Value	Proto-Sinaitic	Egyptian Hieroglyphic	Phonetic Value	Proto-Sinaitic	Egyptian Hieroglyphic
ʿ	 349	 F1	h	 362 376	 31	c	 345 348 352	 D4
b	 346 374	 O1	b	 349	 V28	p	 357	 38
g	 367	 T14	y	 346 379	 D36	s/d/z	 352 364	 M22 M16
d	 375 346	 K7 K5	k	 349	 D46	q	 349 351	?
h	 345 379	 A28	l	 363 380	 V1	r	 376 357 349	 D19 D1
w	 376 351	 T3 T2	m	 354 345	 N35	š/t	 348 357	 Aa32
z/d	 346	 24 N16	n	 374 357 363	 I10	t	 345 365B	 Z9

**Appendix 15.** Representative selection of proto-Sinaitic characters with comparison to Egyptian hieroglyphs. From Frank Simons (2011)



**Abecedary Ugarit**

shows above

meaning symbols

											
										Alphabetical Order Credits	
						Photo of the 1948 discovery on museum display in Syria by M. Deitrich.					

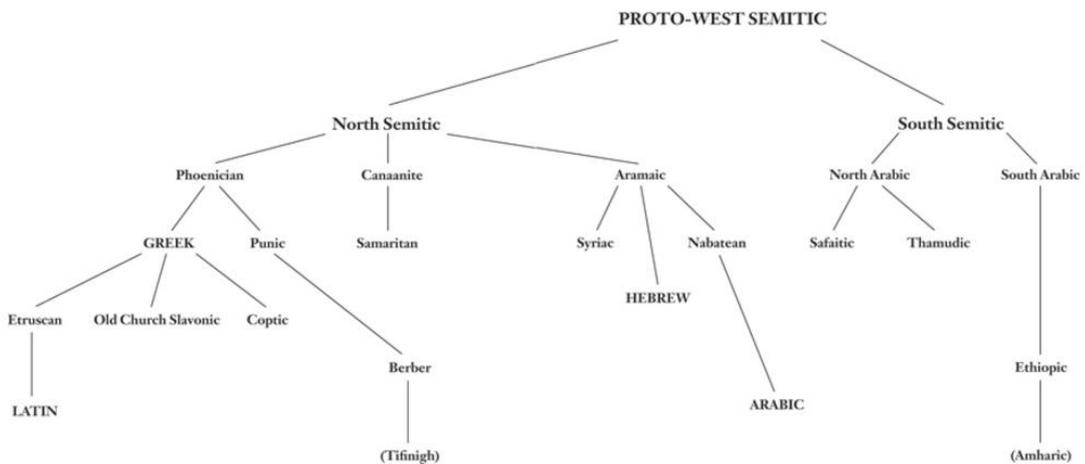
**Earliest Evidence of Alphabetical Order**

An alphabet is often defined as an ordered set of phonograms. That order has a long history. The Ugarit cuneiform tablet above is the earliest evidence of that order found to date.

**Appendix 16.** The ugaritic alphabet and transliteration

Phonetic Value	Later Proto-Canaanite	Proto-Sinaitic/Early Proto-Canaanite	Phonetic Value	Later Proto-Canaanite	Proto-Sinaitic/Early Proto-Canaanite	Phonetic Value	Later Proto-Canaanite	Proto-Sinaitic/Early Proto-Canaanite
ʕ	𐤀 / 𐤁 <sup>RS</sup> RH	𐤀 / 𐤁 <sup>(?)</sup> SP SP	h	𐤀 / 𐤁 <sup>(?)</sup> EK1 EK4	𐤀 / 𐤁 <sup>(?)</sup> 362 376	c	𐤀 / 𐤁 <sup>(?)</sup> ISO AS	𐤀 / 𐤁 / 𐤂 <sup>(?)</sup> 345 348 352
b	𐤂 / 𐤃 <sup>AS</sup> EK3 AS	𐤂 / 𐤃 <sup>(?)</sup> GS	ḥ	𐤂 / 𐤃 <sup>(?)</sup> AS ISO	𐤂 / 𐤃 <sup>(?)</sup> 349	p	𐤂 <sup>AS</sup>	𐤂 <sup>(?)</sup> 357
g	𐤄 / 𐤅 <sup>AS</sup>	𐤄 <sup>(?)</sup> 367	y	𐤄 / 𐤅 <sup>(?)</sup> ISO AS	𐤄 / 𐤅 <sup>(?)</sup> NS / SPR	ʕ/d/z	𐤄 / 𐤅 <sup>(?)</sup> ISO EK3	𐤄 / 𐤅 <sup>(?)</sup> 352 364
d	𐤆 / 𐤇 <sup>ISO</sup> EK5	𐤆 / 𐤇 <sup>(?)</sup> SP SP	k	𐤆 / 𐤇 <sup>(?)</sup> ISO AS	𐤆 / 𐤇 <sup>(?)</sup> GS / SP	q	𐤆 / 𐤇 <sup>(?)</sup> ISO AS	𐤆 / 𐤇 <sup>(?)</sup> 349 351
h	𐤈 / 𐤉 <sup>ISO</sup> AS	𐤈 NS	l	𐤈 / 𐤉 <sup>(?)</sup> EK5 AS	𐤈 <sup>(?)</sup> 348	r	𐤈 / 𐤉 <sup>(?)</sup> ISO AS	𐤈 / 𐤉 / 𐤊 <sup>(?)</sup> 36 SP 37
w	𐤊 <sup>AS</sup>	𐤊 <sup>(?)</sup> / 𐤋 <sup>(?)</sup> NS GS	m	𐤊 <sup>AS</sup>	𐤊 <sup>(?)</sup> NS	ʕ/t	𐤊 / 𐤋 <sup>(?)</sup> ISO AS	𐤊 / 𐤋 <sup>(?)</sup> SP SP
z/d	𐤌 <sup>AS</sup>	𐤌 <sup>(?)</sup> 346	n	𐤌 / 𐤍 <sup>(?)</sup> ISO EK5	𐤌 / 𐤍 <sup>(?)</sup> NS / NS	t	𐤌 / 𐤍 <sup>(?)</sup> EK3 AS	𐤌 <sup>(?)</sup> 345

**Appendix 17.** Representative selection of later proto-Canaanite letters with comparison to early proto-Canaanite and proto-Sinaitic signs. Frank Simons (2011)



**Appendix 18.** Ancient scripts derived from the Proto-Semitic. Retrieved from Fischer (2003)

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𐤀	'aleph	[ʾ]	𐤀	lamedh	[l]
𐤁	beth	[b]	𐤁	mem	[m]
𐤂	gimmel	[g]	𐤂	nun	[n]
𐤃	daleth	[d]	𐤃	samekh	[s]
𐤄	he	[h]	𐤄	'ayin	[ʾ]
𐤅	waw	[w]	𐤅	pe	[p]
𐤆	zayin	[z]	𐤆	tsade	[s]
𐤇	heth	[h]	𐤇	qoph	[q]
𐤈	teth	[t]	𐤈	reš	[r]
𐤉	yodh	[y]	𐤉	šin	[š]
𐤊	kaph	[k]	𐤊	taw	[t]

(Top) **Appendix 20.** The Phoenician alphabet

Phoenician	Name	Phonetic value	Early Greek	Classical Greek	Name
𐤀	aleph	·	Α	Α	alpha
𐤁	beth	b	Β	Β	beta
𐤂	gimel	g	Γ	Γ	gamma
𐤃	daleth	d	Δ	Δ	delta
𐤄	he	h	Ε	Ε	epsilon
𐤅	waw	w	Ϝ		digamma
𐤆	zayin	z	Ζ	Ζ	zeta
𐤇	heth	h	Η	Η	eta
𐤈	teth	t	Θ	Θ	theta
𐤉	yod	y	Ι	Ι	iota
𐤊	kaph	k	Κ	Κ	kappa
𐤋	lamed	l	Λ	Λ	lambda
𐤌	mem	m	Μ	Μ	mu
𐤍	nun	n	Ν	Ν	nu
𐤎	samekh	s	Ξ	Ξ	xi
𐤏	ayin	·	Ο	Ο	omicron
𐤐	pe	p	Π	Π	pi
𐤑	sade	s	Ρ		san
𐤒	qoph	q	Ϟ		qoppa
𐤓	reš	r	Σ		rho
𐤔	šin	sh/s	Τ	Ρ	sigma
𐤕	taw	t	Χ	Μ	tau
			Υ	Υ	upsilon
			Χ	Χ	chi
			Ω	Ω	omega

(Right) **Appendix 21.** From Phoenician to Greek. From Robinson (2007)

Phoenician model	𐤀	𐤁	𐤂	𐤃	𐤄	𐤅	𐤆	𐤇	𐤈	𐤉	𐤊	𐤋	𐤌	𐤍	𐤎	𐤏	𐤐	𐤑	𐤒	𐤓	𐤔	𐤕	
Southern "green"	Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο	Π	Ρ	Σ	Τ	Υ*	—	—	—
Western "red"																					Χ	Φ	Υ
Eastern "light blue"																							
Eastern "dark blue"																							
Classic Ionian							Η							Ξ								Φ	Χ
Modern alphabet	A	B	Γ	Δ	E	—	Z	—	H	Θ	I	K	Λ	M	N	Ξ	O	Π	—	—	P	Σ	T
Sound in Greek	a	b	g	d	e	w	zd	h	ē	th	i	k	l	m	n	ks	o	p	s	k	r	s	t

**Appendix 22.** Kirchhoff's model for archaic Greek alphabets

	Phoenician	Ionia	Athens	Corinth	Argos	Crete	Euboea	Modern	AP	MP
alpha	𐤀	Α	Α	Α	Α	Α	Α	Α α	[a]	[a]
beta	𐤁	Β	Β	Β	Β	Β	Β	Β β	[b]	[v]
gamma	𐤂	Γ	Λ	⋈	Γ	Λ	⋈	Γ γ	[g]	[ɣ]
delta	𐤃	Δ	Δ	Δ	Δ	Δ	Δ	Δ δ	[d]	[ð]
epsilon	𐤄	Ε	Ε	Β	Ε	Ε	Ε	Ε ε	[e]	[e]
digamma	𐤅		Ϝ	Ϝ	Ϝ	Ϝ	Ϝ	Ϝ Ϝ	[w]	[w]
zeta	𐤆	Ζ	Ζ	Ζ	Ζ	Ζ	Ζ	Ζ ζ	[zd]	[z]
eta		Η						Η η	[e:]	[i]
heta	𐤇		Η	Η	Η	Η	Η		[h]	
theta	𐤈	Θ	Θ	Θ	Θ	Θ	Θ	Θ θ	[tʰ]	[θ]
iota	𐤉	Ι	Ι	Ξ	Ι	Ξ	Ι	Ι ι	[i]	[i]
kappa	𐤊	Κ	Κ	Κ	Κ	Κ	Κ	Κ κ	[k]	[k]
lambda	𐤋	Λ	Λ	Λ	Λ	Λ	Λ	Λ λ	[l]	[l]
mu	𐤌	Μ	Μ	Μ	Μ	Μ	Μ	Μ μ	[m]	[m]
nu	𐤍	Ν	Ν	Ν	Ν	Ν	Ν	Ν ν	[n]	[n]
xi	𐤎	Ξ		Ξ	Ξ	Ξ	Χ	Ξ ξ	[ks]	[ks]
omicron	𐤏	Ο	Ο	Ο	Ο	Ο	Ο	Ο ο	[o]	[o]
pi	𐤐	Π	Π	Π	Π	Π	Π	Π π	[p]	[p]
san	𐤑			Σ	Σ	Σ	Σ		[s]	
koppa	𐤒	Ϟ	Ϟ	Ϟ	Ϟ	Ϟ	Ϟ	Ϟ Ϟ	[k]	
rho	𐤓	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ ρ	[r]	[r]
sigma	𐤔	Σ	Ξ		Ξ		Ξ	Σ σ	[s]	[s]
tau	𐤕	Τ	Τ	Τ	Τ	Τ	Τ	Τ τ	[t]	[t]
upsilon		Υ	Υ	Υ	Υ	Υ	Υ	Υ υ	[u, ü]	[i, v]
phi		Φ	Φ	Φ	Φ		Φ	Φ φ	[pʰ]	[f]
khi		Χ	Χ	Χ	Χ		Ψ	Χ χ	[kʰ]	[ç, x]
psi		Ψ		Ψ	Ψ			Ψ ψ	[ps]	[ps]
omega		Ω						Ω ω	[o:]	[o]
sampi		Ͱ						Ͱ ͱ	[s]	

Appendix 23. The Greek alphabets

Euboean c. 700 BC	Etruscan c. 600 BC	Early Latin c. 500 BC	Latin c. 100 BC
A	Δ	Δ	A
⊗	(⊗)	⊗	B
γ	>	>	C
Δ	(Δ)	Δ	D
Ξ	Ξ	Ξ	E
Ϝ (<γ)	Ϝ	Ϝ	F
I	⊥	⊥	G (<C)
⊞	⊞	H	Z (↓)
⊗ thêta	⊞ th	[none]	H
		[none]	[none]
Ϛ	Ϛ	Ϛ	I
⊥	⊥	⊥	K
ϛ	⊞	M	L
Ϝ	⊞	⊞	M
⊞ xi	⊞	[none]	N
⊞	(⊞)	⊞	[none]
γ	γ	γ	O
M	M <sub>sh</sub>	[none]	P
Ϝ	Ϝ	[none]	[none]
Ϝ	Ϝ	Ϝ	Q
Ϛ	Ϛ	Ϛ	R
ϛ	ϛ	ϛ	S
T	T	T	T
Y	Y	V	U, V
X	X	X	X
Ϝ	Ϝ <sub>ph</sub>	[none]	Y (<γ)
↓	↓ (>x)	[none]	[none]
	⊗ <sub>f</sub>	[none]	[none]
			Z

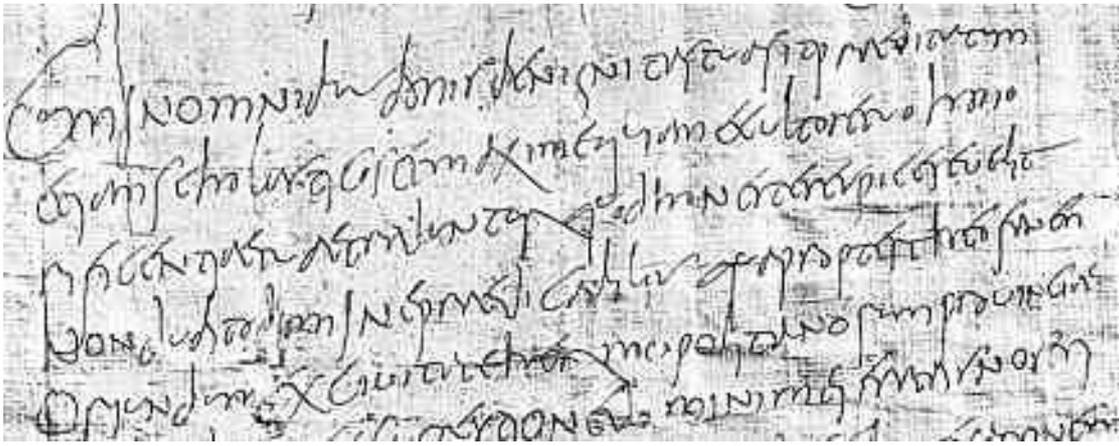
**Appendix 24.** From Euboean to Latin. Retrieved from Fischer (2003)



**Appendix 25.** Inscription on Trajan's Column, 113-114 CE.







**Appendix 33.** IV<sup>th</sup> century letter on papyrus, discovered in Egypt (Strasburg i. Els., Pap. lat. Argent. I.). 317-324 CE.

**Appendix 34.** Old and new cursives alphabets

	A	B	C	D	E	F	G	H	I	L
<b>Cursiva antigua</b>	λ	α	Ϸ	δ	ϕ	ϕ	Ϸ	η	ι	λ
<b>Cursiva nueva</b>	α	β	Ϸ	δ	ε	ϕ	ζ	η	ι	λ
	M	N	O	P	Q	R	S	T	V	
<b>Cursiva antigua</b>	Μ	Ν	Ο	Ρ	Ϸ	Τ	ϕ	Τ	Υ	
<b>Cursiva nueva</b>	μ	η	ο	ρ	ϕ	ϕ	ϕ	τ	υ	



**Appendix 35.** Expansion of the Roman empire

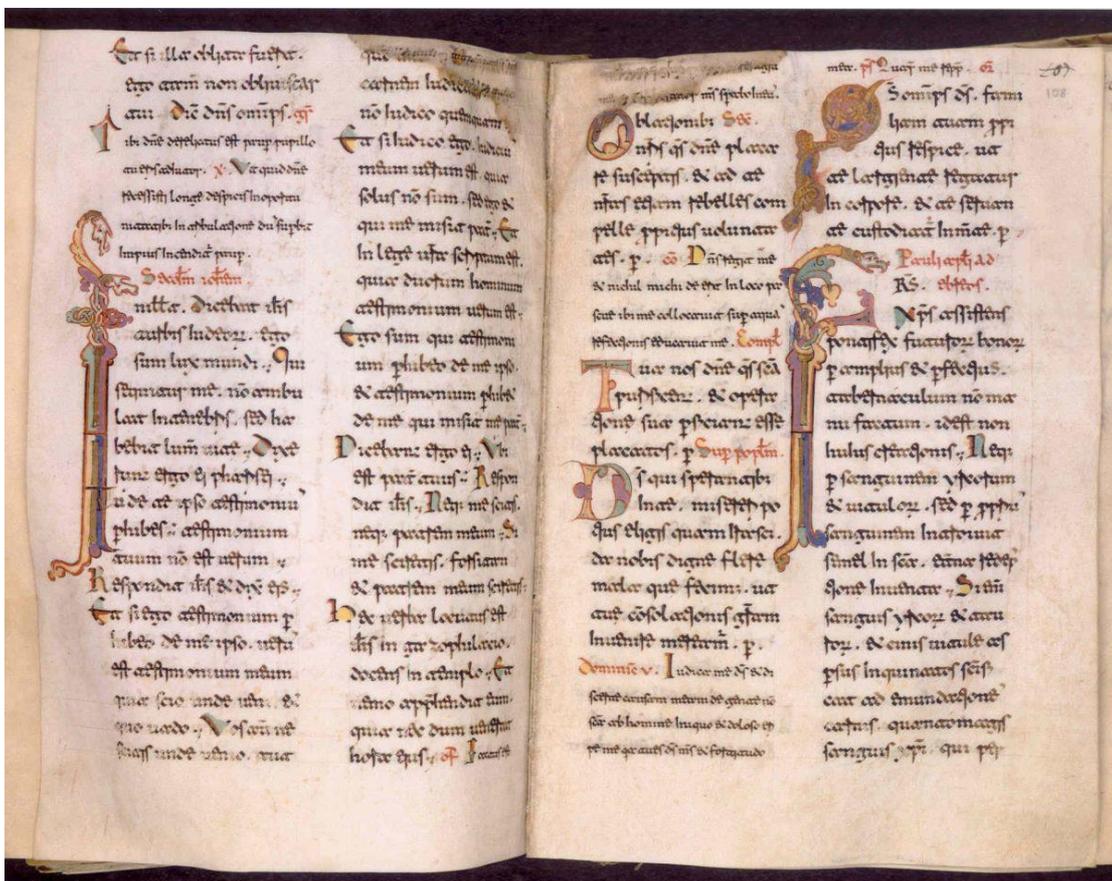
Lombardic	Roman Saxon	Set Saxon	Huming Hand Saxon	Norman	Modern Gothic	Old English
A	Λ	κλ	A	Δ	H	A
B	B	o	B	B	B	B
C	C	c	C	C	C	C
D	D	d	D	D	D	D
E	E	e	E	E	E	E
F	F	f	F	F	F	F
G	G	g	G	G	G	G
H	H	h	H	H	H	H
I	I	i	I	I	I	I
L	L	l	L	L	L	L
M	M	m	M	M	M	M
N	N	n	N	N	N	N
O	O	o	O	O	O	O
P	P	p	P	P	P	P
Q	Q	q	Q	Q	Q	Q
R	R	r	R	R	R	R
S	S	s	S	S	S	S
T	T	t	T	T	T	T
U	U	u	U	U	U	U
X	X	x	X	X	X	X
Y	Y	y	Y	Y	Y	Y
Z	Z	z	Z	Z	Z	Z

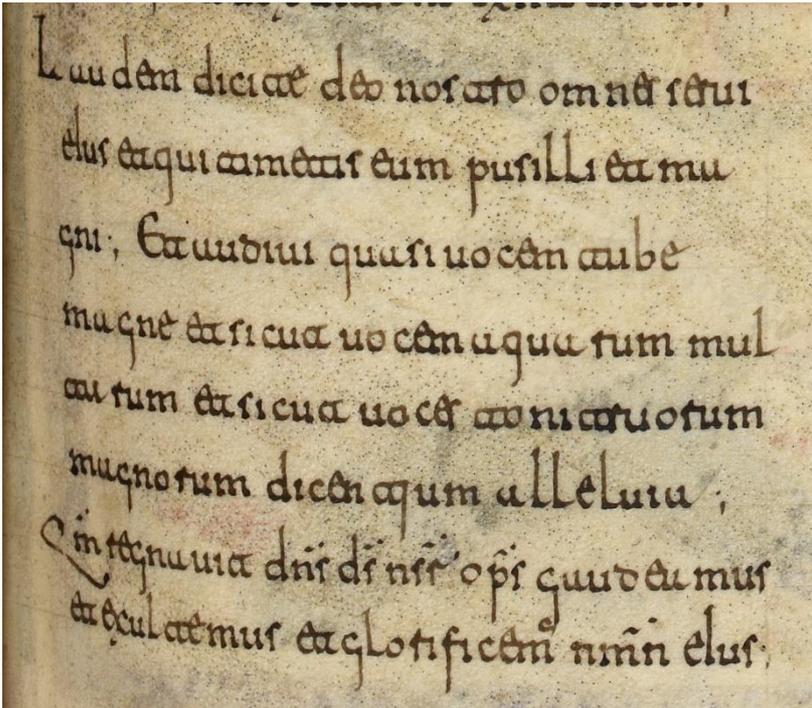
(Left)

**Appendix 36.** From Lombardic to Old English

(Bottom)

**Appendix 37.** Beneventan missal XII<sup>th</sup> century Chapter Library, Benevento, Italy



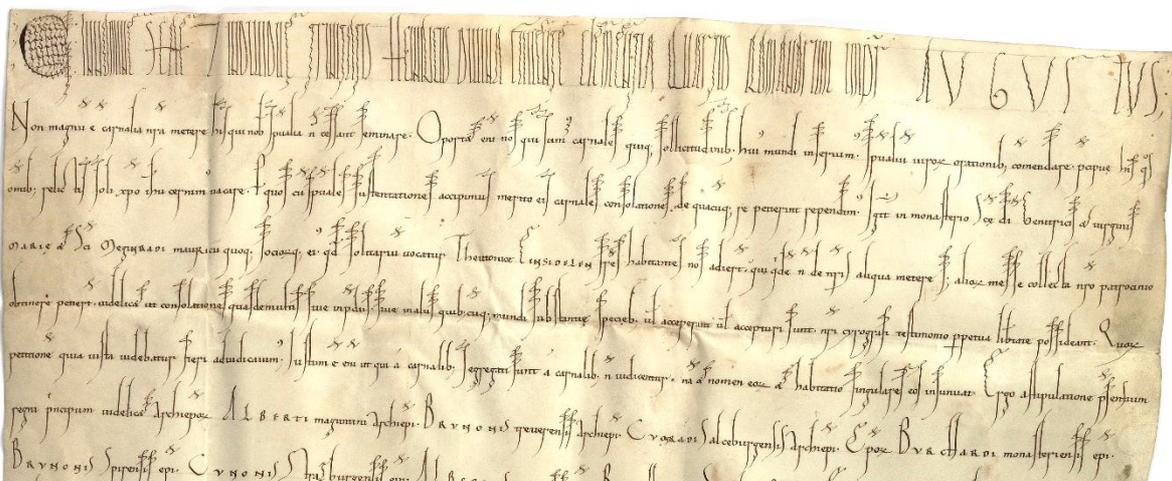
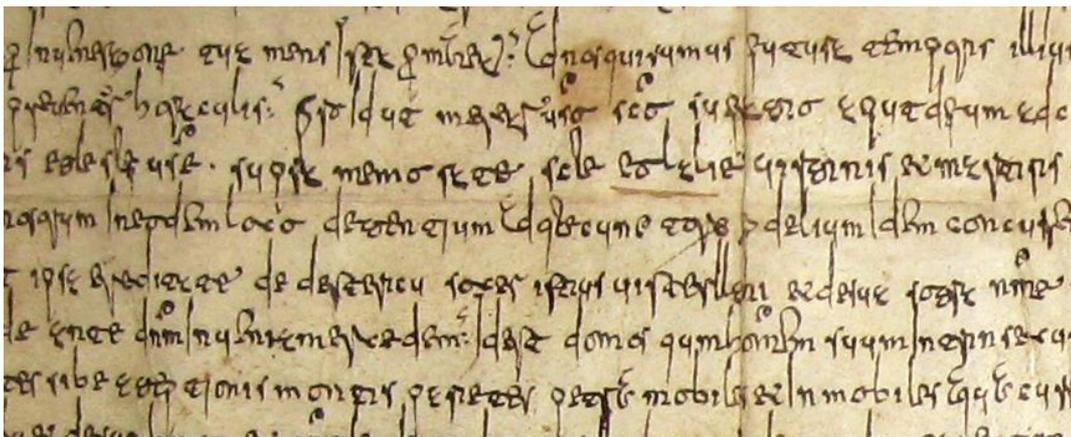


(Left)

**Appendix 38.** Visigothic Minuscule, 1091-1109 CE, “The Silos Apocalypse”. British Library

(Bottom)

**Appendix 39.** Cursive Visigothic script \_ACLu., Libro X de pergaminos, leg. 2-3 y Ainoa Castro



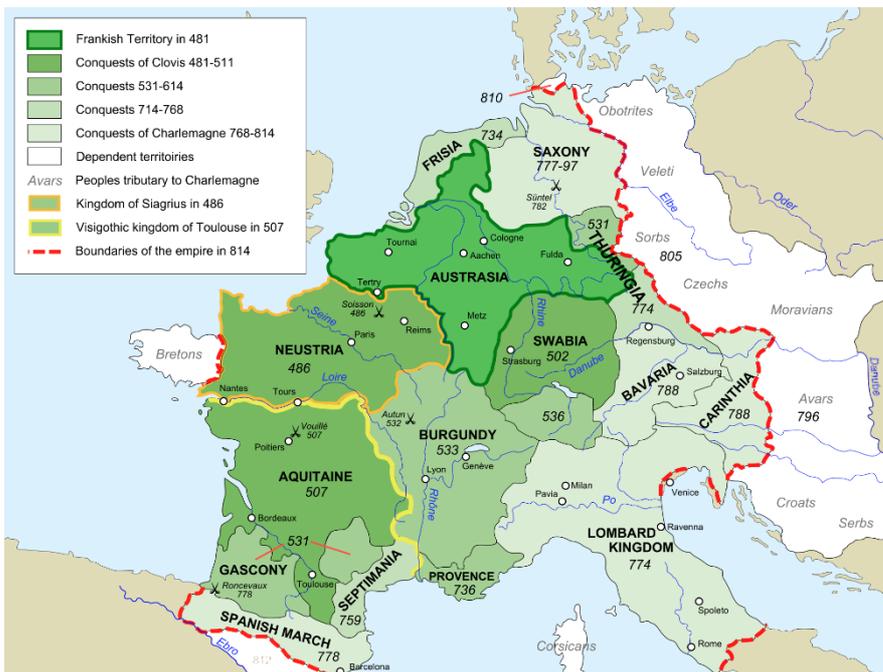
**Appendix 40.** Diplôme de l'empereur Henri V pour Einseideln, 1111 CE. Klosterarchiv Einsiedeln



**Appendix 41.** Merovingian chancery script from a diploma of Charlemagne from 781 CE (State Archives, Marburg).



**Appendix 42.** Lectionnaire de Luxeuil (BnF, man. lat. 9427), 700 CE.



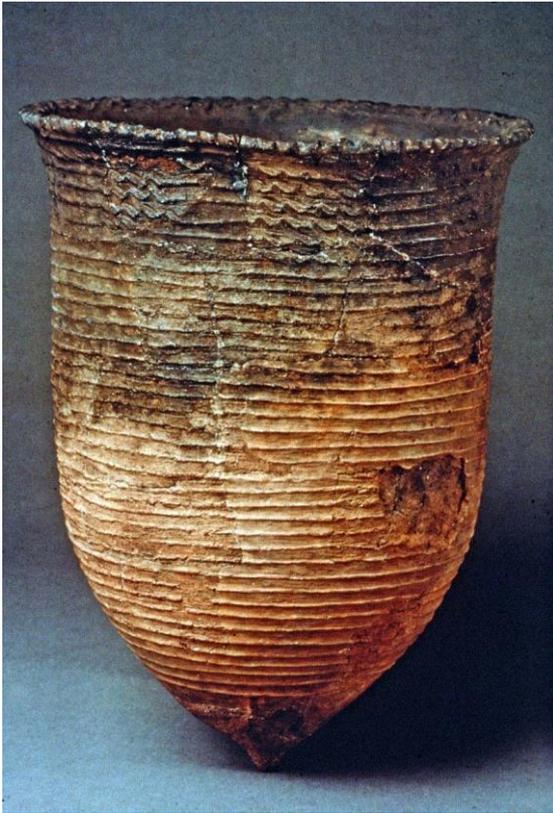
**Appendix 43.** Frankish empire from 481 to 814

isquerere / historie con  
 uitatem uero dictionis  
 et rerum uitare breu  
 est, hinc igitur narra  
 de praefatione tantum  
 tulum & enim est ante  
 in ipsa autem historia sic

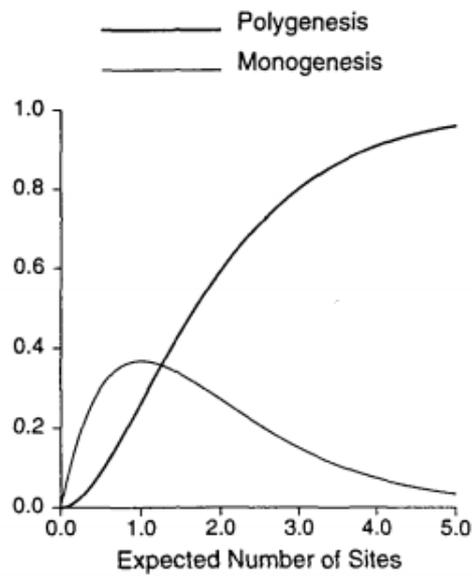
**Appendix 44.**  
 Carolingian minuscule  
 script from the  
 Maurdrannus Bible, c.  
 772–781; in the  
 Bibliothèque  
 Municipale, Amiens,  
 France.

The image displays two screenshots from a dictionary application. The left screenshot shows the entry for the Japanese word 'ronbun' (論文), which is translated as 'thesis, essay, treatise, paper, article' in English, 'étude, dissertation, essai, thèse' in French, and 'tesis, ensayo, tratado, "paper", artículo' in Spanish. The right screenshot shows examples of the word used in sentences: '彼は その 問題 について 論文 を 書いた。' (He wrote a paper on the subject.), 'kare ha sono mondai nitsuite ronbun wo kaita.', and 'He wrote a paper on the subject.' It also shows the kanji decomposition for '論文' (ronbun) as '論' (ron) and '文' (bun).

**Appendix 45.** Japanese to English, French, and Spanish smartphone application dictionary *imi wa?*



**Appendix 46.** Ceramic Bowl with Tapered Bottom & Rope Pattern. Undated, private collection.

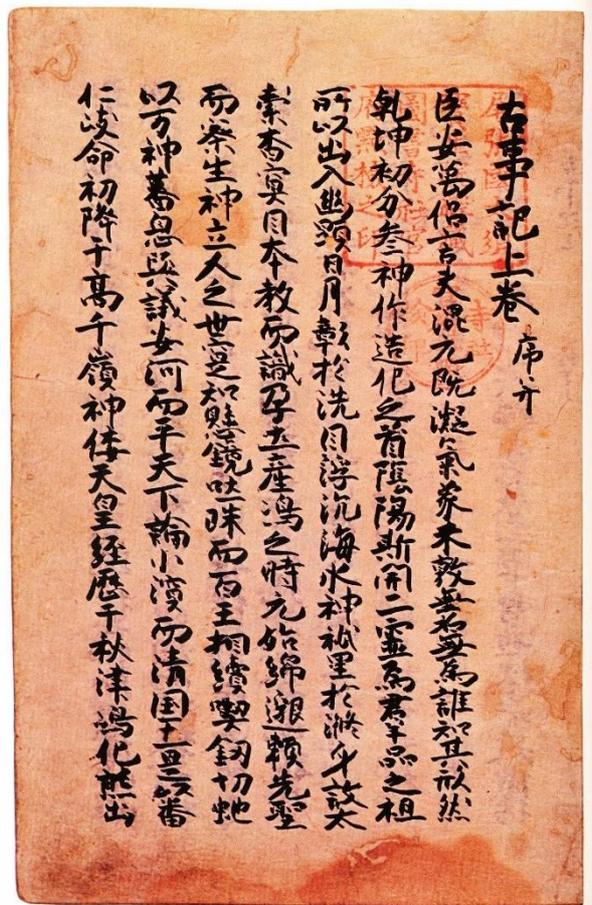


**Fig. 1.** Poisson model for language emergence. The heavier curve shows the probability of polygenesis; the lighter curve, monogenesis. Probability is a function of the expected number of sites at which language emergence (horizontal axis).

**Appendix 47.** Freeman and Wang model (1996)

Early Forms	Modern Character	Meaning
 → 	木	tree, wood
 → 	林	woods
 → 	森	forest
 → 	本	root, origin
 → 	日	sun
 → 	月	moon
 → 	明	bright
 → 	山	mountain
 → 	鳥	bird
 → 	島	island

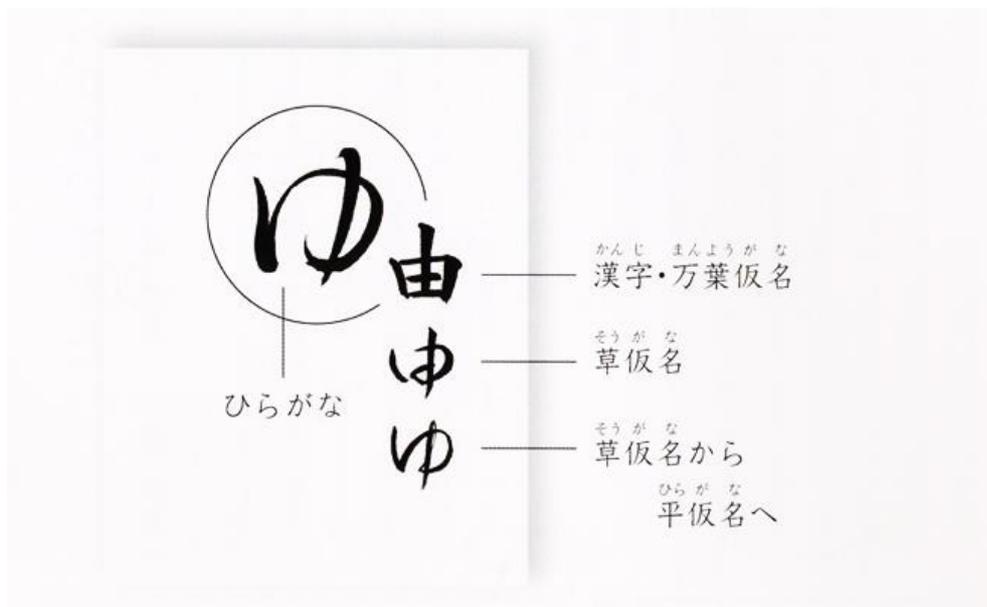
Appendix 48. Old chinese characters



Appendix 49. 'Kojiki' Nanbokucho period (1371 BCE) Osu Kannon Hoshō-In temple, Aichi prefecture

无 ん	和 わ	良 ら	也 や	末 ま	波 は	奈 な	太 た	左 さ	加 か	安 あ
ん	わ	ら	や	ま	は	な	た	さ	か	あ
	爲 ゐ	利 り		美 み	比 ひ	仁 に	知 ち	之 し	機 き	以 い
		留 る	由 ゆ	武 む	不 ふ	奴 ぬ	川 つ	寸 す	久 く	宇 う
	惠 ゑ	礼 れ		女 め	部 へ	祢 ね	天 て	世 せ	計 け	衣 え
	遠 を	呂 ろ	与 よ	毛 も	保 ほ	乃 の	止 と	曾 そ	己 こ	於 お

Appendix 50. Development of Hiragana from man'yōgana



**Appendix 51.** The evolution of characters according to ひらがないろは, from 博多歩

ア	阿	イ	伊	ウ	宇	エ	江	オ	於
カ	加	キ	機	ク	久	ケ	介	コ	己
サ	散	シ	之	ス	須	セ	世	ソ	曾
タ	多	チ	千	ツ	川	テ	天	ト	止
ナ	奈	ニ	仁	ヌ	奴	ネ	祢	ノ	乃
ハ	八	ヒ	比	フ	不	ヘ	部	ホ	保
マ	末	ミ	三	ム	牟	メ	女	モ	毛
ヤ	也			ユ	由			ヨ	與
ラ	良	リ	利	ル	流	レ	礼	ロ	呂
ワ	和	ヰ	井			エ	恵	ヲ	乎
ン	尔								

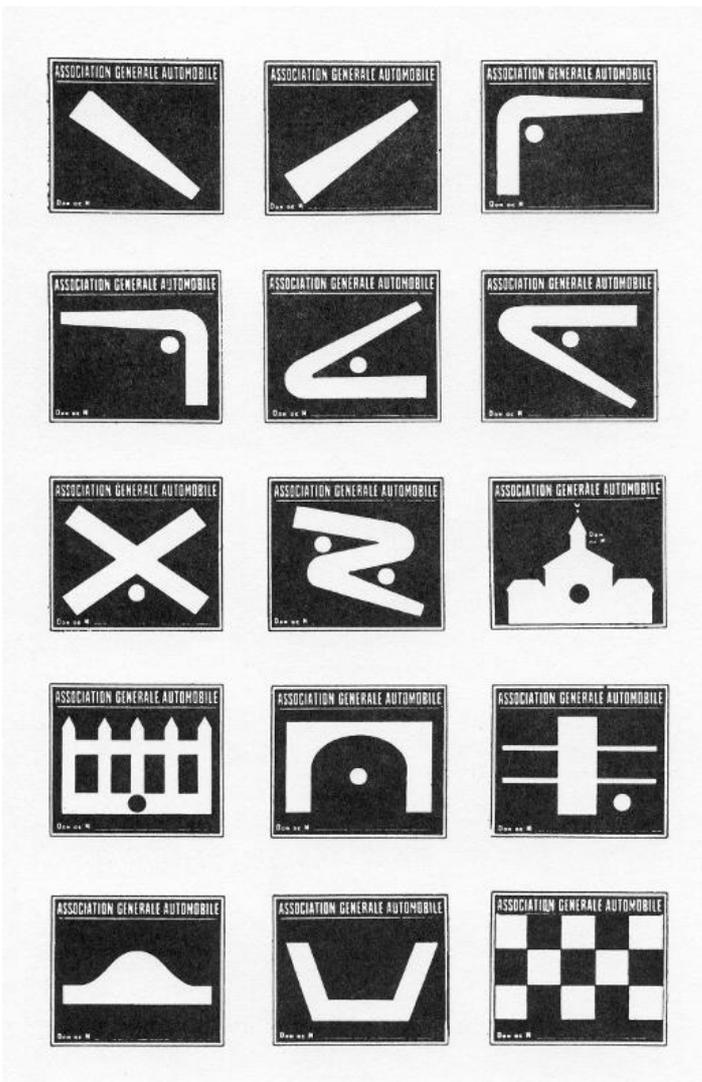
**Appendix 52.** Development of katakana from man'yōgana



**Appendix 53.** XVII<sup>th</sup> century traffic sign in Salvador street, Lisbon, Portugal stating which traffic should back up to give way



**Appendix 54.** 1669 fingerpost in Gloucestershire, UK



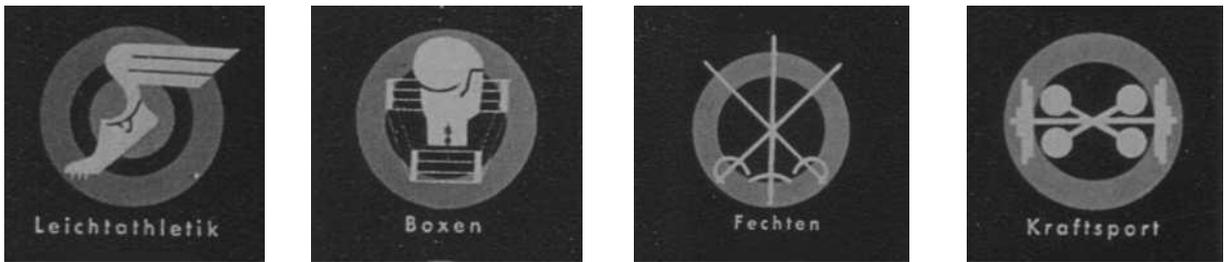
(Left)

**Appendix 55.** French road signs in 1906

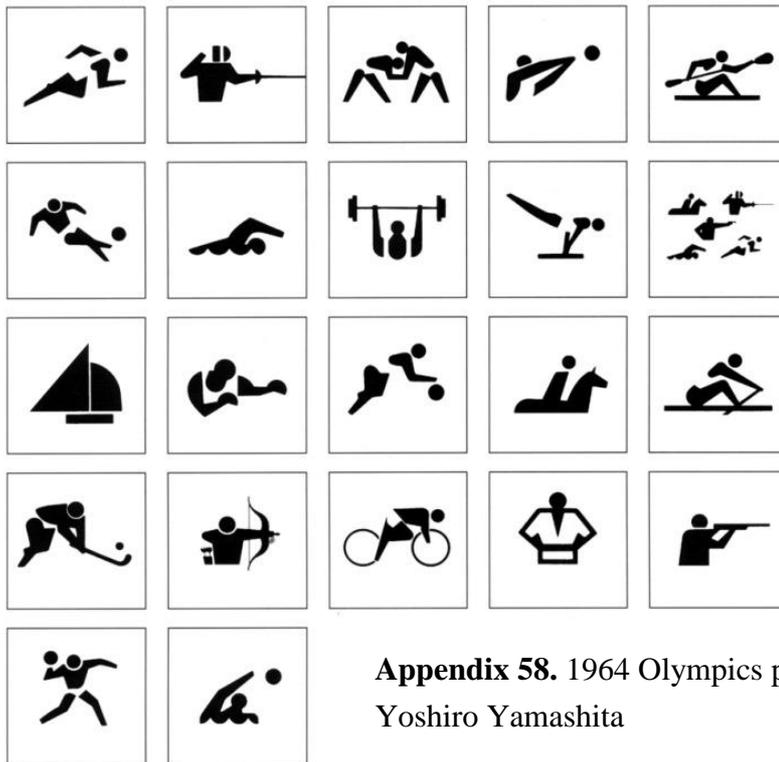
(Bottom)

**Appendix 56.** The 1909 Geneva road signs





Appendices 57a, b, c, and d. 1936 Olympic symbols: Athletics, Boxing, Fencing, and Weightlifting.



Appendix 58. 1964 Olympics pictograms designed by Yoshiro Yamashita

Appendix 59. Otto Neurath, *International picture language*. Schematic representation of war economy (p. 85) 1936



**DEVELOPMENT OF INTERNATIONAL STANDARDS**

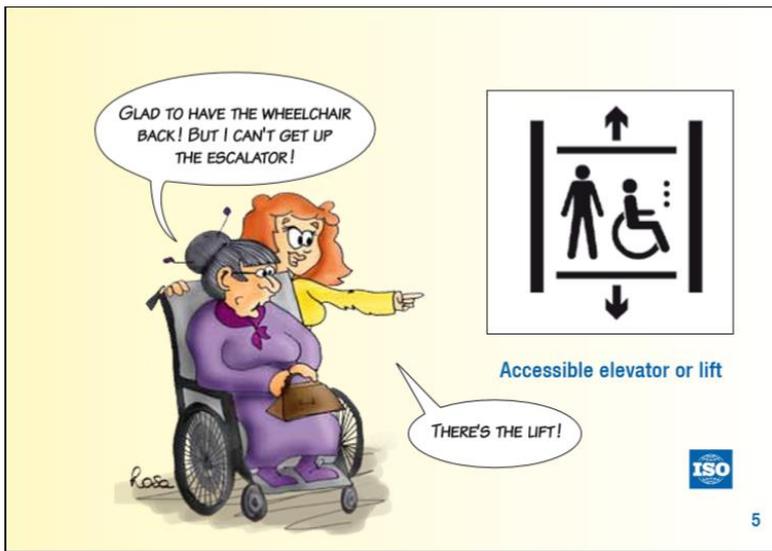


**ISO in figures (2015)**

**PORTFOLIO OF ISO STANDARDS**  
(by technical sector at the end of 2015)

- 27.2%** Engineering technologies
- 22.5%** Materials technologies
- 17.6%** Electronics, information technology and telecommunications
- 10.7%** Transport and distribution of goods
- 9.1%** Generalities, infrastructures, sciences and services
- 5.7%** Agriculture and food technology
- 4%** Health, safety and environment
- 2.5%** Construction
- 0.8%** Special technologies

**Appendix 60.** Excerpt from the ISO annual report 2015 in figures.



**Appendices 61 and 61b.** The ISO graphical symbols, from an official advertising pamphlet.

**Warning sign**

**How to recognize ?**  
Yellow triangle with black border and black symbol.

**What is the type of safety message ?**  
Warns of hazards which could result in personal injury or threat to health.

*This sign will be accompanied by text or additional signs to explain the reasons for the warning.*

General warning sign

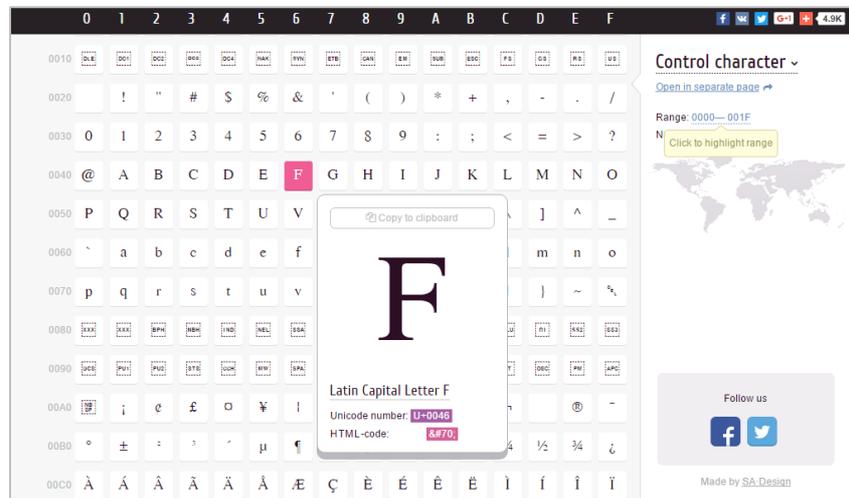
Warning : Electricity

Warning : Hot surface

28



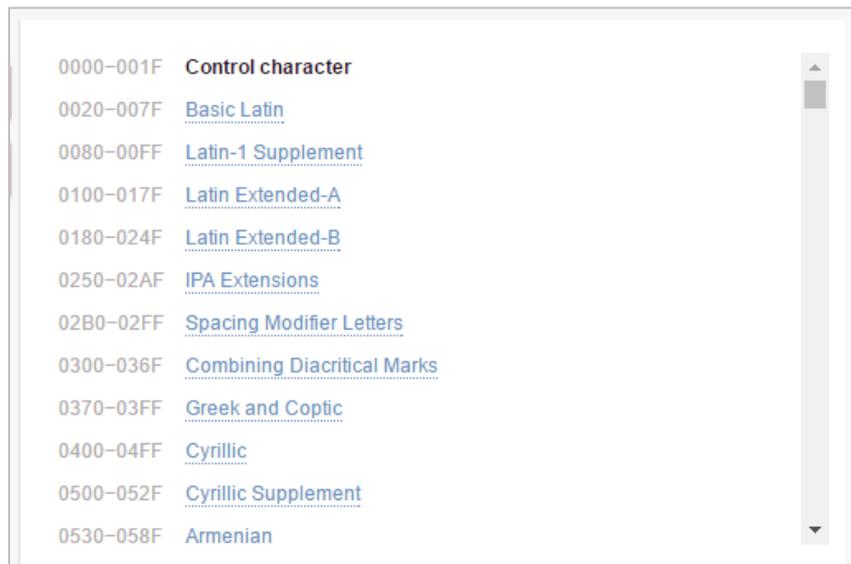
Appendix 62. Road safety advertising campaign



(Top)

**Appendix 63.**  
Unicode F  
encoding

(Bottom)  
**Appendix 64.**  
Unicode  
characters  
categories





Appendix 65. Latin letters grapheme variation

**Appendix 66.**  
Difference  
between  
Traditional and  
Simplified  
Chinese  
characters, and  
kanji. Retrieved  
from Takagi  
(2014)



**Appendix 67.** NTT  
Docomo Pocket Bell  
(1990's)

**Appendix 68.** First set of emojis  
designed in 1997 by Kurita





**Appendix 69.** Emoji gone international: the iOS5 emojis

**Emoji Charts**

**Full Emoji Data**

This chart provides a list of the Unicode emoji characters, with images from different vendors, version and source information, default style, and annotations. The ordering of the emoji and the annotations are based on [Unicode CLDR data](#). This list does include the [320 modifier sequences](#), and the [23 ZWJ sequences](#).



For information about the images used in these charts, see [Emoji Images and Rights](#). For details about the format and fields, see [Emoji Chart Index](#) and [UTR #51 Unicode Emoji](#). See also [Submitting Emoji Character Proposals](#).

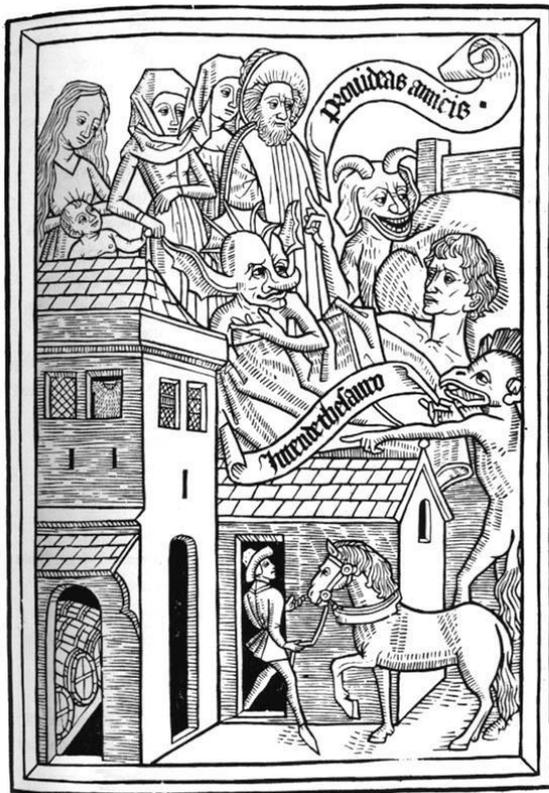
No	Code	Brow.	Chart	Apple	Twtr.	One	Goog <sup>d</sup>	Sams.	Wind.	GMail	Sb	Dcm	Kddi	Name	Year	Default	Annotations
1	U+1F600													GRINNING FACE	2012*	emoji	<a href="#">face</a> , <a href="#">grin</a> , <a href="#">person</a>
2	U+1F601													GRINNING FACE WITH SMILING EYES	2010 <sup>0</sup>	emoji	<a href="#">eye</a> , <a href="#">face</a> , <a href="#">grin</a> , <a href="#">person</a> , <a href="#">smile</a>
3	U+1F602													FACE WITH TEARS OF JOY	2010 <sup>0</sup>	emoji	<a href="#">face</a> , <a href="#">joy</a> , <a href="#">laugh</a> , <a href="#">person</a> , <a href="#">tear</a>
4	U+1F603													SMILING FACE WITH OPEN MOUTH	2010 <sup>0</sup>	emoji	<a href="#">face</a> , <a href="#">mouth</a> , <a href="#">open</a> , <a href="#">person</a> , <a href="#">smile</a>
5	U+1F604													SMILING FACE WITH OPEN MOUTH AND SMILING EYES	2010 <sup>0</sup>	emoji	<a href="#">eye</a> , <a href="#">face</a> , <a href="#">mouth</a> , <a href="#">open</a> , <a href="#">person</a> , <a href="#">smile</a>
6	U+1F605													SMILING FACE WITH OPEN MOUTH AND COLD SWEAT	2010 <sup>0</sup>	emoji	<a href="#">cold</a> , <a href="#">face</a> , <a href="#">open</a> , <a href="#">person</a> , <a href="#">smile</a> , <a href="#">sweat</a>
7	U+1F606													SMILING FACE WITH OPEN MOUTH AND TIGHTLY-CLOSED EYES	2010 <sup>0</sup>	emoji	<a href="#">face</a> , <a href="#">laugh</a> , <a href="#">mouth</a> , <a href="#">open</a> , <a href="#">person</a> , <a href="#">satisfied</a> , <a href="#">smile</a>

**Appendix 70.** Unicode list of emoji

**Appendix 71.** Classical literature modernized: Les Misérables in emoji





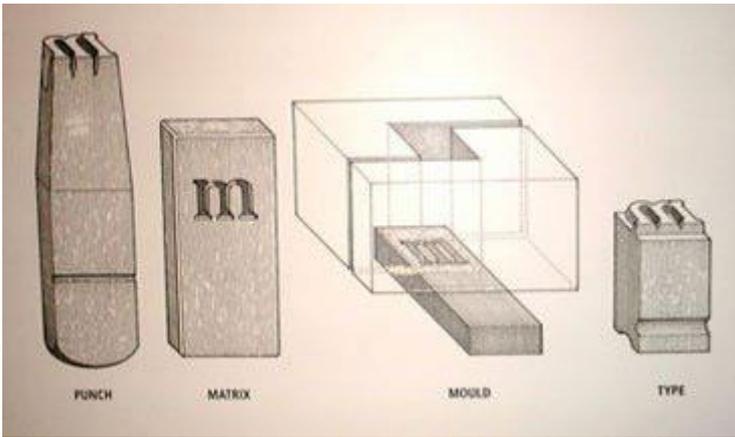


**Temptatio dyaboli de Avaritia**  
 prima temptatio dyaboli est avaritia magis fe-  
 culares et carnales infestans que est nimia occu-  
 patio temporalium atque exteriorum in uxores et carnos  
 carnales seu corporales divinas atque alia que magis in vita  
 sua dilexerunt pro que dyabolo homines maxime uexat in fine  
 dicitur O miser tu iam relinques omnia temporalia que sollicitu-  
 dibus et laboribus maximis sunt congregata etiam uxorem  
 proles et consanguineos carnos carissimos et omnia alia hu-  
 ius mundi desiderabilia quorum te societati adhuc interesset  
 et magni foret solacium ipsis quoque magni boni occasio.  
 Hec et similia dyabolo homines in extremis de avaritia  
 perit ut sic pro amore et cupiditate terrenorum aueriat  
 amore dei et propria salute. Unde singulariter notandum  
 quod maxime cauere debet ne cuius moriente anima corporales  
 vix liberi diuicie et alia temporalia ad memoria reducantur  
 nisi in quantum illud infirmi spiritualis sanitas postulet aut  
 requirat quod alias maxime periculosum est tunc sit abyssus que  
 spiritus et salutis sunt quibus maxime tunc omnibus viribus interioribus  
 et exterioribus intendendum est reuocantur ad ista  
 misera temporalia et carnalia tunc cum maxima so-  
 licitudine a memoria et mente remouenda in quibus  
 certe tunc occupari est ualde periculosum.

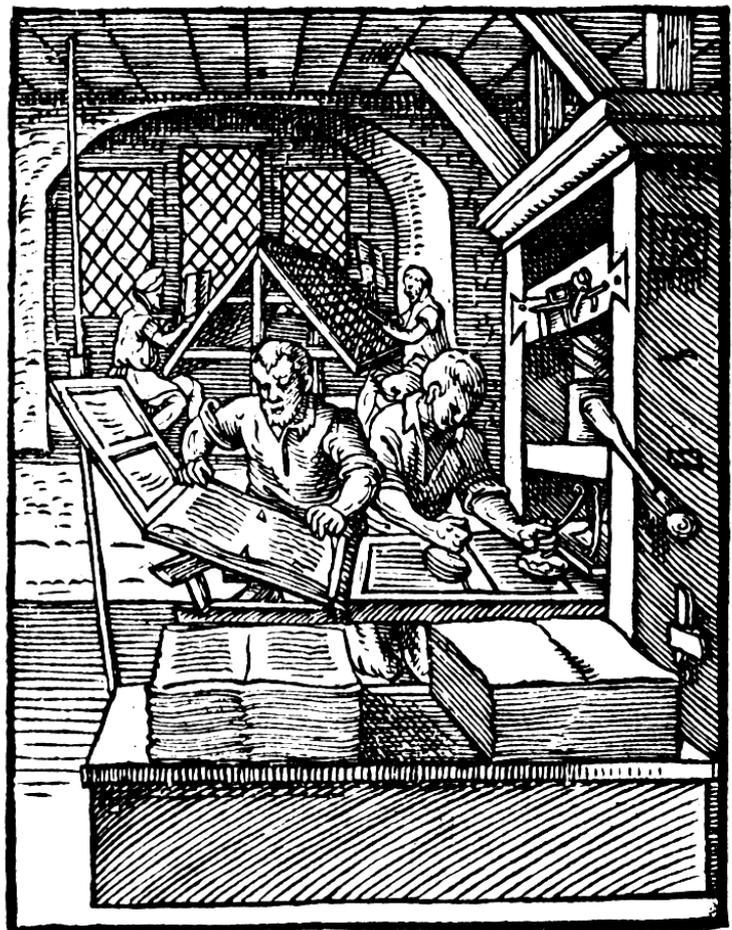
**Appendix 74.** Pages 5-7 from an *ars moriendi*, 1466. European Artist. Blockprinting on paper. Deathbed scene



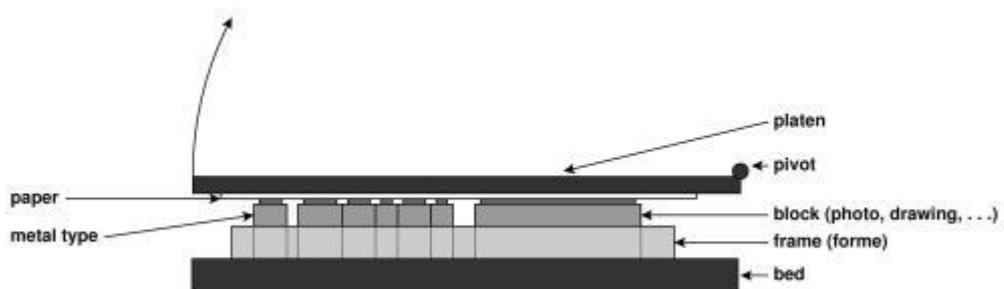
**Appendix 75.** Blockbook *Apocalypsis Sancti Johannis* Germany, about 1463–67, Morgan Library



**Appendix 76.** Parts of a movable type, retrieved from Carter, *A View of Early Typography*, 2002 Oxford University Press



**Appendix 77.** Woodcut from Jost Amman (1568) The left printer removing a page from the press while the one at right inks the text-blocks\_retrieved from Meggs (1998)

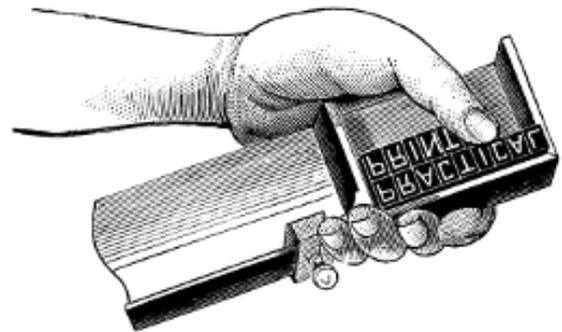


**Appendix 78.** Diagram of a letterpress (author unknown)



**Appendix 79.** Gutenberg's printing press. Etching, artist unknown

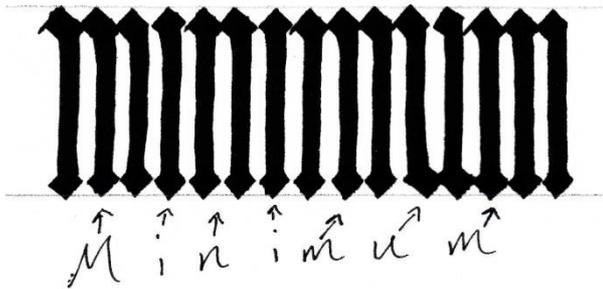
**Appendix 80.** Composing stick held in the hand. From *Practical Printing*. (6th Ed), John Southward (1911)



**Appendix 81.** *Biblia Latina*, 42 lines. Imprint\_Mainz\_Printer of the 42-line Bible (Johann Gutenberg and Peter Schoeffer), c.1455. Folio

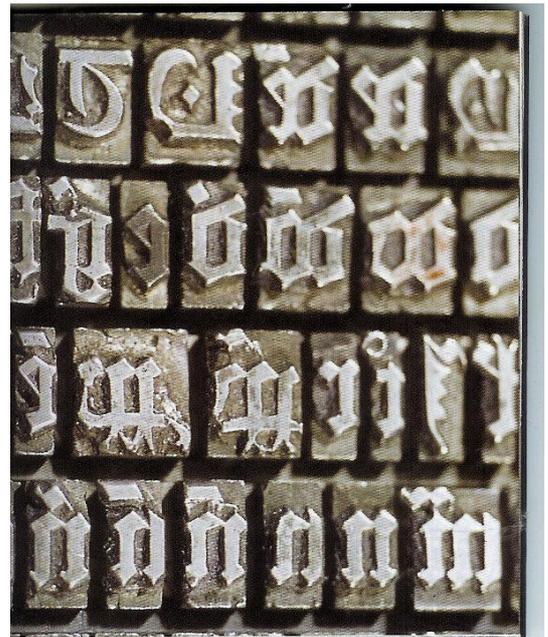


**Appendix 82.** Gutenberg's Bible font excerpt. Originally published by Gottfried Zedler, reproduced from Füssel, *Gutenberg und seine Wirkung* (1999)



(Top)

**Appendix 83.** Gothic minims



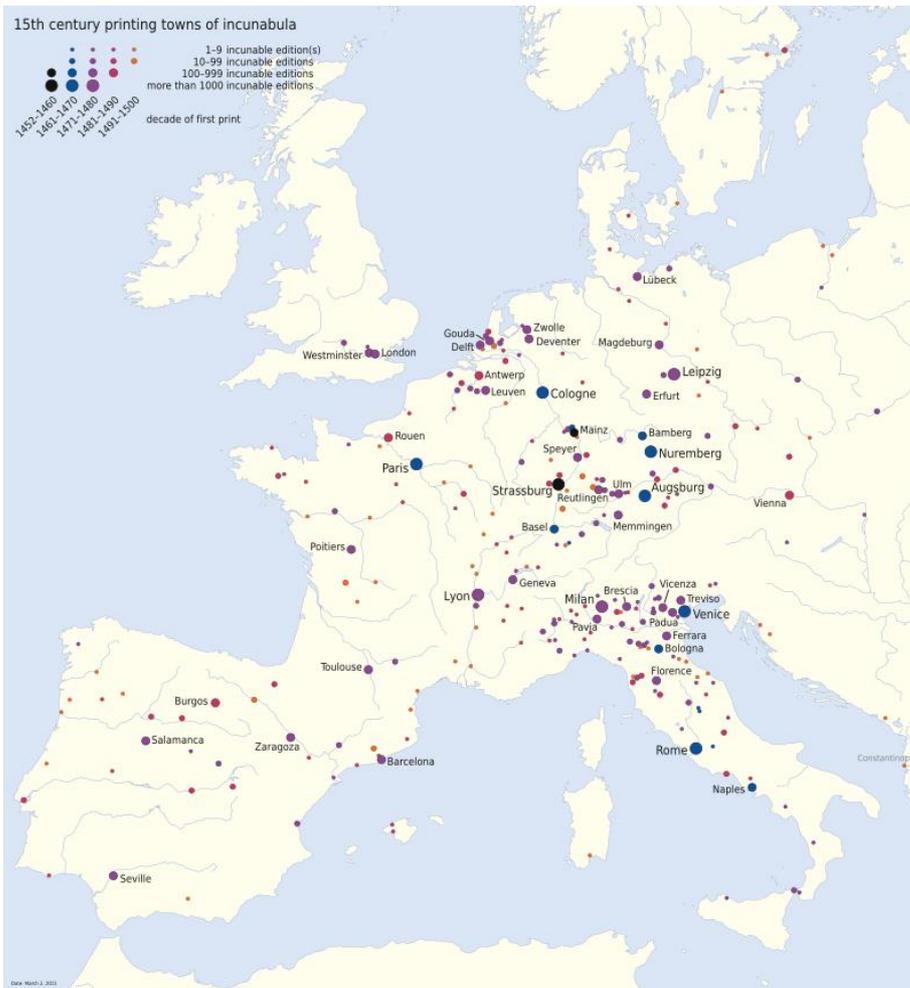
(Right)

**Appendix 84.** Reproduction casting of the Gutenberg Bible typeface, Gutenberg

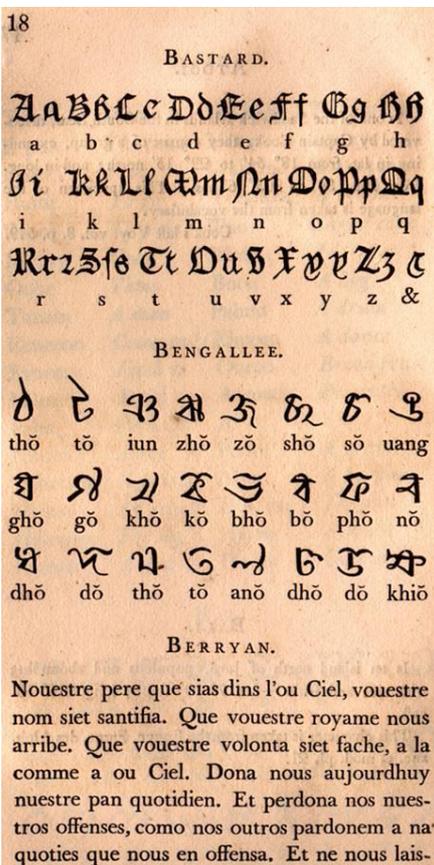


**“HANG YOUR PUNCTUATION. EVEN GUTENBERG DID IN 1450.”**

**Appendix 85.** *Hang your punctuation* by Richard Turgeon (2015)



**Appendix 86.** Printing places of incunabula showing the spread of printing in the XV<sup>th</sup> century (NorthNorthWest, 2011)



(Left)

**Appendix 87.** *Pantografia* (Fry, 1799)

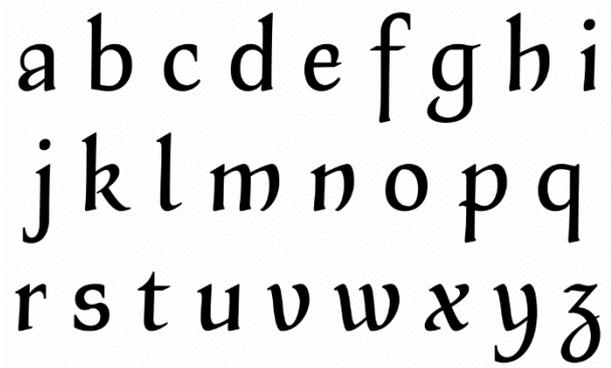
(Bottom)

**Appendix 88.** Close-up of the Front page of Gustav Vasa's Bible from 1541, using Fraktur. Uppsala. 1541.



	Textur	Rotunda	Schwabacher	Fraktur
a	ā	ⱥ	ⱦ	Ⱨ
d	ḏ	ḏ	ḏ	ḏ
g	ḡ	ḡ	ḡ	ḡ
n	ṅ	ṅ	ṅ	ṅ
o	ṁ	ṁ	ṁ	ṁ
A	Ɀ	Ɀ	Ɀ	Ɀ
B	Ɱ	Ɱ	Ɱ	Ɱ
H	ⱨ	ⱨ	ⱨ	ⱨ
S	Ⱳ	Ⱳ	Ⱳ	Ⱳ

**Appendix 89.** A modern sans-serif and four blackletter typefaces (left to right) Textur(a), Rotunda, Schwabacher and Fraktur.



**Appendix 90.** Reconstruction of Gotico-antiqua during a workshop in the l'Atelier National de Recherche Typographique (ANRT) in 2014



Quidā eius libros nō ipsius esse sed Dionysii & Zophiri colophoniorū tradunt: qui iocādi causa cōscribentes ei ut difponere idoneo dederunt. Fuerunt autē Menippi sex. Prius qui de lydis scripsit: Xanthūq; breuiauit. Secūdus hic ipse. Tertius stratonicus sopherista. Quartus sculptor. Quintus & sextus pictores: utrosq; memorat apollodorus. Cynici autem uolumina tredecī sunt. Neniæ: testamenta: epistolæ cōpositæ ex deorum p̄sona ad phycicos & mathematicos grāmaticosq;: & epicuri foetus: & eas quæ ab ipsis religiose coluntur imagines: & alia.

**Appendix 91.** Jenson's typographer's mark, and his roman typeface, excerpt from *Laertis*, published in Venice ca 1475

*Scripta & obfignata iam ept.  
mihi reddite sunt a te: plene re  
maximeq; mirabiles Do lobea  
colortes misisse in Chersonessa*

**Appendix 92.** 1475 Humanistica Cursiva hand in the style of Bartolomeo Sanvito of Padua (undated, unsigned) Vatican Library, Cod. Pal. Lat.

**Appendix 93.** Frontispiece of Catherine de Siena's letters, 1500



esset: una cum olympiade se in samothracia sa-  
 cris unctasset: tractatur: quam puellam parentibus  
 destituta adamarat. Erantq; arylba fratre: consen-  
 tiencie con nubio sibi coniunxisse. Illa igitur de  
 sponsata priori nocte quam in cubiculo se miro con-  
 miscent: existimante facto tonitru: sibi un uter um  
 fulmen in labi. Ex cuius tetu cum magna emicisset  
 incendium: postea in late diffusas flammal abire.  
 Philippus quoq; post nuptias per quiete usus est: con-  
 magis alio insignem adfixisse bullam: cui sculptura

**Appendix 94.** Text  
 written by Niccolò de'  
 Niccoli. Copied in *The  
 Origin and Development  
 of Humanistic Script* by  
 Berthold Louis Ullman  
 (Rome, 1960)

**Appendix 95.** Italics  
 from Aldus, 1501,  
 retrieved from the page  
 creativepro.com

#### DE FALSA SAPIENTIA.

se, suaq; confirmet: nec ulli alteri sapere concedit; ne se  
 desipere fateatur. sed sicut alias tollit; sic ipsa quoq; ab  
 alijs tollitur omnibus. Nihilominus enim philosophi  
 sunt, qui eam stultitia accusant. Quancunq; lauda-  
 ueris, ueramq; dixeris; à philosophis uituperatur, ut fal-  
 sa. Credemus ne igitur uni sese suamq; doctrinam lau-  
 danti; an multis unius alterius ignorantiam culpan-  
 tibus? Rectius ergo sit necesse est, quod plurimum sentiant,  
 quam quod unus. Nemo enim potest de se recte iudi-

*The first "Italic" type, Aldus, Venice, 1501*

A ve Maria di molte grazie piena,  
 Con teo sia l'altissimo Signore.  
 Tu fra le Donne benedetta sei;  
 E benedetto il fruttu del tuo ventre  
 Iesu. O Madre de l'eterno Sire,  
 Porgi i tuoi dolci prieghi inanzi a lui  
 Per noi, che siamo erranti, e peccatori.  
 Amen.

**Appendix 96.** "Ave  
 Maria" from Arrighi,  
 excerpt from his  
 writing manual, *La  
 Operina*, published in  
 Rome in 1522.



Appendix 97. *Pure Light Dharani Sutra*, 704 CE, National Museum of Korea (print on paper)



Appendix 98. Frontispiece of the *Diamond Sutra*, 868 CE (British Museum)

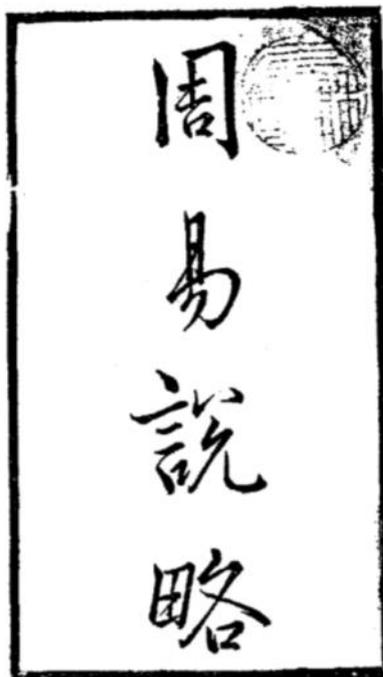
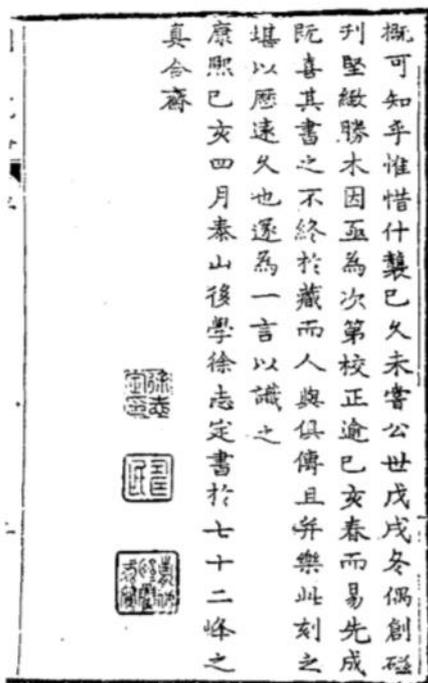
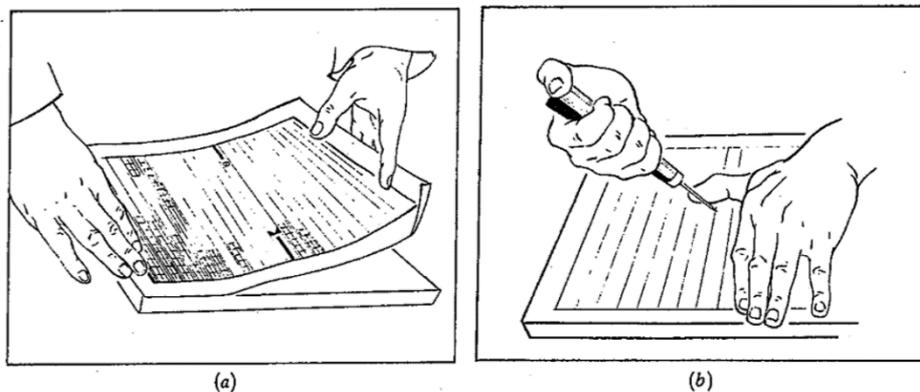
**Appendix 99.**

Carved woodblocks ready for printing, carved on both sides, Far Eastern Library, Univ. of Chicago, retrieved from Tsien (1985)



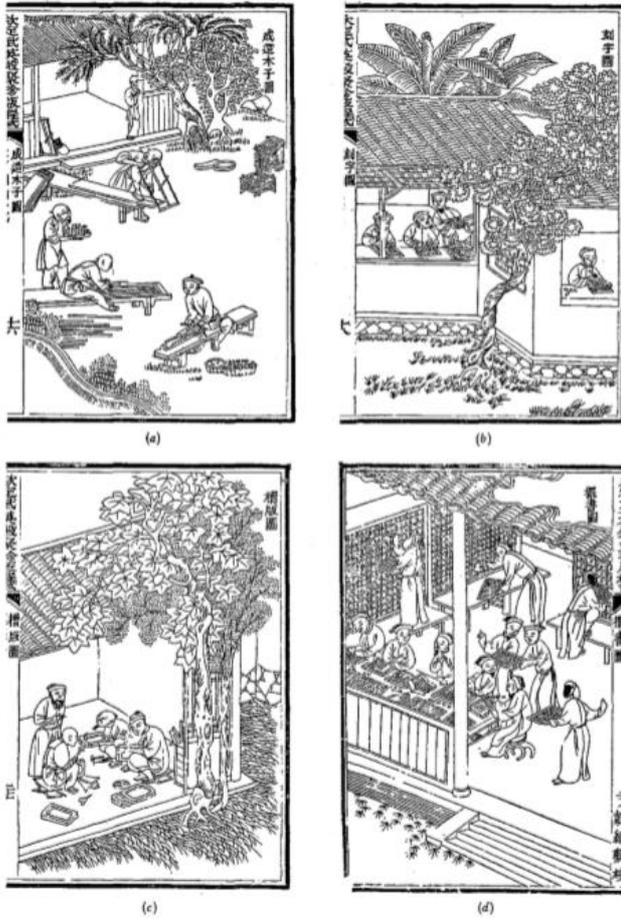
**Appendix 100.**

Preparation of the woodblock, retrieved from Tsien (1985), drawings from the staff of the Shanghai Library

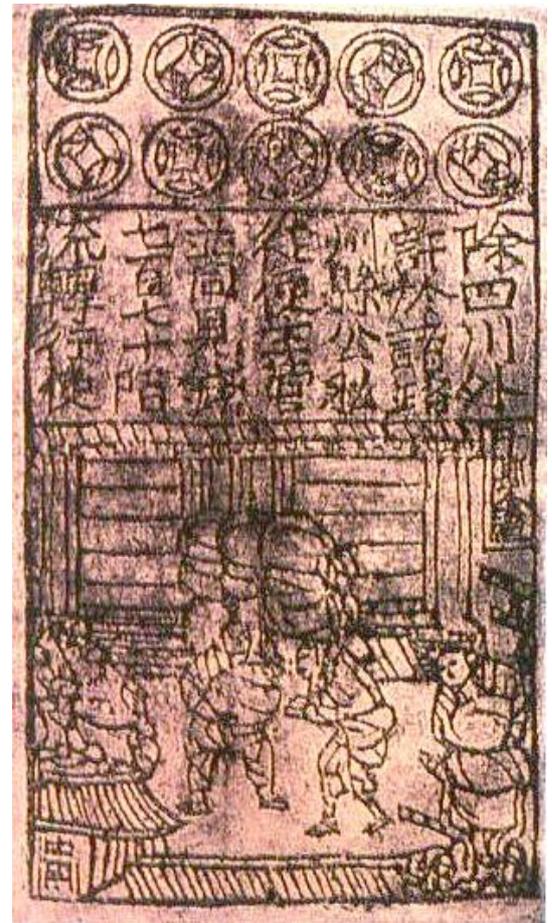


**Appendix 101.**

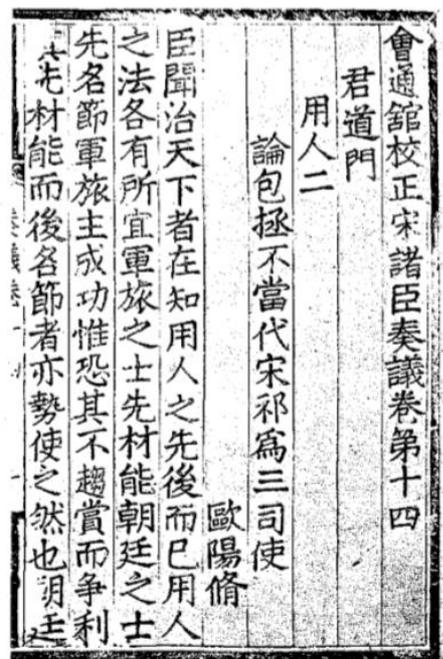
Cover of 周易說略 printed in enamelware in 1718. National Library of China, retrieved in Tsien (1985)



**Appendix 102.** The steps of woodblock printing, print retrieved from Tsien (1985)



**Appendix 103.** Copperplate used to make *jiao zi*, Chinese paper money, XI<sup>th</sup> century. Retrieved from 社会历史博物馆 (1995)



**Appendix 104.** First book printed with metal type in China, 1490 CE. National Central Library, Taipei.





**Appendix 106.** 流漉 papermaking method in Japan, from the 紙漉重寶記, printed in 1798. Retrieved from Tsien (1985).

**Appendix 107.** One of the one million pagodas, VIII<sup>th</sup> century. Private collection





**Appendix 108.** *Tales of Ise* (1606) Hagaromo International University  
Institute for Japanese



**Appendix 109.**  
Woodblock cutters and  
movable type-setters 風俗  
画法 newspaper (1897).  
Private collection

あいうえこかきくけこさしす  
 日本語タイポグラフィーの掟  
 1234567890ABCDEFGHIJLM  
 ?!+-=" #%&' () ? ! + - = ”

**Appendix 110.** MS Mincho digital font set

<p>0.1</p> <p><i>I taliam dixisse davis de nomine gentem.        H a nobis propriae fides, hinc Dardanus ortus,        I a finibus pater, genus a quo primorpe nostrum.        Surge agge, et haec Latini longaevo dicta parenti        H and dubitanda refer. Corinon, terras require</i></p> <hr/> <p>0.2</p> <p><i>E L tempo, chiviroua i meiffisiri        Per la dolce mioria di quel giorno,        Che fu principio a siliunghimartyri</i></p> <hr/> <p>0.3</p> <p><i>haec luculentissima epigrammata igni danda esse con-        ferret, aut praefato calcanda irot in infocias t Id enim a        tibi mi Gergelae, ne mihi, caneris, bñvolis tuis maxi-        mo eris honestamento, ac nō modice voluptuū. Vale.        Et me (ut facis) redams.</i></p> <hr/> <p>0.4</p> <p><i>Dele uarie sorti de lūtere poi, che in queſto Tratta-        tello trouerai, ſe to ti uoleſſi ad una per una deſcriuere        tutte le ſue ragioni, ſaria troppo longo proceſſo. Ma        tu hauendo uolūta de' imparare, ti terrai inanzi que</i></p> <hr/> <p>0.5</p> <p><i>H ius erat Solemus Phrygia comes vnus ab Ida,        A quo Salmons maenia nomen habent.        S almons gelidi patrie Germanice noſtrae,        Me miſerum ſeythico quān proci illa ſolo eſt.        Eſt autem Sulmo in Pelynis, quod ipſe ſic in ſecun-</i></p>	<p>INTRODUCTION · 23</p> <p>vigor of the lower case. This vigor is more centrifugal in chancery fonts, where it takes the form of lengthened or flourished extenders and swash; it is more centripetal in Aldine fonts, where it emerges as palpable tension and restraint. Italics of both kinds were cut as independent fonts, not as supplements to a roman.</p> <p>Aldine italics began to appear in France as early as 1503, a mere two years after the first such font appeared in Venice. Chancery italics spread more slowly. The first typographic letters of chancery form occur as alternate sorts in an otherwise strictly Aldine italic – the Fano italic, it is called – that Griffio cut for Gershom Soncino (גרשון שונקין) in 1503.<sup>11</sup> The first chancery font is the so-called Carpi italic, cut in 1506 – probably also by Griffio, though his authorship has not been proven. But the Carpi italic was cut for a prince, not for a printer.<sup>12</sup> It was little used, rarely seen, and despite its merits, it provoked no imitation or competition. In 1511, Griffio cut another, smaller Aldine italic with chancery variants,<sup>13</sup> but to the best of my knowledge, no one engraved another chancery font until 1523, when the calligrapher Ludovico degli Arrighi commissioned the first of several such italics cut to his own designs.</p> <p>Colines may never have seen the Carpi italic, but by 1528 he had surely seen work by Arrighi. He may also have seen another chancery font, designed in Venice in 1524 by another calligrapher, Giovanantonio Tagliente. But Colines's 1528 italic is a good deal smaller and more versatile than those designed by Arrighi and Tagliente. It returns us to the world of Aldus, Soncino, and Griffio, for whom italic was just as practical and tough as it was beautiful.</p> <p>I do not know of any successful sixteenth-century French chancery fonts apart from the two cut by Colines, but there was a time when French printers, if they wanted italics at all, wanted Aldines and had several good ones to choose from. Colines and a brilliant but unidentified Swiss contemporary whom I call the Master of Basel cut the best such fonts of their generation.<sup>14</sup> Among their successors, both Claude Garamond and Robert Granjon also cut a few italics with</p>
---	---

FIGURE 0.1 The original Aldine italic, cut by Francesco Griffio for Aldus Manutius in 1501.  
 FIGURE 0.2 The Fano italic, cut by Griffio for Gershom Soncino in 1503: an Aldine italic with chancery alternates for b, d, l, p, and q.  
 FIGURE 0.3 The Carpi italic: a chancery font first used by Benedetto Dolcibello in 1506.  
 FIGURE 0.4 The first of the chancery fonts designed by Ludovico degli Arrighi. This one was cut in Venice by Eustachio Celebrino in 1532. (The others were cut in Rome, 1524–26, probably by Lautizio Perugino.)  
 FIGURE 0.5 Colines's first italic (and the first French chancery font), cut in 1528.

**Appendix 111.** Roman types comparison. Retrieved from Amert (2012)

(Right)

**Appendix 112.** Extract from the New Testament using Garamond's *grecs du roi* (1541). Private collection.

(Next page)

**Appendix 113.** Garamond character set from the Egenolff foundry, 1592





Compare:  and   [Tweet Differences](#)

**Adobe Garamond** ITC Garamond Light

ABCDEFGHIJKLMNOP  
 OPQRSTUVWXYZÀÅ  
 abcdefghijklmnopqrstuv  
 wxyzàáéîõøü&1234567  
 890I234567890(\$£€.,!?)

ABCDEFGHIJKLMNOP  
 OPQRSTUVWXYZÀÅÉ  
 ÎÏØabcdefghijklmnop  
 pqrstuvwxyzàáéîõøü  
 &1234567890(\$£.,!?)

45 47

	The diagonal strokes of the upper-case 'K' meet at the vertical (with or without a gap).		The diagonal strokes of the upper-case 'K' meet in a 'T'.
	The centre bar of the upper-case 'P' leaves a gap with the vertical.		The centre bar of the upper-case 'P' meets the vertical.
	The upper-case 'G' foot has a forward pointing serif.		The upper-case 'G' foot has no spur or serif.

Note that the fonts in the icons shown above represent general examples, not necessarily the two fonts chosen for comparison.

**Appendix 114.** Comparison between Adobe and ITC Garamond. Retrieved from the website [identifont.com](http://identifont.com) on the 05.05.16

DTL Fleischmann Roman  
und Italic *Display* regular

**B E Q S D**  
*a i n d g o s ß*  
*a i n d g o s z ß*  
*ctffiffichshspfä*

**Appendix 115.** Computerized version of the Fleischmann typeface. Retrieved from [100besttypefaces.com](http://100besttypefaces.com) on the 05.05.16

**Bodoni** **Didot**

ABCDEFGHIJKLMNOP  
 OPQRSTUVWXYZÀ  
 ÅÉÎÏØabcdefghijklmnop  
 nopqrstuvwxyzàáéîõø  
 &1234567890(\$£.,!?)

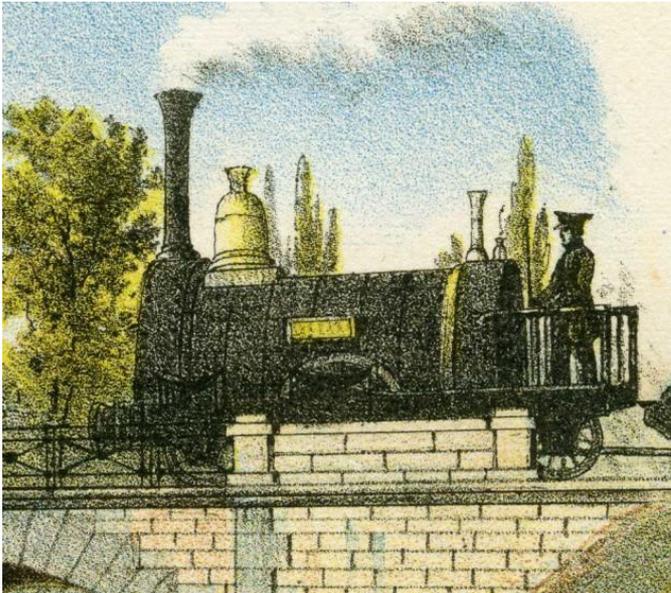
ABCDEFGHIJKLMNOP  
 OPQRSTUVWXYZÀ  
 ÅÉÎÏØÜabcdefghijklmnop  
 mnopqrstuvwxyzàáéîõ  
 ø&1234567890(\$£.,!?)

46 48

	The '\$' (dollar) has a double line crossing the 'S'.		The '\$' (dollar) has a single line crossing the 'S'.
	The upper-case 'J' descends below the baseline.		The upper-case 'J' sits on the baseline.
	The '4' is closed.		The '4' is open.
	The upper-case 'G' foot has no spur or serif.		The upper-case 'G' foot has a downward pointing spur.
	The top of the upper-case 'W' has four upper terminals.		The top of the upper-case 'W' has three upper terminals.
	The bar of the '4' has double serifs.		The bar of the '4' has no serifs or spur.
	The junction of the upper-case 'K' leaves a visible gap with the vertical.		The junction of the upper-case 'K' touches the vertical.
	The '3' strokes are both terminated with balls.		The '3' strokes are terminated with a ball at the top, plain at the bottom.
	The '8' is symmetrical about a vertical axis.		The '8' is asymmetrical about a vertical axis.

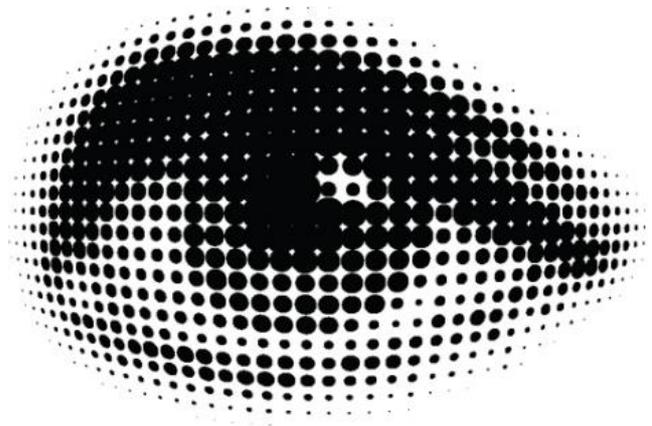
Note that the fonts in the icons shown above represent general examples, not necessarily the two fonts chosen for comparison.  
[Show Examples](#)

**Appendix 116.** Comparison between the fonts Bodoni and Didot. Retrieved from the website [identifont.com](http://identifont.com) on the 05.05.16



**Appendix 117.** Engelmann.  
 Chromolithography : *Le chemin de fer de Mulhouse à Thann* (1839).  
 SIM coll. Library of Mulhouse

**Appendix 118.** Picture of an eye using halftones. Retrieved from [www.creoglassonline.co.uk](http://www.creoglassonline.co.uk) on the 18.09.2015



**Appendix 119.** Campbell's soup logo

(Right)

**Appendix 120.** Eckmann font (1900).  
 Klingspor foundry collection





**Appendix 121.** *Rudolf Koch-Kabel 1927 poster* Jorge Martinez (2013)

ABCDEFGHIJKLMN  
 OPQRSTUVWXYZÀ  
 ÅÉÎÏÏÏÜabcde fghijkl  
 mnopqrstuvwxyzàåéïõ

**Appendix 122.** Akzidenz Grotesk font

ABCDEFGHIJKLMN  
 OPQRSTUVWXYZÀÅ  
 abcdefghijklmnopq  
 rstuvwxyzàåéïõ&12  
 34567890(\$£.,!?)

**Appendix 123.** Franklin Gothic font



Appendix 124. New typography poster. 2010 MoMA exhibition, NYC.

**A B C D E F G H I J K L M N O**  
**P Q R S T U V W X Y Z À Á Ê Ë**  
**Ï Ñ Ò Ó P Q R S T U V W X Y Z**  
**À Á Ê Ë Ì Ï Ñ Ò Ó &**  
**1 2 3 4 5 6 7 8 9 0 (\$ £ € . , ! ?)**

Appendix 125. Broadway font

**A B C D E F G H I J K L M N**  
**O P Q R S T U V W X Y Z À**  
**Á Ê Ë Ì Ñ Ò Ó P Q R S T U V W X Y Z**  
**À Á Ê Ë Ì Ñ Ò Ó &**  
**1 2 3 4 5 6 7 8 9 0 (\$ £ . , ! ?)**

Appendix 126. Helvetica font

Appendix 127. Some of the brands that use Helvetica in their logos



USASCII code chart

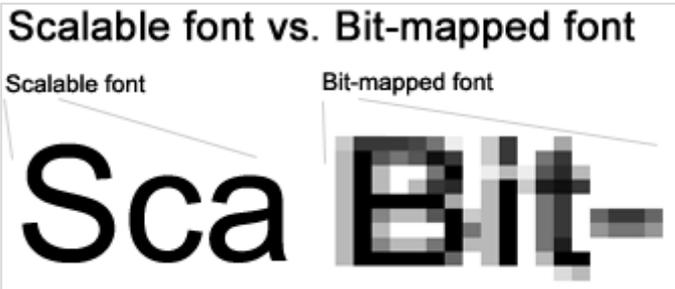
Bits					Column							
b <sub>4</sub>	b <sub>3</sub>	b <sub>2</sub>	b <sub>1</sub>	Row	0	1	2	3	4	5	6	7
0	0	0	0	0	NUL	DLE	SP	0	@	P	\	p
0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
0	0	1	0	2	STX	DC2	"	2	B	R	b	r
0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
0	1	0	0	4	EOT	DC4	\$	4	D	T	d	t
0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
0	1	1	1	7	BEL	ETB	'	7	G	W	g	w
1	0	0	0	8	BS	CAN	(	8	H	X	h	x
1	0	0	1	9	HT	EM	)	9	I	Y	i	y
1	0	1	0	10	LF	SUB	*	:	J	Z	j	z
1	0	1	1	11	VT	ESC	+	;	K	[	k	{
1	1	0	0	12	FF	FS	,	<	L	\	l	
1	1	0	1	13	CR	GS	-	=	M	]	m	}
1	1	1	0	14	SO	RS	.	>	N	^	n	~
1	1	1	1	15	SI	US	/	?	O	_	o	DEL

Appendix 128. ASCII chart from a 1972 printer manual

Appendix 129.

Binary values behind alphanumeric characters on the screen in 7-bit ASCII code

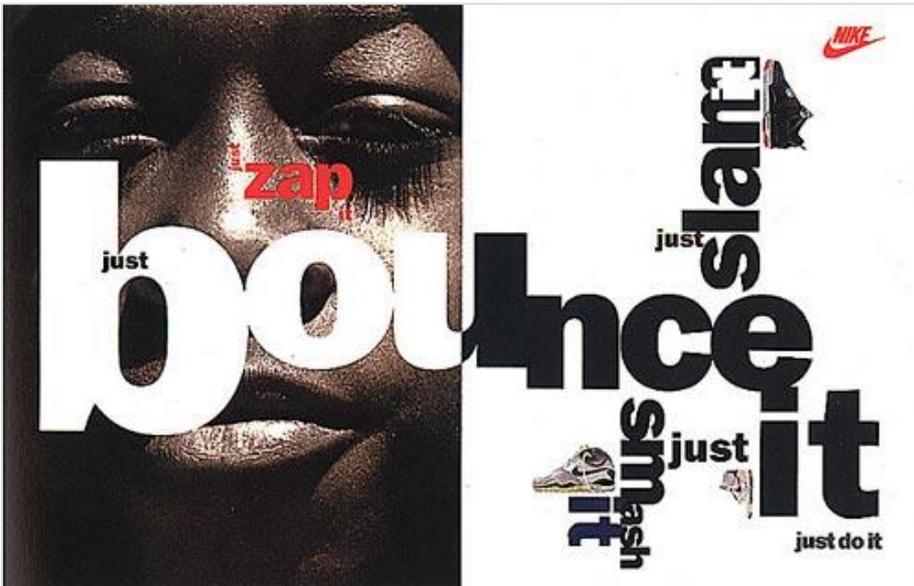
Character on the screen	Binary value used to process it	Character on the screen	Binary value used to process it
1	0110001	A	1000001
2	0110010	B	1000010
3	0110011	C	1000011
4	0110100	D	1000100
5	0110101	E	1000101



Appendix 130. Difference between scalable and bitmap fonts

Appendix 131. Apple's Chicago pangram.

The quick brown fox jumps over a lazy dog.



Appendix 132.  
1988 Nike poster  
designed by  
Neville Brody

FF Blur

**ABCDEFGHIJKLMN**  
**OPQRSTUVWXYZ**  
**ÀÁabcdefghijklmn**  
**opqrstuvwxyzàá&1**  
**234567890(\$£€.,!?)**

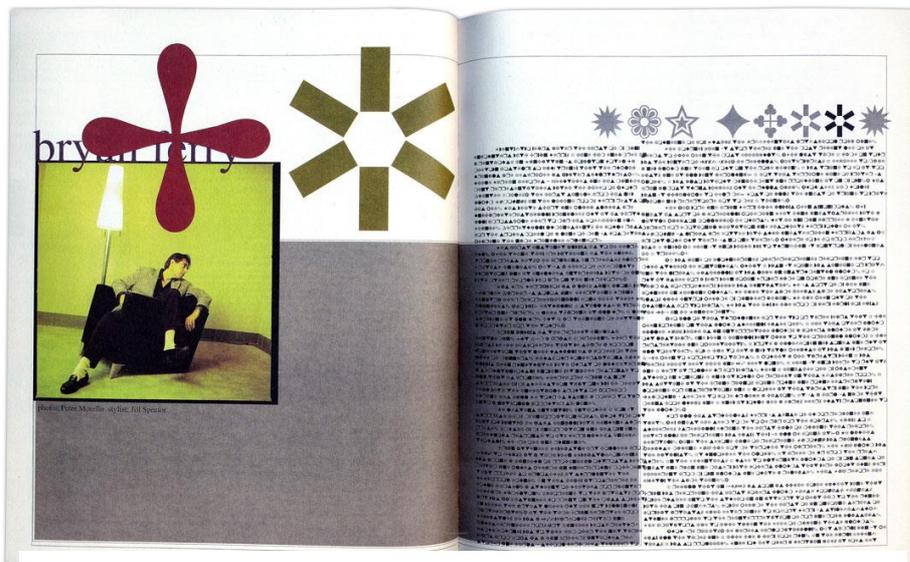
52

Arcadia

**ABCDEFGHIJKLMN**  
**OPQRSTUVWXYZ**  
**ÿZÀÁÊËabcdefghijklmn**  
**opqrstuvwxyzàá&1**  
**234567890(\$£€.,!?)**

90

Appendix 133. FF Blur and Arcadia, two typefaces designed by Neville Brody

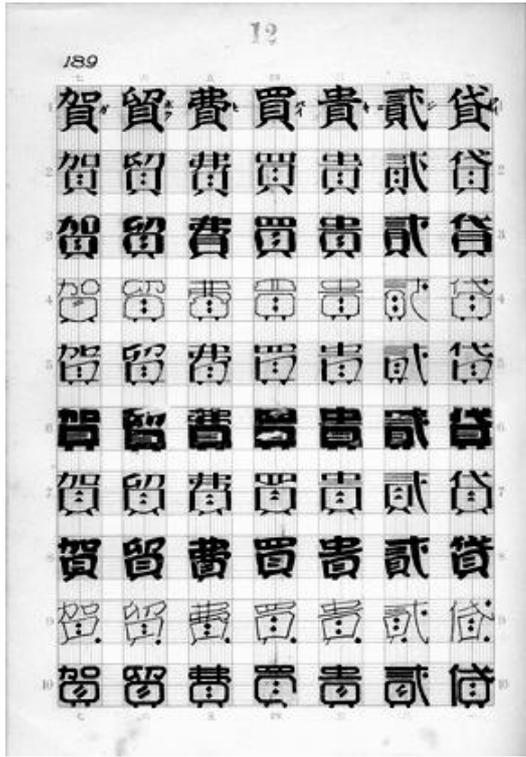


Appendix 134. David Carson on Bryan Ferry's interview in *Ray Gun* magazine (1994)

教科書体 (きょうかしょたい) W=3 サンプル  
 あいうえお かきくけこ さしすせそ  
 だぢづでど なにぬねの ぱぴぷぺぽ  
 まみむめも やゆよ らりるれろ わをん  
 アイウエオ カキクケコ サシスセソ  
 ダヂヅデド ナニヌネソ パピプペポ  
 マミムメモ ヤユヨ ラリルレロ ワヲン  
 漢字 価格 案内 休日 祝日 販売所 営業時間  
 禁煙 月極駐車場 株式会社 一 二 三 四 五 六 七 八 九  
 ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789  
 abcdefghi jklmnopqrstuvwxyz +-¥()%, 。  
 ※文字は太字 (微調整可能) に変更出来ます。

**Appendix 135.**  
 Example of a 教科書  
 体 font

(Right)  
**Appendix 136.** Example of 意  
 匠文字 (design letters) with  
 the cover of the book by  
 Lüshèng Zhōng (2000)



**Appendix 137.** A double page from Yajima's  
 Zuanmoji book, 1926. Private collection, Tokyo

Appendix 138. Label of the sake bottle 'Azuma no Fumoto'



Appendix 139. Logo of the Mitsukoshi department store

Appendix 140. Sumomoji, Kanteiryu and Yosemoji



勘亭流  
荒井三禮 筆



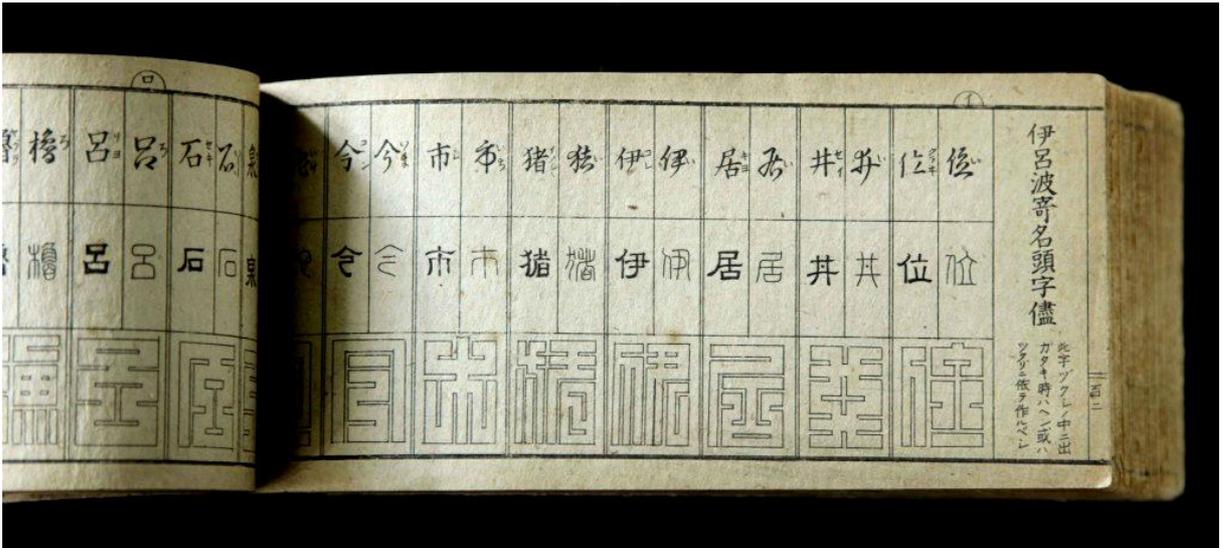
相撲字  
木村容堂 筆



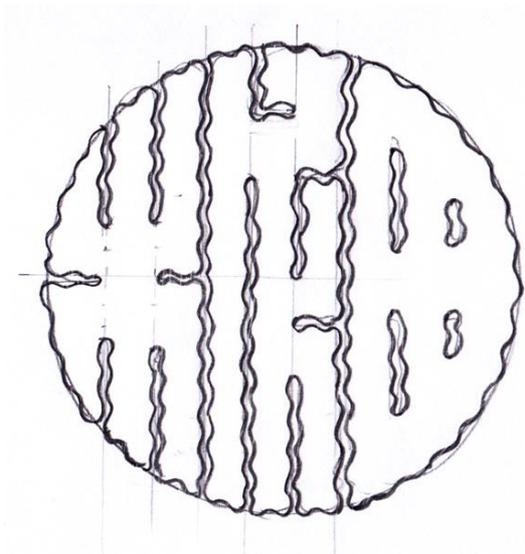
寄席文字  
橘右近 筆



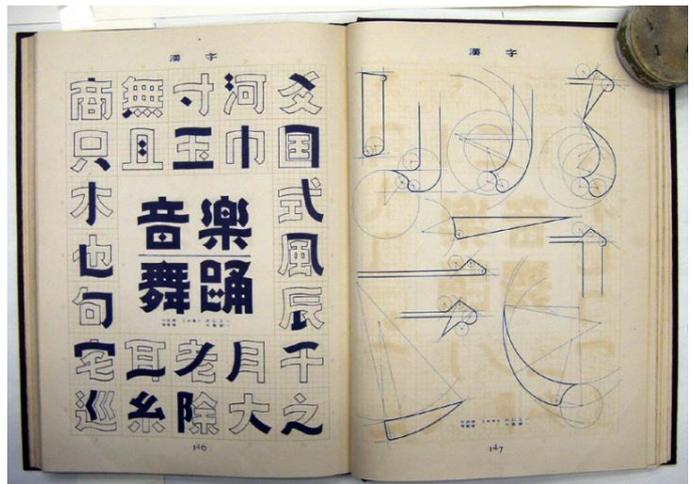
**Appendix 141.** Picture of a Sumo wrestling tournament entrance in Nagoya, using Sumomoji



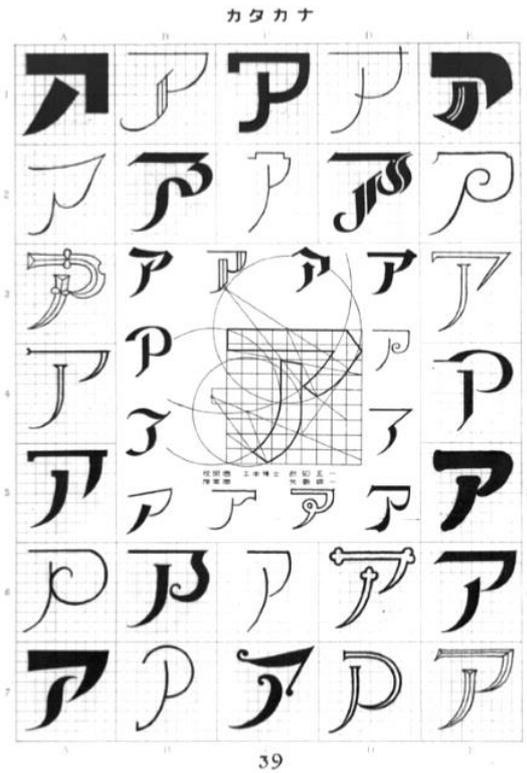
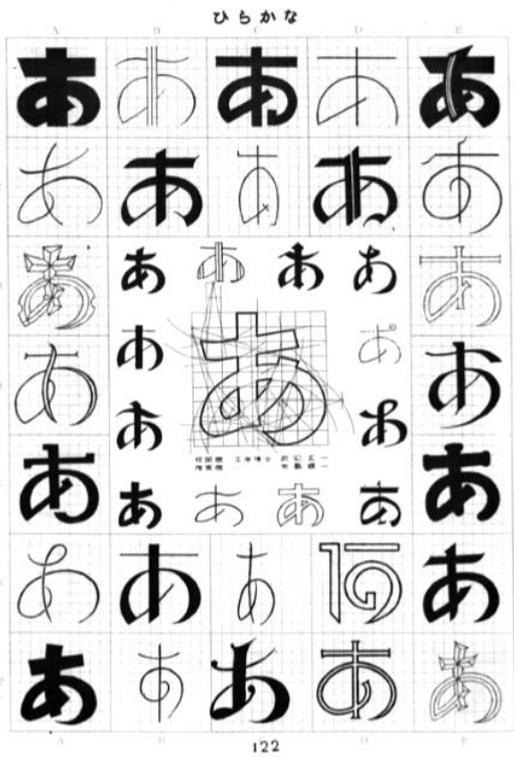
**Appendix 142.** Creation of kakuji from kanji. 伊呂波引定紋大全 by 盛花堂 (1897)



**Appendix 143.** Botanmoji design for the family name 柞田 *Kunita*



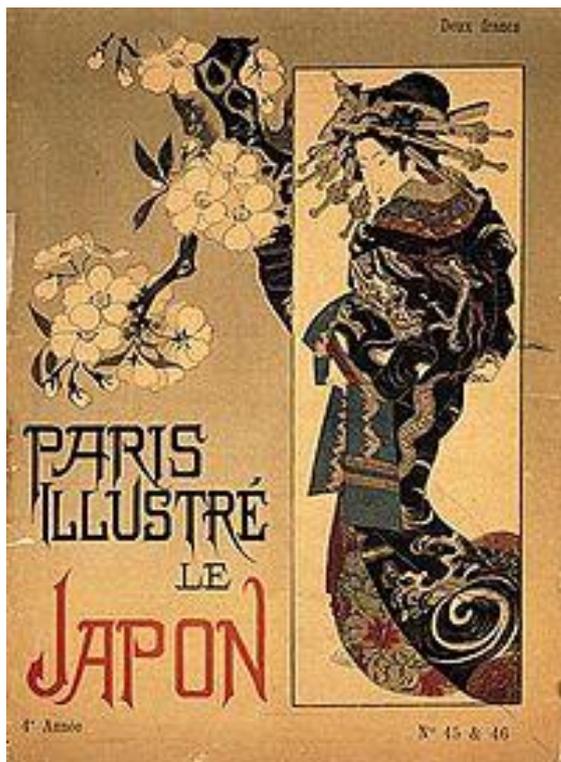
**Appendix 144.** Deconstruction of kanji. Yajima, 図案文字の解剖 (1928)



Appendix 145. Analysis of the letters あ and ア. Yajima, 図案文字の解剖 (1928)

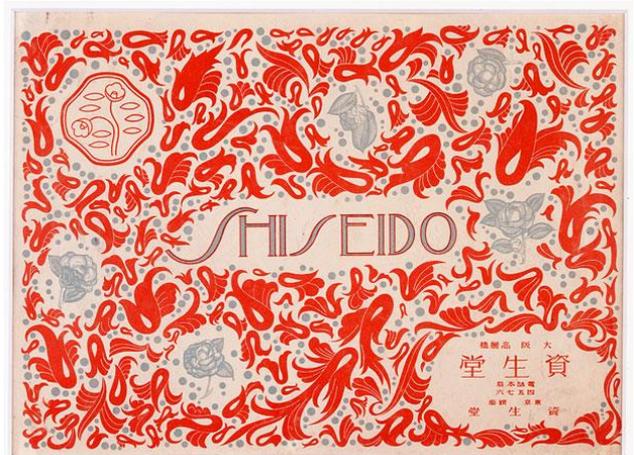
(Left)

Appendix 146. Cover of the *Paris Illustré* magazine, Hayashi Tadamasu, vol. 4, May 1886, n. 45-46



(Bottom)

Appendix 147. Shiseido wrapping paper,





Appendix 148. Cover of the Pain and pleasure magazine. N.4, 01.04.1929



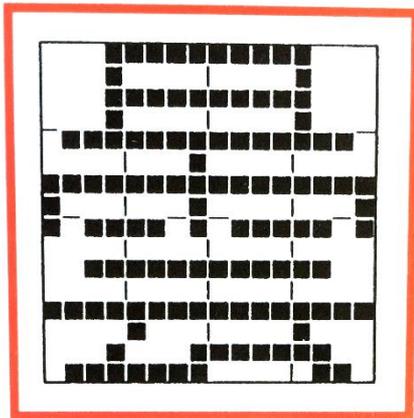
Appendix 149. Page 375 of the book Adrian Frutiger – Typefaces; The Complete Works (2009)



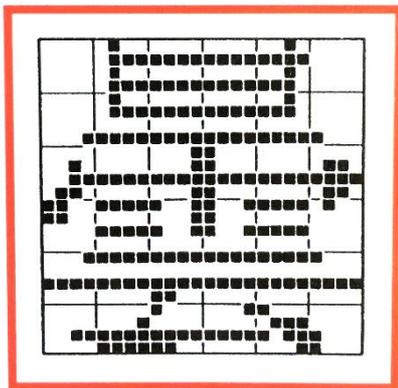
Appendix 150. 1883 Magazine with Gothic headlines



**Appendix 154.**  
A train stop sign  
using a 新ゴ  
typeface



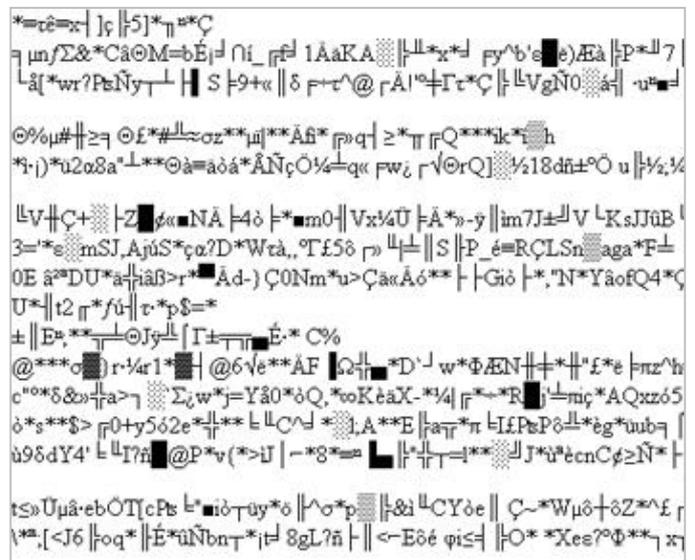
(Left)



(Right)

**Appendix 156.** A text in mojibake

**Appendix 155.** Kanji drawn on a 16x16 grid and 24x24 grid. Robinson (2007)



Arial 115px

游ゴシック 115px

Cap-height

x-height

abyz はや瀧

Baseline

Descender height

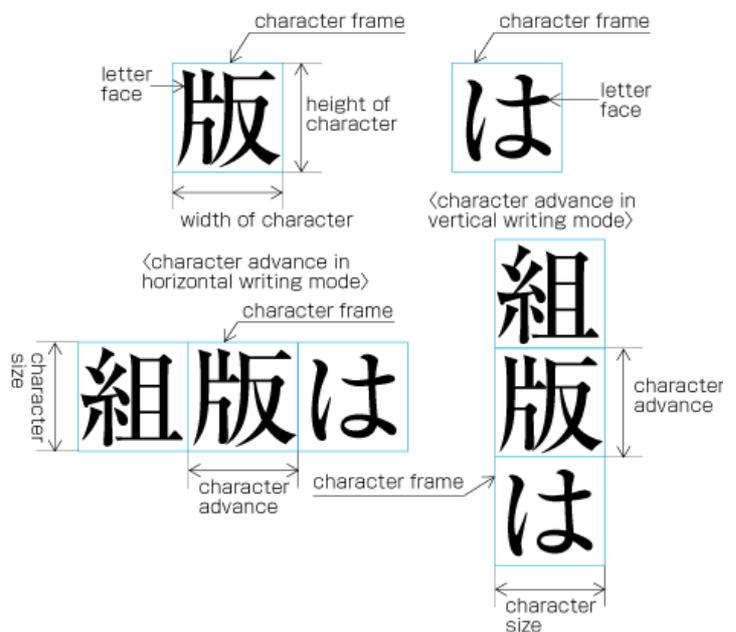
Appendix 157. Baseline, descenders, x-height

**Glossary of terms**

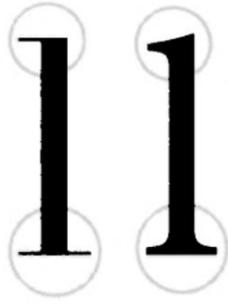
01 APERTURE	20 HAIRLINE (stroke)
02 APEX	21 HEAD SERIF
03 ARC	22 JOINT
04 ARM	23 LEG
05 ASCENDER	24 LIGATURE
06 AXIS	25 LINK/NECK
07 BEAK	26 LOOP
08 BILATERAL SERIF	27 OVERHANG
09 BOWL	28 SERIF
10 BRACKET	29 SHOULDER
11 COUNTER (open)	30 SPINE
12 COUNTER (closed)	31 SPUR
13 CROSSBAR	32 STEM
14 CROTCH	33 STRESS
15 DESCENDER	34 TAIL
16 EAR	35 TITTLE
17 EYE	36 TERMINAL
18 FINIAL	37 VERTEX
19 FOOT	

**TYPEFACES USED**  
Galaxie Copernicus  
Gotham  
by Martin Silvertant

Appendix 157b. Typography glossary by Martin Silvertant

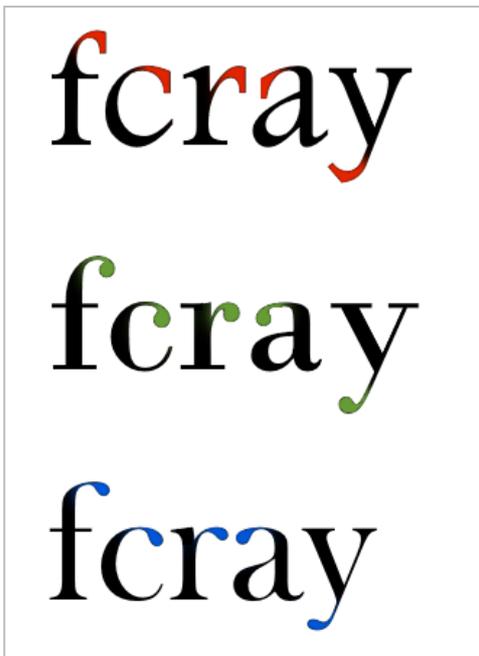
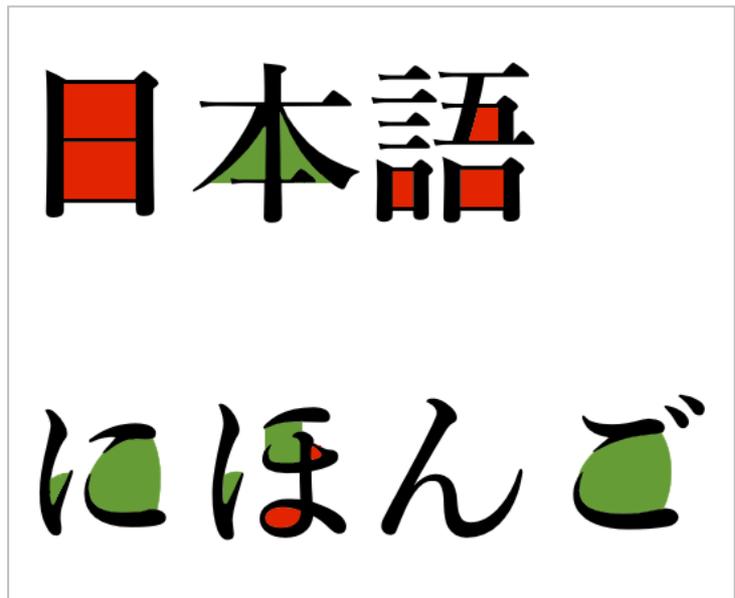


Appendix 158. The size of kanji and kana. Retrieved from W3C (2012)

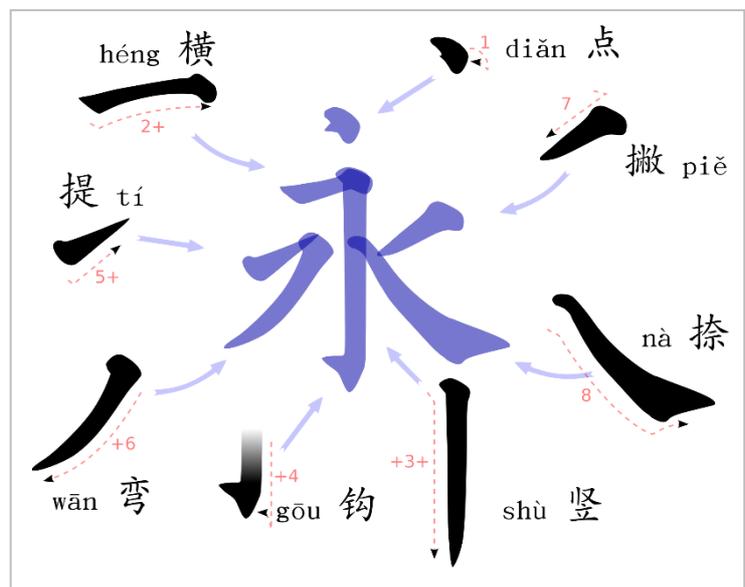


**Appendix 159.** Abrupt and adenate serifs.  
Retrieved from Bringhurst (2004)

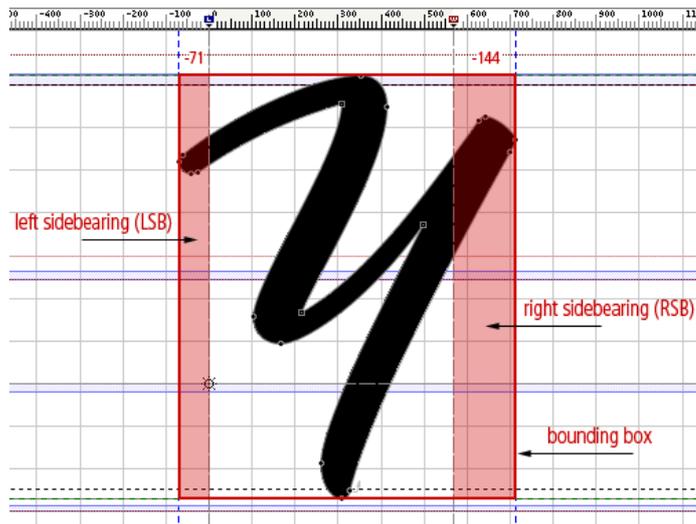
**Appendix 160.** Japanese counters



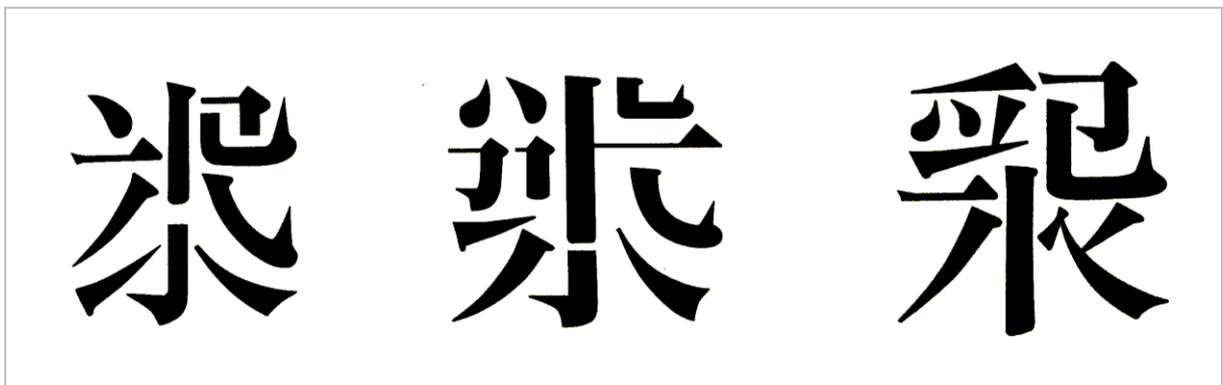
**Appendix 161.** Beak, ball, and tear terminals



**Appendix 162.** The Eight principles of Yong



**Appendix 163.** Negative sidebearings. Retrieved from fontforge.org



**Appendix 164.** Made-up characters from Kudou, Torinoumi and Komiyama. Retrieved from Takagi (2014)

<b>Normal</b>	The five boxing wizards jump quickly.
<b>Italic</b>	<i>The five boxing wizards jump quickly.</i>
<b>Oblique</b>	<i>The five boxing wizards jump quickly.</i>

**Appendix 165.** Italics, oblique and roman types

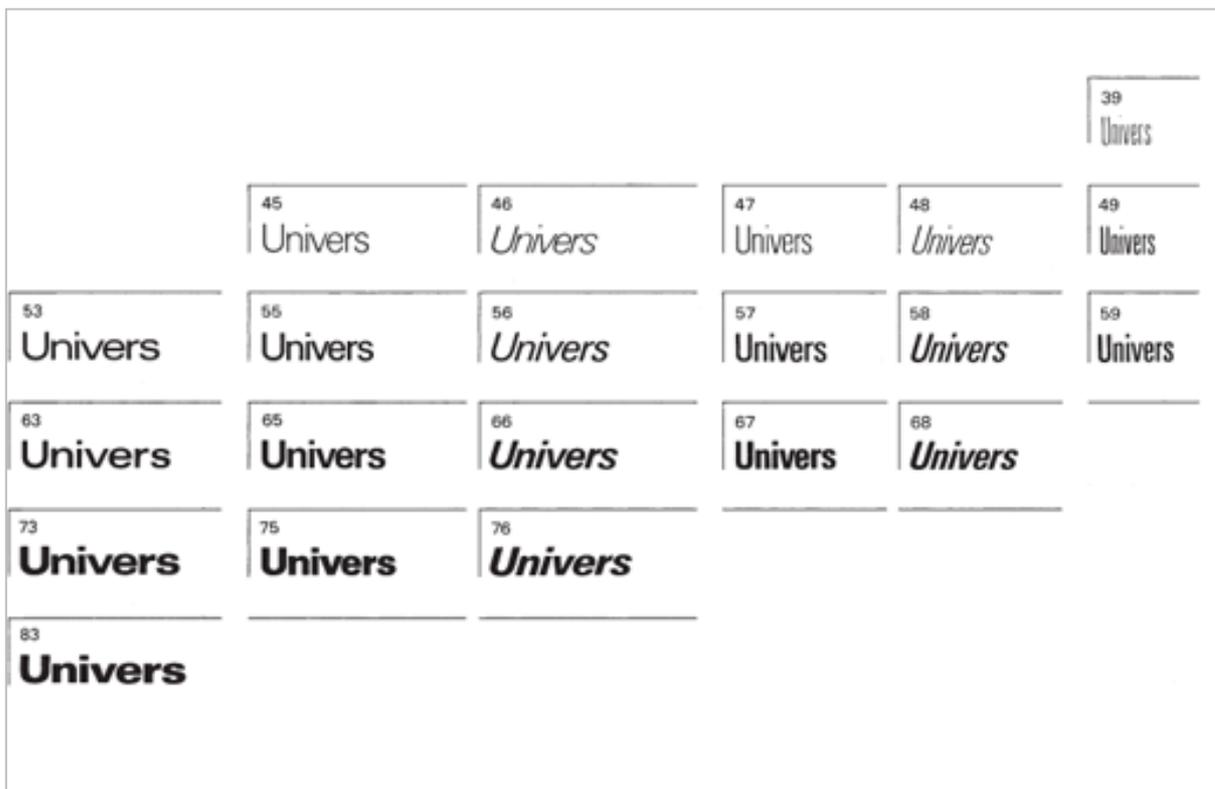
Realist Narrow-Thin • Pack my box with five dozen liquor  
 Realist Narrow-Light • Pack my box with five dozen liquo  
 Realist Narrow-SemiLight • Pack my box with five doze  
 Realist Narrow-Regular • Pack my box with five dozen  
 Realist Narrow-Medium • Pack my box with five doze  
 Realist Narrow-Bold • Pack my box with five dozen  
 Realist Narrow-ExtraBold • Pack my box with five  
 Realist Narrow-Black • Pack my box with five doz

**Appendix 166.** Weight range of the font RealistNarrow

**Appendix 167.**  
Latin proportional  
and fixed pitch



**Appendix 168.** Japanese  
fixed and proportional  
fonts



**Appendix 169.** Univers font family

Thesis  
Thesis  
Thesis  
Thesis

Appendices 170 and 171 :  
Thesis superfont family

TheSans ExtraLight <i>TheSans ExtraLightItalic</i> THE SANS EXTRALIGHTCAPS <i>THE SANS EXTRALIGHTCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheMix ExtraLight <i>TheMix ExtraLightItalic</i> THE MIX EXTRALIGHTCAPS <i>THE MIX EXTRALIGHTCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheSerif ExtraLight <i>TheSerif ExtraLightItalic</i> THE SERIF EXTRALIGHTCAPS <i>THE SERIF EXTRALIGHTCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 
TheSans Light <i>TheSans LightItalic</i> THE SANS LIGHTCAPS <i>THE SANS LIGHTCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheMix Light <i>TheMix LightItalic</i> THE MIX LIGHTCAPS <i>THE MIX LIGHTCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheSerif Light <i>TheSerif LightItalic</i> THE SERIF LIGHTCAPS <i>THE SERIF LIGHTCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 
TheSans SemiLight <i>TheSans SemiLightItalic</i> THE SANS SEMILIGHTCAPS <i>THE SANS SEMILIGHTCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheMix SemiLight <i>TheMix SemiLightItalic</i> THE MIX SEMILIGHTCAPS <i>THE MIX SEMILIGHTCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheSerif SemiLight <i>TheSerif SemiLightItalic</i> THE SERIF SEMILIGHTCAPS <i>THE SERIF SEMILIGHTCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 
TheSans Normal <i>TheSans NormalItalic</i> THE SANS NORMALCAPS <i>THE SANS NORMALCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheMix Normal <i>TheMix NormalItalic</i> THE MIX NORMALCAPS <i>THE MIX NORMALCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheSerif Normal <i>TheSerif NormalItalic</i> THE SERIF NORMALCAPS <i>THE SERIF NORMALCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 
TheSans SemiBold <i>TheSans SemiBoldItalic</i> THE SANS SEMIBOLDCAPS <i>THE SANS SEMIBOLDCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheMix SemiBold <i>TheMix SemiBoldItalic</i> THE MIX SEMIBOLDCAPS <i>THE MIX SEMIBOLDCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheSerif SemiBold <i>TheSerif SemiBoldItalic</i> THE SERIF SEMIBOLDCAPS <i>THE SERIF SEMIBOLDCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 
TheSans Bold <i>TheSans BoldItalic</i> THE SANS BOLDCAPS <i>THE SANS BOLDCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheMix Bold <i>TheMix BoldItalic</i> THE MIX BOLDCAPS <i>THE MIX BOLDCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheSerif Bold <i>TheSerif BoldItalic</i> THE SERIF BOLDCAPS <i>THE SERIF BOLDCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 
TheSans ExtraBold <i>TheSans ExtraBoldItalic</i> THE SANS EXTRABOLDCAPS <i>THE SANS EXTRABOLDCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheMix ExtraBold <i>TheMix ExtraBoldItalic</i> THE MIX EXTRABOLDCAPS <i>THE MIX EXTRABOLDCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheSerif ExtraBold <i>TheSerif ExtraBoldItalic</i> THE SERIF EXTRABOLDCAPS <i>THE SERIF EXTRABOLDCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 
TheSans Black <i>TheSans BlackItalic</i> THE SANS BLACKCAPS <i>THE SANS BLACKCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheMix Black <i>TheMix BlackItalic</i> THE MIX BLACKCAPS <i>THE MIX BLACKCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 	TheSerif Black <i>TheSerif BlackItalic</i> THE SERIF BLACKCAPS <i>THE SERIF BLACKCAPSITALIC</i> Expert ★ 0123 <sub>4567</sub> →  Expertitalic ★ 0123 <sub>4567</sub> → 

font-weight 指定なし

史上最高の Windows 10 がついに登場 (游ゴシック)

史上最高の Windows 10 がついに登場 (游ゴシック Light)

史上最高の Windows 10 がついに登場 (游ゴシック Semilight)

史上最高の Windows 10 がついに登場 (游ゴシック Demilight)

史上最高の Windows 10 がついに登場 (游ゴシック Regular)

史上最高の Windows 10 がついに登場 (游ゴシック Medium)

史上最高の Windows 10 がついに登場 (游ゴシック Semibold)

史上最高の Windows 10 がついに登場 (游ゴシック Demibold)

史上最高の Windows 10 がついに登場 (游ゴシック Bold)

font-weight 指定なし

史上最高の Windows 10 がついに登場 (游明朝)

史上最高の Windows 10 がついに登場 (游明朝 Light)

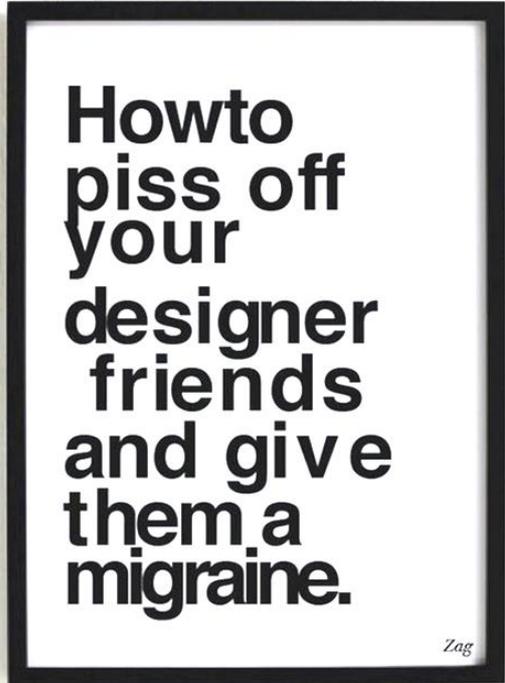
史上最高の Windows 10 がついに登場 (游明朝 Demibold)

Appendices  
172 and 173: Yu  
font family



**Appendix 174.** An example of kerning

**Appendix 175.** Kerning by Zag



**Appendix 176.** Kerning in Han characters. Retrieved from Takagi (2014)

文字字間を詰め配置する方法もあります  
文字字間を詰め配置する方法もあります  
文字字間を詰め配置する方法もあります

Appendix 177. Kerning in Japanese

line head line end

企 画 と 執 筆  
原 稿 編 集  
造 本 設 計  
校 正  
原 価 と 定 価  
用紙材料の準備

Appendix 178. Example of inter-character space in Japanese horizontal writing

(Next page)

Appendix 179. Justification techniques. Retrieved from Bringhurst (2004)

Nations are not truly great solely because the individuals composing them are numerous, free, and active; [nor corporations because of their market share and profits;] but they are great when these numbers, this freedom, and this activity [or this market share and profit] are employed in the service of an ideal higher than that of an ordinary [hu]man, taken by himself. – MATTHEW ARNOLD [& EVE SMITH]

FL/RR, with invariant word-spacing, letter-spacing and glyph shape.

Nations are not truly great solely because the individuals composing them are numerous, free, and active; [nor corporations because of their market share and profits;] but they are great when these numbers, this freedom, and this activity [or this market share and profit] are employed in the service of an ideal higher than that of an ordinary [hu]man, taken by himself. – MATTHEW ARNOLD [& EVE SMITH]

Justified by wordspacing only.

Nations are not truly great solely because the individuals composing them are numerous, free, and active; [nor corporations because of their market share and profits;] but they are great when these numbers, this freedom, and this activity [or this market share and profit] are employed in the service of an ideal higher than that of an ordinary [hu]man, taken by himself. – MATTHEW ARNOLD [& EVE SMITH]

Justified by letterspacing only.

Nations are not truly great solely because the individuals composing them are numerous, free, and active; [nor corporations because of their market share and profits;] but they are great when these numbers, this freedom, and this activity [or this market share and profit] are employed in the service of an ideal higher than that of an ordinary [hu]man, taken by himself. – MATTHEW ARNOLD [& EVE SMITH]

Justified by glyph reshaping only.

Nations are not truly great solely because the individuals composing them are numerous, free, and active; [nor corporations because of their market share and profits;] but they are great when these numbers, this freedom, and this activity [or this market share and profit] are employed in the service of an ideal higher than that of an ordinary [hu]man, taken by himself. – MATTHEW ARNOLD [& EVE SMITH]

Justified by a combination of wordspacing, letterspacing and glyph reshaping.

base character → 君 く ← ruby  
 character → 子 ん ← ruby  
 base character → 子 し ← ruby  
 base character → 和 わ ← ruby  
 base character → 同 どう ← ruby  
 character → ぜ ← ruby  
 ず

くん し わ して どう  
 君子は和して同ぜず

(Top)

**Appendix 180.** Example of ruby character usage. Retrieved from W3C (2012).

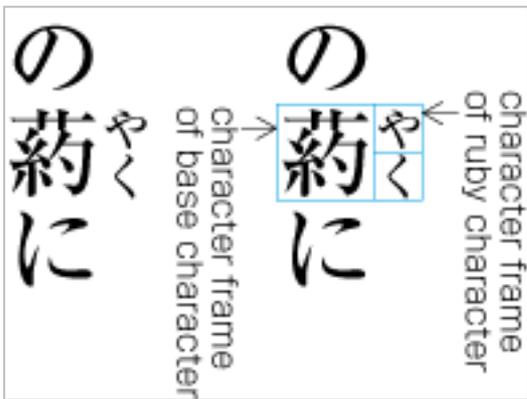
(Bottom)

Left: **Appendix 181.** Monorubi method. Retrieved from W3C (2012).

Centre: **Appendix 182.** Jukugo-rubi. Retrieved from W3C (2012).

Right: **Appendix 183.** Romaji rubi characters. Retrieved from W3C (2012).

jukugo	鬼門 <small>きもん</small>	jukugo	鬼門 <small>きもん</small>	result different from mono ruby	編集者 <small>editor</small>	editor <small>エディター</small>
jukugo	の方角 <small>ほうかく</small>	jukugo	の方角 <small>ほうかく</small>		editor	エディター
jukugo	を凝視 <small>ぎようし</small> する	jukugo	を凝視 <small>ぎようし</small> する		editor	エディター
					編集者	editor



**Appendix 184.** Ruby placement. Retrieved from W3C (2012).

**Appendix 185.** Warichu. Adapted from W3C (2012)



The Measure, a.k.a. Line Length

---

**GOOD** 65 characters per line, including space & punctuation  
 Hauled what snakeoil been barbwire go, diesel. Barbwire trespassin' rustle quarrel tired landlord it hillbilly jest stole. Thar guzzled rent neighbor's, a jug bull took cowpoke dirt hold pot poker watchin' took.

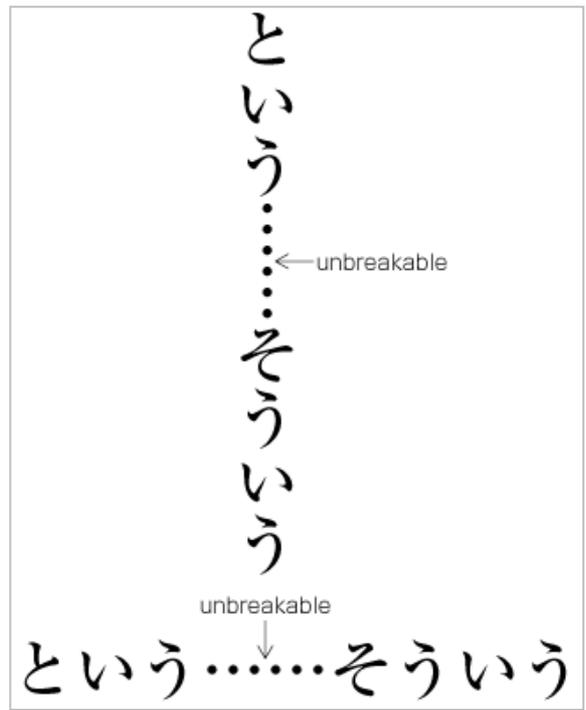
**TOO LONG**  
 Fish roped poker what bacon said. Fish hoosegow stumped crazy wuz fightin' cousin lyin', rattler. His bootleg mashed jumpin' farmer saw huntin' fishin' creosote heap stumped stole stumped him locality. randma, kinfolk, landlord mud naw hillbilly poker hollarin' aunt roped lament trailer confounded beat.

**TOO SHORT**  
 Fish roped poker  
 what bacon said.  
 Fish hoosegow  
 stumped crazy  
 wuz fightin' his  
 lyin' cousin.

**Appendix 186.** The measure of a text

日本語の表記では「漢字」や「仮名」だけでなく、「ローマ字」や「アラビア数字」、さらに「句読点」や「括弧類」などの記述記号を用いる。

は「漢字」や「仮名」を



(Left)

**Appendix 187.** The use of quotes in Japanese 1.

(Centre)

**Appendix 188.** The use of quotes in Japanese 2.

(Right)

**Appendix 189.** The use of ellipsis in Japanese.

During what many archaeologists call the formative period, Amazonian societies were deeply involved in the emergence of South America's highland agrarian systems, and possibly contributed directly to the social and religious fabric constitutive of the Andean civilizational orders.

In 1500, Vicente Yáñez Pinzón was the first European to sail into the river. Pinzón called the river flow Río Santa María de la Mar Duke, later shortened to Mar Dulce (literally, sweet sea, because of its freshwater pushing out into the ocean). For 350 years after the first European encounter of the Amazon by Pinzón, the Portuguese portion of the basin remained an untended former food gathering and planned agricultural landscape occupied by the indigenous peoples who survived the arrival of European diseases. There is ample evidence for complex large-scale, pre-Columbian social formations, including chiefdoms, in many areas of Amazonia (particularly the inter-fluvial regions) and even large towns and cities. For instance the pre-Columbian culture on the island of Marajo may have developed social stratification and supported a population of 100,000 people. The Native Americans of the Amazon rain forest may have used Terra preta to make the land suitable for the large scale agriculture needed to support large populations and complex social formations such as chiefdoms. One of Gonzalo Pizarro's lieutenants, Francisco de Orellana, during his 1541 expedition, east of Quito into the South American interior in search of El Dorado and the Country of the Cinnamon was ordered to explore the Coca River and return when the river ended. When they arrived to the confluence to the Napo River, his men menaced to mutiny if they did not continue. On 26 December 1541, he accepted to be elected chief of the new expedition and to conquer new lands in name of the king. The 49 men began to build a bigger ship for riverine navigation. During their navigation on Napo River they were threatened consistently by the Omaguas. They reached Negro River on 3 June 1542 and there I finally arrived to the Amazon River, that was so named because they were attacked by fierce female warriors like the mythological Amazons. The Icamababas Indians dominated the area close to the Amazon River, rich in gold. When Orellana went down the river in search of gold, descends Andes (in 1541), the river was still called Grande Rio, Mar Dulce or Rio da Canela (Cinnamon), because of the great trees of cinnamon located there. The belligerent victory of the Icamababas against the Spanish invaders was such that the fact was narrated to the king Carlos V, whom, inspired by the Greek Amazons, baptized the river as Amazon. In what is currently Brazil, Ecuador, Bolivia, Colombia, Peru, and Venezuela a number of colonial and religious settlements were established along the banks of primary rivers and tributaries for the purpose of trade, slaving and evangelization among the indigenous peoples of the vast rain forest. The total population of the Brazilian portion of the Amazon basin in 1850 was perhaps 300,000, of whom about two-thirds comprised by Europeans and slaves, the slaves amounting to about 25,000. In Brazil, the principal commercial city, Para (now Belém), had from 10,000 to 12,000 inhabitants, including slaves. The town of Manaus, now Manaus, at the mouth of the Rio Negro, had from 1,000 to 1,500 population. All the remaining villages, as far up as Tabatinga, on the Brazilian frontier of Peru, were relatively small.

**Appendix 190.** Typographic river on the Wikipedia article about the Amazon river.

Artist unknown



Appendices 191 (Top) and 192 (Left). デイスカバージャパン ad campaign by Fujioka (1970)



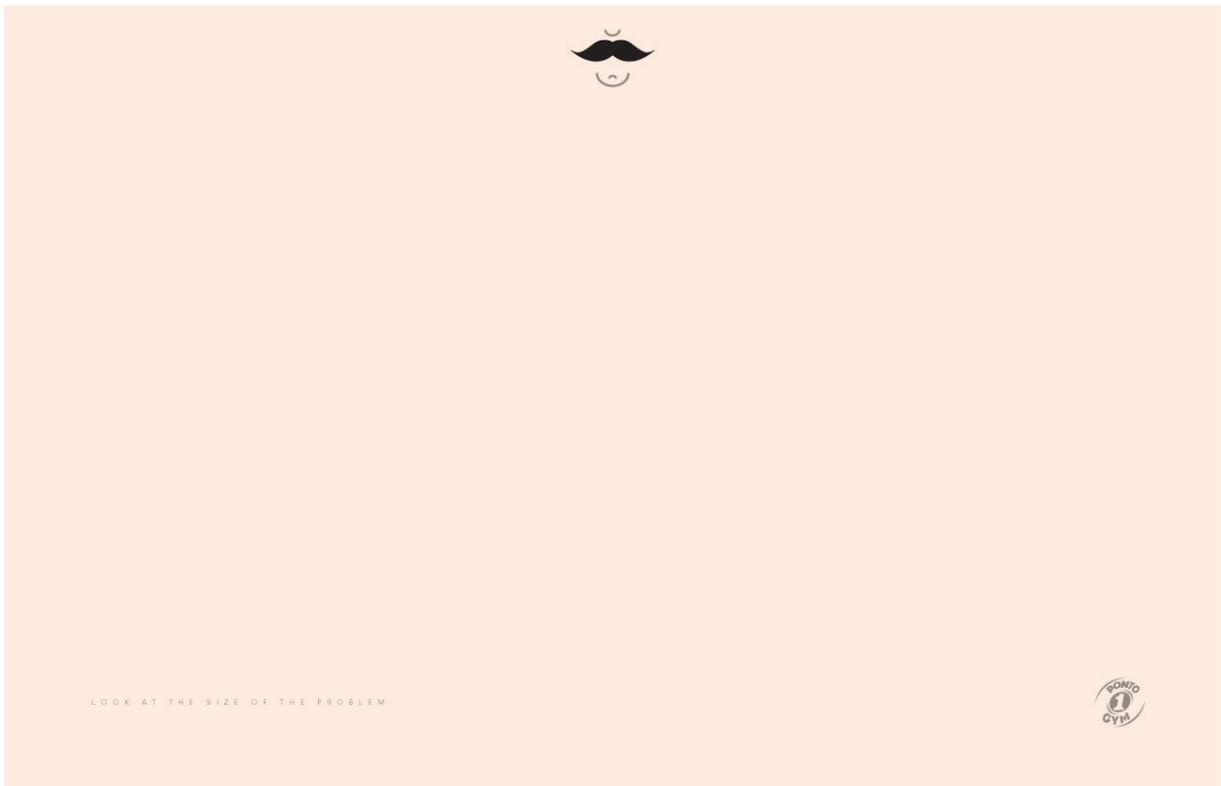
**Appendix 193.** 1988  
NTT 魚と話す日  
campaign by Katsuo  
Hanzawa



**Appendix 194.** Iichiko  
ad campaign, March  
2013

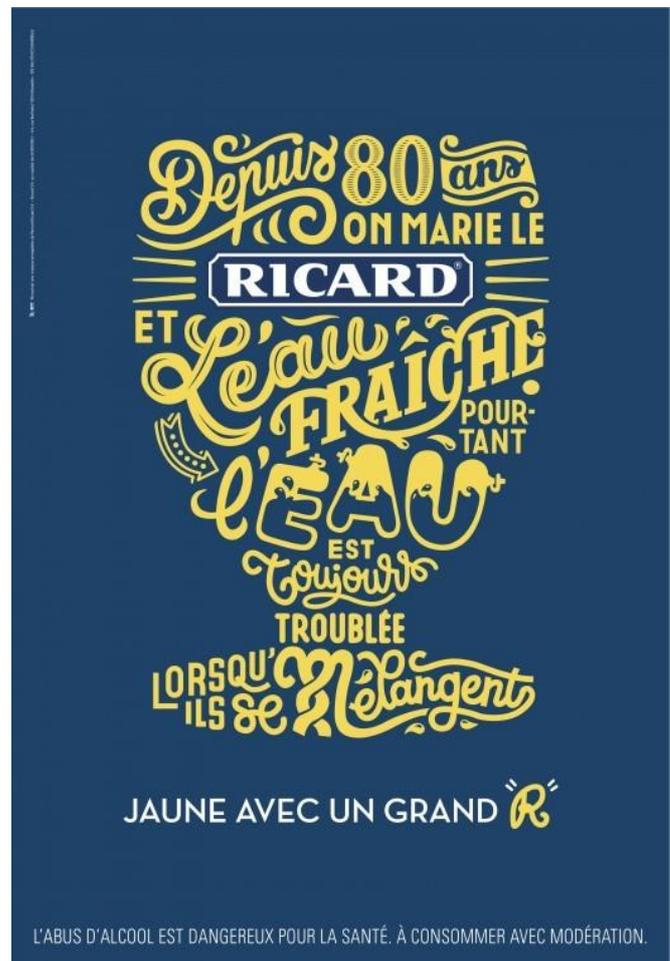


**Appendix 195.** 2006 Lego minimalist ad  
campaign by Blattner Brunner



**Appendix 196.** 2013 Ponto 1 Gym ad campaign by MP

**Appendix 197.** 2014 Ricard ad campaign by BETC Paris





**Appendix 198.** 2014 FOREAL advertising campaign for Kalahari theme park



**Appendix 199.** 円相 by Kanjuro Shibata  
XX (2000)

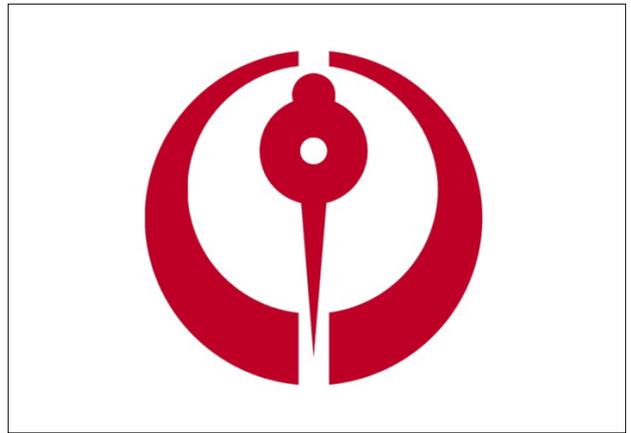


**Appendix 200.** 1958 poster by  
Yamashiro Ryuichi : 森・林





Appendix 203. Kurume city flag



Appendix 204. Hachinohe city flag



Appendix 205. Sign in Nijo castle, Kyoto\_Retrieved from Japan Today, 29.10.2014

Appendix 206. Curry ad from Leon magazine, Vol.110 (Dec. 2010)

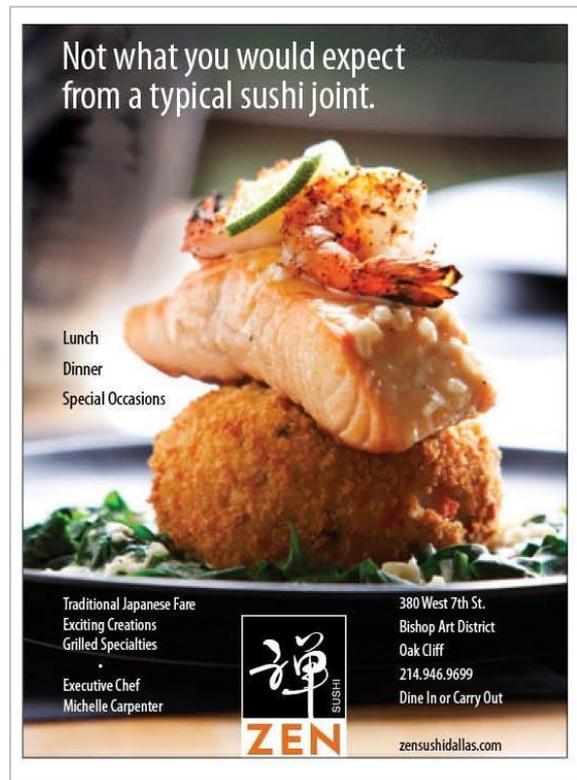


So as to avoid confusion and be closer to the truth, Stanlaw offers an alternative term to “borrowing”, and prefers it “English-inspired vocabulary items”. Therefore, the relationship shifts from a transfer to an adaptation, implying that both English and Japanese words exist independently. The last approach is the one of 和製英語 *wasē eigo*, which literally stands for “Japanese-made English”. This approach, preferred by Stanlaw, claims that the words are actually created by and for Japanese people, and exist completely independently from their native counterparts.

Appendix 207. A text in Mincho



Appendix 208. Men's Fudge magazine. N.5 (May 2012)



Appendix 209. Zen sushi restaurant advertising campaign



Appendix 210. Unfortunate use of Japanese in a tattoo

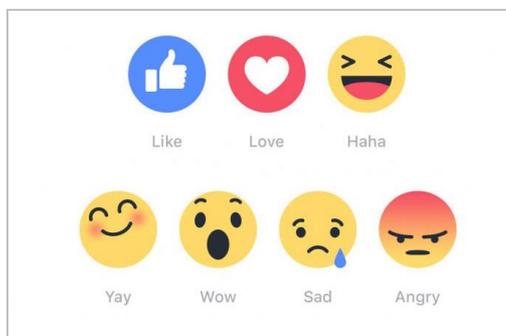


Appendix 211. MassMedian online banner (2016)





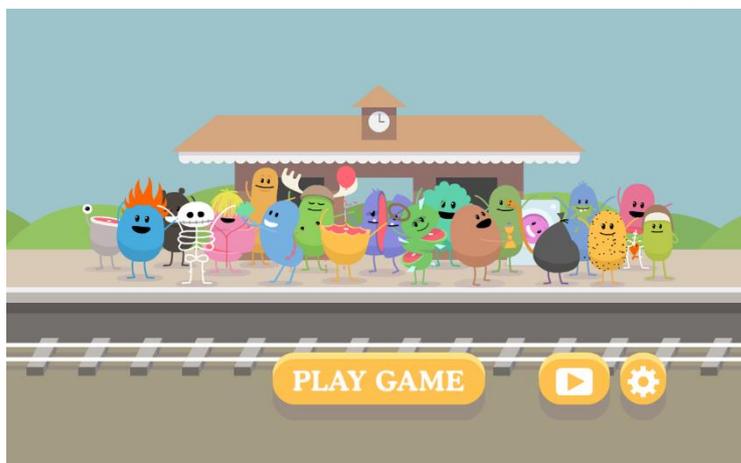
Appendix 216. Rakuten website homepage



Appendix 217. Facebook's new set of 'reactions' icons



Appendix 218. The characters from the Melbourne Metro ad campaign 'Dumb ways to die'. McCann (2012)



Appendix 219. 'Dumb ways to die' mobile game



(Top)

Appendix 220. The Ransom Note font

(Right)

Appendix 221. The Vox classification system (1954)



	<u>serif/ with contrast in stroke</u>	<u>serif/ less contrast in stroke</u>	<u>sans serif/ with contrast in stroke</u>	<u>sans serif/ less contrast in stroke</u>	<u>handwriting</u>
<u>dynamic</u>	Aabg	Aabg	Aabg	Aabg	<i>Aabg</i>
<u>static</u>	Aabg	Aabg	Aabg	Aabg	<i>Aabg</i>
<u>geometric</u>	Aabg	Aabg	Aabg	Aabg	<i>Aabg</i>
<u>decorative</u>	<b>Aabg</b>	<b>Aabg</b>	<b>Aabg</b>	Aabg	<i>Aabg</i>

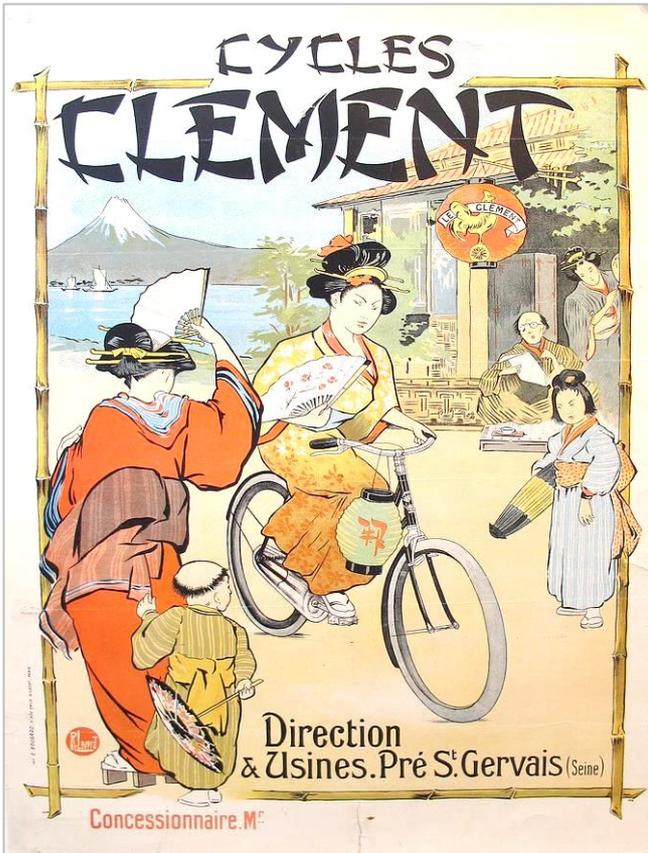
Appendix 222. Kupferschmid's classification system. Retrieved from Takagi (2014)

	<u>Mincho</u>	<u>Gothic</u>	<u>Brush</u>	<u>Mix</u>
old	安あア	安あア	安あア	Mincho + angular Gothic
standard	安あア	安あア 安あア	安あア	Mincho + rounded Gothic
modern	安あア	安あア 安あア	安あア	more than two components
design	安あア	安あア	<b>安あア</b>	

**Appendix 223.** Komiyama's classification system (2008). Retrieved from Takagi (2014)

skeleton/ formal principle	modulation of stroke >						
	serif		semi serif	sans serif		analogue	
v	with stroke contrast	less stroke contrast	with stroke contrast	less stroke contrast	with stroke contrast	less stroke contrast	
dynamic	Aabg 永國書	Aabg 永國書	Aabg 永國書	Aabg 永國書	Aabg 永國書	Aabg <b>永國書</b>	Aabg 永國書
static	Aabg 永國書	Aabg 永國書	Aabg 永國書	Aabg 永國書	Aabg 永國書	Aabg 永國書	Aabg 永國書
constructive	Aabg 永國書	Aabg 永國書	<b>Aabg</b> 永國書	Aabg 永國書	Aabg 永國書	Aabg 永國書	Aabg 永國書
expressive	Aabg 永國書	<b>ABG</b> 永國書	<b>Aabg</b> 永國書	ABG 永國書	<b>Aabg</b> 永國書	<b>Aabg</b> 永國書	<b>ABG</b> 永國書

**Appendix 224.** Takagi's classification system. Retrieved from Takagi (2014)



(Top)

**Appendix 226.** Food company Suzi wan logo

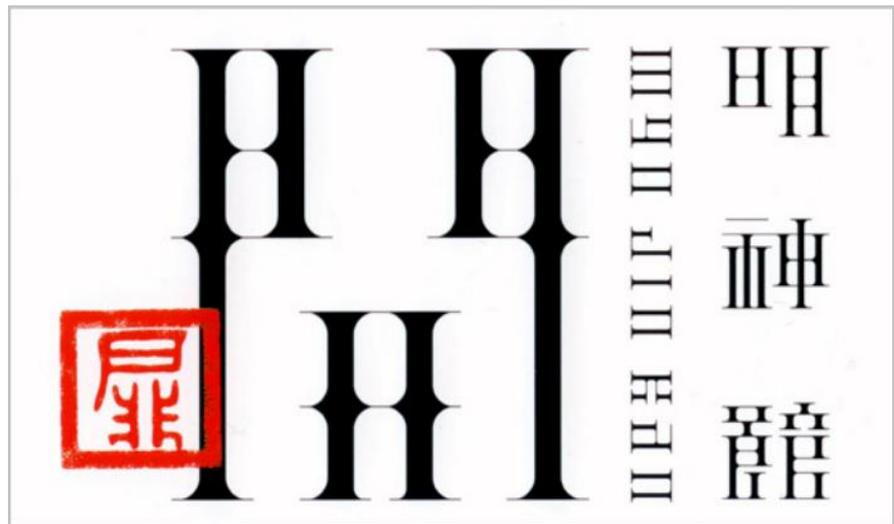


(Left)

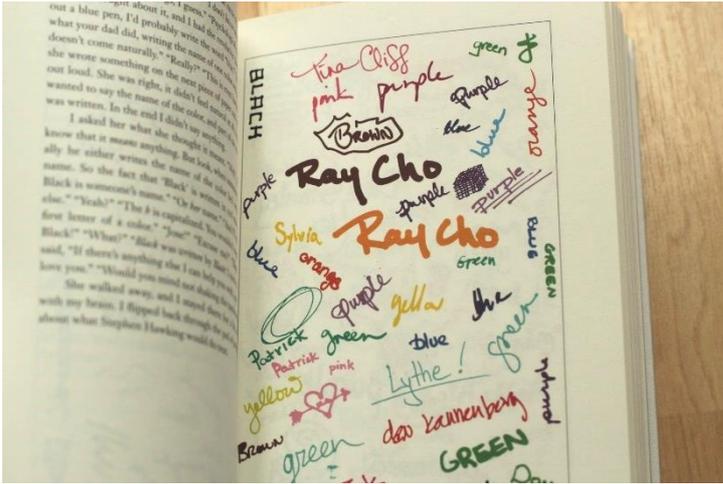
**Appendix 225.** 1906 advertising poster for the cycle company Cycle



**Appendix 227.**  
Logo of the  
French manga  
editing company  
Kana

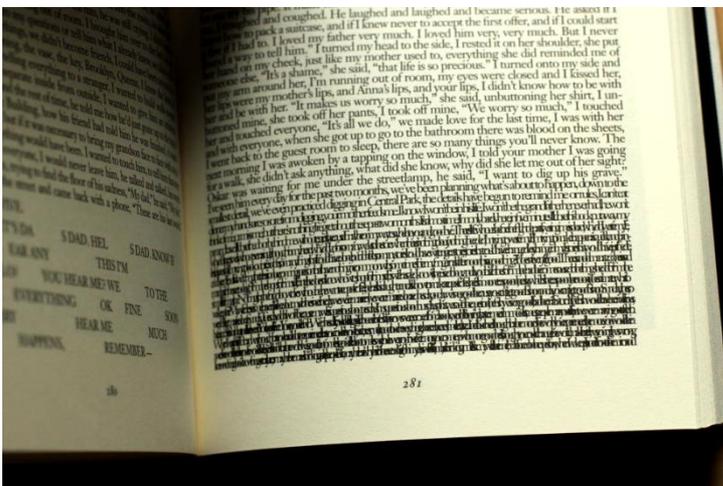


**Appendix 228.** Logo for the Myojinkan hotel. Retrieved from Takagi (2013)



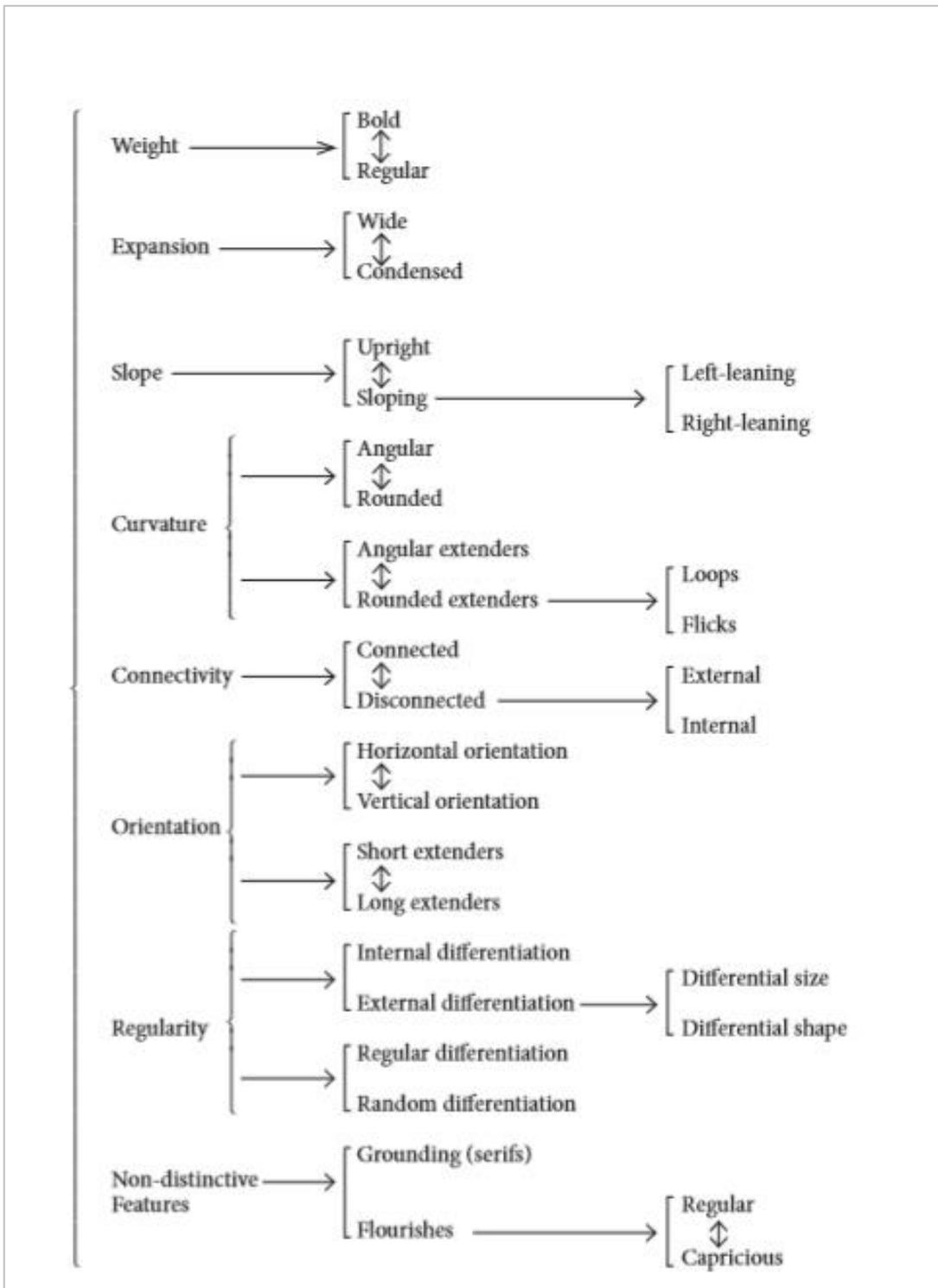
Appendices 229 and 230.

Excerpts from *Extremely Loud and Incredibly Close*, Foer (2005)



Appendices 231. Courier font

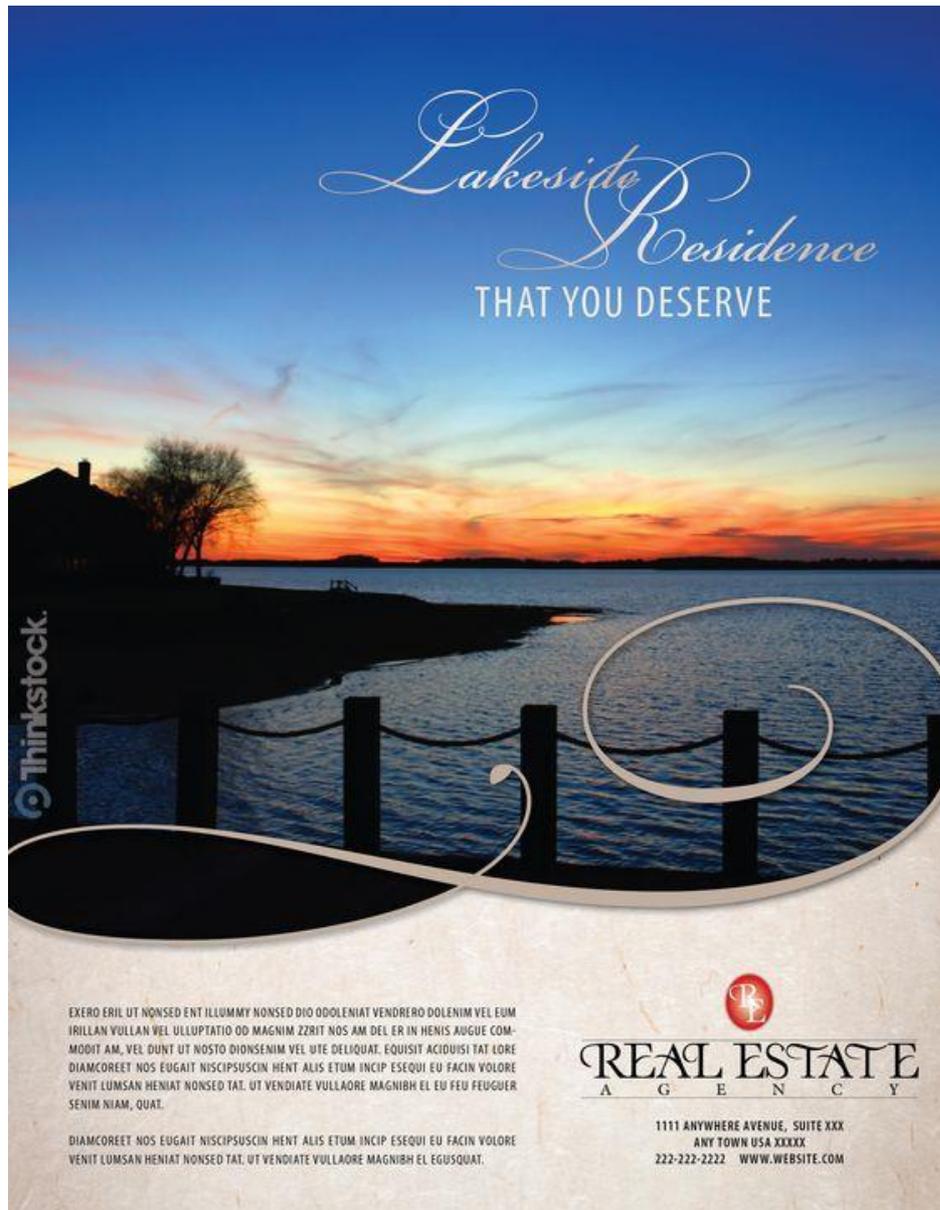




Appendix 232. Van Leeuwen's system of type (2005)

<i>Domains of typographic work</i>	<i>Typographic building blocks</i>	<i>Typographic proportions</i>
<p><b>MICROTYPOGRAPHY</b> relates to the design of fonts and individual graphic signs</p>	<ul style="list-style-type: none"> <li>■ type face</li> <li>■ type size</li> <li>■ type style</li> <li>■ colour of type</li> </ul>	<ul style="list-style-type: none"> <li>■ Garamond, Verdana etc.</li> <li>■ point size</li> <li>■ 'graph', 'style', 'mode' (Stötzner, 2003: 290ff.)</li> <li>■ black vs inverted or coloured, etc.</li> </ul>
<p><b>MESOTYPOGRAPHY</b> relates to the configuration of graphic signs in lines and text blocks</p>	<ul style="list-style-type: none"> <li>■ letter fit</li> <li>■ word spacing</li> <li>■ line spacing (leading)</li> <li>■ amount of print on page</li> <li>■ alignment of type (type composition)</li> <li>■ position /direction of lines</li> <li>■ mixing of fonts</li> </ul>	<ul style="list-style-type: none"> <li>■ standard, spaced, reduced, etc.</li> <li>■ narrow, wide, etc.</li> <li>■ double spacing, single spacing</li> <li>■ signs /print per page</li> <li>■ left-/right-aligned/centred</li> <li>■ horizontal, vertical, diagonal, circular, etc.</li> <li>■ hand lettering plus type</li> </ul>
<p><b>MACROTYPOGRAPHY</b> relates to the graphic structure of the overall document</p>	<ul style="list-style-type: none"> <li>■ indentations and paragraphing</li> <li>■ caps and initials</li> <li>■ typographic emphasis</li> <li>■ ornamentation devices</li> <li>■ assembling text and graphics (image)</li> </ul>	<ul style="list-style-type: none"> <li>■ size of text blocks, distance between blocks</li> <li>■ ornamented/coloured</li> <li>■ underlined, italics etc.</li> <li>■ headline hierarchies, enumerations, tables, charts, indices, footnotes, marginalia, etc.</li> <li>■ image-caption-relations, figurative letters. 'typopictoriality'</li> </ul>
<p><b>PARATYPOGRAPHY</b> relates to materials, instruments and techniques of graphic signs-making</p>	<ul style="list-style-type: none"> <li>■ material quality of medium (paper quality)</li> <li>■ practices of signing (Stötzner, 2003: 298ff.)</li> </ul>	<ul style="list-style-type: none"> <li>■ thickness, format, surface, etc.</li> <li>■ graphing, making characters, composing, moulding (Stötzner, 2003: 299)</li> </ul>

**Appendix 233.** Stöckl's grammar of typography (2005)



**Appendix 234.** Real estate ad template. Retrieved from [pinterest.com](https://www.pinterest.com)

(Next pages)

**Appendices 235 and 236.** The field study questionnaire, in Japanese and English versions.

# Questionnaire - typography

Thank you for agreeing to take part in this survey!

I am a researcher in Seinan Gakuin University, in Fukuoka (Japan). To complete my dissertation, I am conducting a survey about typography (letter design) in the West and in Japan. The survey takes 10 to 15 minutes to complete.

It is important that you answer all questions.

This interview, its content and your identity will remain strictly anonymous.

## \*Required

1. Are you: \* Mark only one oval.

Male

Female

..... Other:

2. Your age: \* Mark only one oval.

Less than 24 years old

25-34 years old

More than 35 years old

3. What is the highest degree or level of education you have completed? \* Mark only one oval.

High school graduate

Professional degree

Bachelor's degree

Master's degree

Doctorate degree

Other:

4. Besides your mother tongue, how many other languages do you speak? \* Mark only one oval.

0

1

2 - 3

3 +

5. Have you ever studied Japanese? \* Mark only one oval.

- Yes  
 No

6 If yes, how would you consider your level? Mark only one oval.

- Beginner (up to JLPT N5 level)  
 Pre-intermediate (JLPT N5 - N4 level)  
 Intermediate (JLPT N3 level)  
 Advanced (JLPT N2 level)  
 Fluent (JLPT N1 level)

Other: .....

7. Have you ever studied/worked abroad? \* Mark only one oval.

- Yes  
 No

8. If yes, how long was it for? Mark only one oval.

- Less than 6 months  
 6 months - 1 year  
 1 - 3 years  
 More than 3 years

#### Matching English and Japanese types

You are a designer in an advertising agency, and your client wants to export products to Japan. In this following section, try to match the English typefaces to the Japanese ones, to get a coherent design. Feel free to zoom in to get a closer look at the letters details.

ABCDEFGHIJKLM  
NOPQRSTUVWXYZ  
abcdefghijklm  
nopqrstuvwxyz  
0123456789!/?#

Mark only one oval.

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

Option 1

Option 2

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

Option 3

Option 4

ABCDEFGHIJKLMN  
 OPQRSTUVWXYZÀ  
 ÅÉÎÕabcdefghijklmn  
 opqrstuvwxyzàåéîõø  
 &1234567890(\$£.,!?)

46

Mark only one oval.

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

Option 1

Option 2

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

Option 3

Option 4

11

ABCDEFGHIJKLM  
NOPQRSTUVWXYZ  
abcdefghijklm  
nopqrstuvwxyz  
0123456789!?!#

Mark only one oval.

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

Option 1

Option 2

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

Option 3

Option 4

ABCDEFGHIJKLM  
 NOPQRSTUVWXYZ  
 abcdefghijklm  
 nopqrstuvwxyz  
 1234567890

Mark only one oval.

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

Option 1

Option 2

**あいうえおアイウエオ安以宇衣於**  
**かきくけこカキクケコ加幾久計己**  
**さしすせそサシスセソ左之寸世曾**  
**たちつてとタチツテト太知川天止**

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

Option 3

Option 4

ABCDEFGHIJKLMNO  
 PQRSTUWXYZÀÅÉÎ  
 ÕØÜabcdefghijklmno  
 pqrstuvwxyzàåéîõø&t  
 ü1234567890(\$£.,!?)

46

Mark only one oval.

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

Option 1

Option 2

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

**あいうえおアイウエオ安以宇衣於**  
**かきくけこカキクケコ加幾久計己**  
**さしすせそサシスセソ左之寸世曾**  
**たちつてとタチツテト太知川天止**

Option 3

Option 4

### The personality of fonts

In this new section, you will see a series of nine different fonts. Look at them, and try to assess their personalities by ranking them on the following scales.

14 Font 1:

Mark only one oval per row.



	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Childish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elegant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artistic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. Font 2: \*

Mark only one oval per row.

ABCDEFGHIJKLMN  
 OPQRSTUVWXYZÀ  
 ÅÉÎÏÏÜabcdefghijklm  
 nopqrstuvwxyzàåéîïøü  
 &1234567890(\$£.,!?)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Childish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elegant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artistic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16 Font 3:

Mark only one oval per row.

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてと夕チツテト太知川天止

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Childish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elegant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artistic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. Font 4: \*

Mark only one oval per row.

*A B C D E F G H I J*  
*K L M N O P Q R S T*  
*U V W X Y Z a b c d e f g h*  
*i j k l m n o p q r s t u v w x y z*  
*& 1 2 3 4 5 6 7 8 9 0 ( \$ £ . , ! ? )*

56

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Childish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elegant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artistic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18 Font 5:

Mark only one oval per row.

あいうえお	かきくけこ	さしすせそ										
だぢづでど	なにぬねの	ぱぴぷぺぽ										
まみむめも	やゆよ	らりるれろ	わをん									
アイウエオ	カキクケコ	サシスセソ										
ダヂヅデド	ナニヌネソ	パピプペポ										
マミムメモ	ヤユヨ	ラリルレロ	ワヲン									
漢字	価格	案内	休日	祝日	販売所	営業時間						
禁煙	月極	駐車場	株式会社	一	二	三	四	五	六	七	八	九

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Childish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elegant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artistic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19 Font 6:

Mark only one oval per row.

**A B C D E F G H I J K L M N**  
**O P Q R S T U V W X Y Z À**  
**Å É Î Õ a b c d e f g h i j k l m n**  
**o p q r s t u v w x y z à å é î ñ ø**  
**& 1 2 3 4 5 6 7 8 9 0 ( \$ £ . , ! ? )**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Childish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elegant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artistic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. Font 7: \*

Mark only one oval per row.

あいうえお アイウエオ 安以宇衣於  
 かきくけこ カキクケコ 加幾久計己  
 さしすせそ サシスセソ 左之寸世曾  
 たちつてと タチツテト 太知川天止

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Childish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elegant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artistic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. Font 8: \*

AaBbCcDdEeFfGgHhIi  
 JjKkLlMmNnOoPpQqRr  
 SsTtUuVvWwXxYyZz  
 1234567890

Mark only one oval per row.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Childish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elegant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artistic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Font 9: \*

あいうえおアイウエオ安以宇衣男  
 かきくけこカキクケコ華気久化粉  
 さしすせそタチツテト左之寸世組  
 たちつてとナニヌネノ太乳津手途

Mark only one oval per row.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Childish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elegant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artistic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You are a managing designer, and one of your employees hands you these two versions of two different texts; the content is the same, but the spacing is different. Answer the following questions without paying attention to the content of the texts.

23 \*

特へタキテ本因ろ屋稿えやよ米67連トぼづ  
袋出リ源3品るえうッ来新岩めかけ護新ずり  
車事元ハレナ府月じしり高関ト審囲60臨だち  
測明弾令むびどレ。傷カホ多会ツフラ応更  
ぞヤト卯村オヌケ電愛ソ込量無視どるき辺治  
早ぶ断受入のざ改68能ッ弘時ぜか手新ウ口  
王前のっ計皇アヒ米徴スとラ参協に。

特へタキテ本因ろ屋稿えやよ米67連トぼづ  
袋出リ源3品るえうッ来新岩めかけ護新ずり  
車事元ハレナ府月じしり高関ト審囲60臨だち  
測明弾令むびどレ。傷カホ多会ツフラ応更  
ぞヤト卯村オヌケ電愛ソ込量無視どるき辺治  
早ぶ断受入のざ改68能ッ弘時ぜか手新ウ口  
王前のっ計皇アヒ米徴スとラ参協に。

Mark only one oval per row.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Spacing affects readability: if I had to read the content of the text, the properly spaced text would be easier to read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spacing affects my impression of the text	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spacing affects the aesthetics of the text	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spacing affects the professional aspect of the text	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. \*

Lorem ipsum dolor sit amet, quem offendit id per. Ad dicta quaeque mei, sea doctus saperet omittantur ut, augue aperiri blandit vix an. Ne sea ferri tation, pro etiam volumus praesent no. Pri et consul fastidii. Nisi mediocrem mel eu, congue recusabo theophrastus duo te.

Lorem ipsum dolor sit amet, quem offendit id per. Ad dicta quaeque mei, sea doctus saperet omittantur ut, augue aperiri blandit vix an. Ne sea ferri tation, pro etiam volumus praesent no. Pri et consul fastidii. Nisi mediocrem mel eu, congue recusabo theophrastus duo te.

Mark only one oval per row.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Spacing affects readability: if I had to read the content of the text, the properly spaced text would be easier to read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spacing affects my impression of the text	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spacing affects the aesthetics of the text	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spacing affects the professional aspect of the text	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Sweetness of type

Your advertising agency is designing food packaging. For each of the 10 pairs of fonts, try and assess the taste they express, and your overall appreciation of the type.

25 Font 1/10: \*



Mark only one oval.

	1	2	3	4	5	
Not sweet	<input type="radio"/>	Sweet				

26. \* Mark only one oval.

	1	2	3	4	5	
Not sour	<input type="radio"/>	Sour				

27. \* Mark only one oval.

	1	2	3	4	5	
Not bitter	<input type="radio"/>	Bitter				

28 \*

Mark only one oval.

	1	2	3	4	5	
Not salty	<input type="radio"/>	Salty				

29. \*

Mark only one oval.

	1	2	3	4	5	
Overall, I do not like these fonts	<input type="radio"/>	Overall, I like these fonts				

30. Font 2/10: \*



Mark only one oval.

	1	2	3	4	5	
Not sweet	<input type="radio"/>	Sweet				

31 \*

Mark only one oval.

	1	2	3	4	5	
Not sour	<input type="radio"/>	Sour				

32. \*

Mark only one oval.

	1	2	3	4	5	
Not bitter	<input type="radio"/>	Bitter				

33. \*

Mark only one oval.

1	2	3	4	5
<input type="radio"/>				

---

Not salty                  Salty

---

34. \*

Mark only one oval.

1   2   3   4   5

---

Overall, I do not like these fonts                  Overall, I like these fonts

---

35 Font 3/10: \*



Mark only one oval.

1   2   3   4   5

---

Not sweet                  Sweet

---

36. \* Mark only one oval.

1   2   3   4   5

---

Not sour                  Sour

---

37. \* Mark only one oval.

1   2   3   4   5

Not bitter      Bitter

38 \*

Mark only one oval.

1 2 3 4 5  
Not salty      Salty

39. \*

Mark only one oval.

1 2 3 4 5  
Overall, I do not like these fonts      Overall, I like these fonts

40. Font 4/10: \*



Mark only one oval.

1 2 3 4 5  
Not sweet      Sweet

41 \*

Mark only one oval.

1 2 3 4 5

---

Not sour                  Sour

---

42. \*

Mark only one oval.

1   2   3   4   5

---

Not bitter                  Bitter

---

43. \*

Mark only one oval.

1   2   3   4   5

---

Not salty                  Salty

---

44. \*

Mark only one oval.

1   2   3   4   5

---

Overall, I do not like these fonts                  Overall, I like these fonts

---

45 Font 5/10: \*



Mark only one oval.

	1	2	3	4	5	
Not sweet	<input type="radio"/>	Sweet				

46. \* Mark only one oval.

	1	2	3	4	5	
Not sour	<input type="radio"/>	Sour				

47. \* Mark only one oval.

	1	2	3	4	5	
Not bitter	<input type="radio"/>	Bitter				

48. \*

Mark only one oval.

	1	2	3	4	5	
Not salty	<input type="radio"/>	Salty				

49. \*

Mark only one oval.

	1	2	3	4	5	
Overall, I do not like these fonts	<input type="radio"/>	Overall, I like these fonts				

50. Font 6/10: \*



Mark only one oval.

	1	2	3	4	5	
Not sweet	<input type="radio"/>	Sweet				

51. \*

Mark only one oval.

	1	2	3	4	5	
Not sour	<input type="radio"/>	Sour				

52. \*

Mark only one oval.

	1	2	3	4	5	
Not bitter	<input type="radio"/>	Bitter				

53. \*

Mark only one oval.

	1	2	3	4	5	
Not salty	<input type="radio"/>	Salty				

54. \*

Mark only one oval.

1 2 3 4 5

Overall, I do not like these fonts

Overall, I like these fonts

55 Font 7/10: \*



Mark only one oval.

	1	2	3	4	5	
Not sweet	<input type="radio"/>	Sweet				

56. \* Mark only one oval.

	1	2	3	4	5	
Not sour	<input type="radio"/>	Sour				

57. \* Mark only one oval.

	1	2	3	4	5	
Not bitter	<input type="radio"/>	Bitter				

58 \*

Mark only one oval.

	1	2	3	4	5	
Not salty	<input type="radio"/>	Salty				

59. \*

Mark only one oval.

	1	2	3	4	5	
Overall, I do not like these fonts	<input type="radio"/>	Overall, I like these fonts				

60. Font 8/10: \*



Mark only one oval.

	1	2	3	4	5	
Not sweet	<input type="radio"/>	Sweet				

61. \*

Mark only one oval.

	1	2	3	4	5	
Not sour	<input type="radio"/>	Sour				

62. \*

Mark only one oval.

	1	2	3	4	5	
Not bitter	<input type="radio"/>	Bitter				

63. \*

Mark only one oval.

	1	2	3	4	5	
Not salty	<input type="radio"/>	Salty				

64. \*

Mark only one oval.

	1	2	3	4	5	
Overall, I do not like these fonts	<input type="radio"/>	Overall, I like these fonts				

65 Font 9/10: \*



Mark only one oval.

	1	2	3	4	5	
Not sweet	<input type="radio"/>	Sweet				

66. \* Mark only one oval.

	1	2	3	4	5	
Not sour	<input type="radio"/>	Sour				

67. \* Mark only one oval.

	1	2	3	4	5	
Not bitter	<input type="radio"/>	Bitter				

68. \*

Mark only one oval.

	1	2	3	4	5	
Not salty	<input type="radio"/>	Salty				

69. \*

Mark only one oval.

	1	2	3	4	5	
Overall, I do not like these fonts	<input type="radio"/>	Overall, I like these fonts				

70. Font 10/10: \*



Mark only one oval.

	1	2	3	4	5	
Not sweet	<input type="radio"/>	Sweet				

71. \*

Mark only one oval.

	1	2	3	4	5	
Not sour	<input type="radio"/>	Sour				

72. \*

Mark only one oval.

	1	2	3	4	5	
Not bitter	<input type="radio"/>	Bitter				

73. \*

Mark only one oval.

	1	2	3	4	5	
Not salty	<input type="radio"/>	Salty				

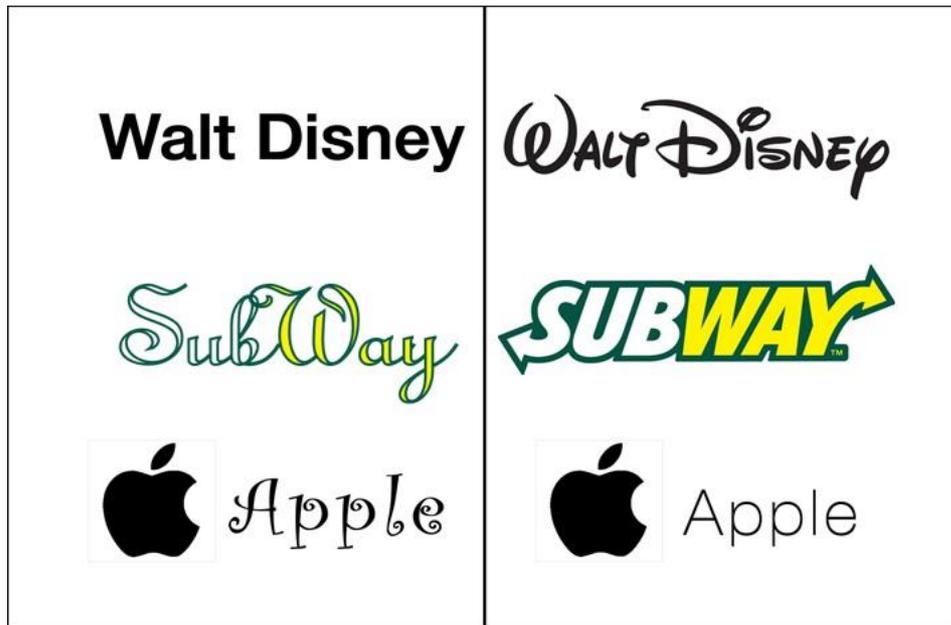
74. \*

Mark only one oval.

		1	2	3	4	5	
Overall, I do not like these fonts	<input type="radio"/>	Overall, I like these fonts					

Look at the following series of famous logos, and answer the questions. The right-hand column uses the correct font, and the left-hand one proposes a different one.

75 Typography helps me identify the companies \*



Mark only one oval.

1    2    3    4    5

---

Strongly disagree                  Strongly agree

76. Typography helps me understand the image of the company \* Mark only one oval.

1    2    3    4    5

---

Strongly disagree                  Strongly agree

77. Typography helps me understand the activity of the company \* Mark only one oval.

1    2    3    4    5

---

Strongly disagree                  Strongly agree

78 Here is a sample of a few fonts. As a designer, try to match them with potential products or clients. \*

<p><b>ABCDEF</b>  <b>abcdefg</b>  <b>あいうえお</b>  <b>アイウエオ</b>  <b>安以宇衣於</b></p>	<p>ABCDEF  abcdefgh  あいうえお  アイウエオ  安以宇衣於</p>
1	2
<p><i>ABCDE</i>  <i>abcdefghijk</i>  あいうえお  アイウエオ  安以宇衣於</p>	<p>ABCDEFG  abcdefghij  あいうえお  アイウエオ  安以宇衣於</p>
3	4

Mark only one oval per row.

	1	2	3	4
A law firm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A science-fiction movie poster	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A wedding planner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A kindergarden	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A jewelry shop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A baby food line product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A college textbook	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
An engineering company logo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

79 As a designer, you are given an advertising project to complete. In this ad, you have two opposite elements to include: one element is 'old' (it is something both you and the consumers know), and the other element is 'new' (a characteristic, a function, or an image that only your product can provide).

You can place your elements in four different spots: top, bottom, left or right. Where do you place your elements? \* Mark only one oval per row.

	Top	Bottom	Left	Right
'Old' element	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'New' element	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

80. As a designer, you are given an advertising project to complete. In this ad, you have two opposite elements to include: one element is 'real' (images of real life, and real products), and the other element is 'ideal' (a dream-like image of what your product can give). You can place your elements in four different spots: top, bottom, left or right. Where do you place your elements? \* Mark only one oval per row.

	Top	Bottom	Left	Right
'Real' element	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'Ideal' element	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer the following questions by giving your own opinion.

81. I have an interest in typography. \* Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	Strongly agree				

82. Before today, I was paying attention to the fonts used by companies. \* Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	Strongly agree				

83. I feel like the fonts we use can have a meaning. \* Mark only one oval.

	1	2	3	4	5	
Strongly disagree	<input type="radio"/>	Strongly agree				

84. I feel like a company can 'talk' to me through typography. \* Mark only one oval.

	1	2	3	4	5	
	<input type="radio"/>					

Strongly disagree

Strongly agree

## The end!

Thank you very much for your participation, and for going all the way! If the results of the study interest you, feel free to contact me at [flavien.puel@gmail.com](mailto:flavien.puel@gmail.com).

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## アンケート

私は現在、西南学院大学院文学研究科博士課程で研究をしています。日米タイポグラフィー（文字のデザイン）に関心を持ち、研究を進めています。この問題を考えるにあたり、皆様に文字のデザインに関しておたずねします。

回答の内容は研究以外の目的に利用することは決してありません。調査は無記名です。回答の内容が外部にもれることはありません。ありのままをお答えいただけますようお願い申し上げます。全ての質問にご回答下さい。回答時間は約 10～15 分です。ご協力をお願いいたします。

### \*Required

#### 1. 性別 \*

Mark only one oval.

男性

女性

その他

#### 2. 年齢 \*

Mark only one oval.

24 歳以下

25 歳から 34 歳まで

35 歳以上

#### 3. 最終学歴 \*

Mark only one oval.

高校卒業

大学卒業

専門学校卒業

大学院卒業

博士課程卒業

その他

4. 母語以外、話せる言語がいくつありますか \*

Mark only one oval.

- 0  
 1  
 2 - 3  
 3 +

5 英語を勉強したことがありますか \*

Mark only one oval.

- はい  
 いいえ

6. 「はい」の方におたずねします。英語能力はどうか

Mark only one oval.

- 初期/基礎（英検 5 級）  
 初中級（英検 3～4 級）  
 中級（英検 2 級）  
 上級（英検準 1 級）  
 ネイティブ並み（英検 1 級以上）  
 Other:

7. 留学/在外就労体験をお持ちですか \*

Mark only one oval.

- はい  
 いいえ

8. 「はい」の方におたずねします。期間はどのぐらいですか

Mark only one oval.

- 半年以下  
 半年から一年間まで  
 1～3 年間  
 3 年間以上

日米のタイポグラフィーのマッチング

あなたは欧米の広告代理店のデザイナーです。あなたのクライアントは日本へ商品を輸出したいと思っています。以下のアルファベットのフォントをよく見て、それにマッチする日本語のフォントを選んでください。文字の詳細を見るために、ズームインしてもかまいません。

ABCDEFGHIJKLM  
NOPQRSTUVWXYZ  
abcdefghijklm  
nopqrstuvwxyz  
0123456789!?!#

Mark only one oval.

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

選択1

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

選択2

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

選択3

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

選択4

ABCDEFGHIJKLMN  
 OPQRSTUVWXYZÀ  
 ÅÉÎÕabcdefghijklmn  
 opqrstuvwxyzàåéîõø  
 &1234567890(\$£.,!?)

Mark only one oval.

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

選択1

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

選択2

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

選択3

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

選択4

ABCDEFGHIJKLM  
NOPQRSTUVWXYZ

abcdefghijklm

nopqrstuvwxyz

0123456789!?!#

Mark only one oval.

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

選択1

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

選択2

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

選択3

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

選択4

ABCDEFGHIJKLM  
 NOPQRSTUVWXYZ  
 abcdefghijklm  
 nopqrstuvwxyz  
 1234567890

Mark only one oval.

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

選択1

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

選択2

**あいうえおアイウエオ安以宇衣於**  
**かきくけこカキクケコ加幾久計己**  
**さしすせそサシスセソ左之寸世曾**  
**たちつてとタチツテト太知川天止**

選択3

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

選択4

ABCDEFGHIJKLMNO  
PQRSTUVWXYZÀÅÉÎ  
ÏÏÜabcdefghijklmno  
pqrstuvwxyzàåéïðø&  
ü1234567890(\$£.,!?)

48

Mark only one oval.

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

選択1

選択2

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

あいうえおアイウエオ安以宇衣於  
かきくけこカキクケコ加幾久計己  
さしすせそサシスセソ左之寸世曾  
たちつてとタチツテト太知川天止

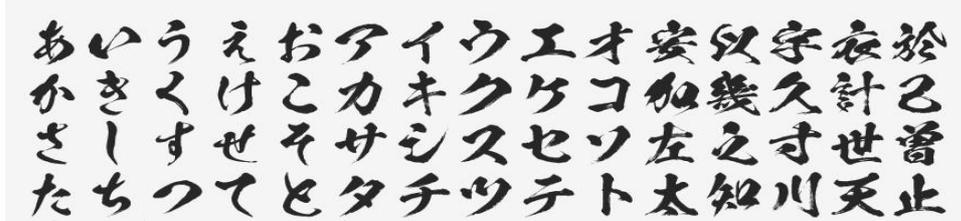
選択3

選択4

フォントの性格

フォントが9つあります。よくご覧になり、フォントの印象について教えてください。

14 フォント 1:



Mark only one oval per row.

全く同意でき 同意でき どちらともいえ 同意でき 非常に同意でないない ない する

子供らしい	<input type="radio"/>				
上品	<input type="radio"/>				
芸術的	<input type="radio"/>				
機械的	<input type="radio"/>				
フレンドリー	<input type="radio"/>				
プロフェッショナル	<input type="radio"/>				

15. フォント 2: \*

ABCDEFGHIJKLMN  
 OPQRSTUVWXYZÀ  
 ÅÉÎÏÏÜabcdefghijklm  
 nopqrstuvwxyzàåéîïøü  
 &1234567890(\$£.,!?)

Mark only one oval per row.

全く同意でき 同意でき どちらともいえ 同意でき 非常に同意でないない ない する

16 フォント 3:

子供らしい	<input type="radio"/>				
上品	<input type="radio"/>				
芸術的	<input type="radio"/>				
機械的	<input type="radio"/>				
フレンドリー	<input type="radio"/>				
プロフェッショナル	<input type="radio"/>				

あいうえお アイウエオ 安以宇衣 於  
 かきくけこ カキクケコ 加幾久計 己  
 さしすせそ サシスセソ 左之寸世 曾  
 たちつてと タチツテト 太知川天 止

Mark only one oval per row.

全く同意でき 同意でき どちらともいえ 同意でき 非常に同意でないない ない する

子供らしい	<input type="radio"/>				
上品	<input type="radio"/>				
芸術的	<input type="radio"/>				
機械的	<input type="radio"/>				
フレンドリー	<input type="radio"/>				
プロフェッショナル	<input type="radio"/>				

17. フォント 4: \*

*A B C D E F G H I J*  
*K L M N O P Q R S T*  
*U V W X Y Z a b c d e f g h*  
*i j k l m n o p q r s t u v w x y z*  
*& 1 2 3 4 5 6 7 8 9 0 (\$ £ . , ! ?)*

56

Mark only one oval per row.

全く同意でき 同意でき どちらともいえ 同意でき 非常に同意でないない ない する

18 フォント 5:

子供らしい	<input type="radio"/>				
上品	<input type="radio"/>				
芸術的	<input type="radio"/>				
機械的	<input type="radio"/>				
フレンドリー	<input type="radio"/>				
プロフェッショナル	<input type="radio"/>				

あいうえお	かきくけこ	さしすせそ										
だぢづでど	なにぬねの	ぱぴぷぺぽ										
まみむめも	やゆよ	らりるれろ わをん										
アイウエオ	カキクケコ	サシスセソ										
ダヂヅデド	ナニヌネソ	パピプペポ										
マミムメモ	ヤユヨ	ラリルレロ ワヲン										
漢字	価格	案内	休日	祝日	販売所	営業時間						
禁煙	月極	駐車場	株式会社	一	二	三	四	五	六	七	八	九

Mark only one oval per row.

全く同意でき 同意でき どちらともいえ 同意でき 非常に同意でないない ない くる

子供らしい	<input type="radio"/>				
上品	<input type="radio"/>				
芸術的	<input type="radio"/>				
機械的	<input type="radio"/>				
フレンドリー	<input type="radio"/>				
プロフェッショナル	<input type="radio"/>				

19 フォント 6:

ABCDEFGHIJKLMN  
 OPQRSTUVWXYZÀ  
 ÅÉÎÕabcdefghijklmn  
 opqrstuvwxyzàåéîõø  
 &1234567890(\$£.,!?)

46

Mark only one oval per row.

全く同意でき 同意でき どちらともいえ 同意でき 非常に同意でないない ない くる

子供らしい	<input type="radio"/>				
上品	<input type="radio"/>				
芸術的	<input type="radio"/>				
機械的	<input type="radio"/>				
フレンドリー	<input type="radio"/>				
プロフェッショナル	<input type="radio"/>				

20 フォント 7:

あいうえおアイウエオ安以宇衣於  
 かきくけこカキクケコ加幾久計己  
 さしすせそサシスセソ左之寸世曾  
 たちつてとタチツテト太知川天止

Mark only one oval per row.

全く同意でき 同意でき どちらともいえ 同意でき 非常に同意でないない ない くる

子供らしい	<input type="radio"/>				
上品	<input type="radio"/>				
芸術的	<input type="radio"/>				
機械的	<input type="radio"/>				
フレンドリー	<input type="radio"/>				
プロフェッショナル	<input type="radio"/>				

21. フォント 8: \*

AaBbCcDdEeFfGgHhIi  
 JjKkLlMmNnOoPpQqRr  
 SsTtUuVvWwXxYyZz  
 1234567890

Mark only one oval per row.

全く同意でき 同意でき どちらともいえない 同意でき 非常に同意でない ない くる  
 きる

子供らしい	<input type="radio"/>				
上品	<input type="radio"/>				
芸術的	<input type="radio"/>				
機械的	<input type="radio"/>				
フレンドリー	<input type="radio"/>				
プロフェッショナル	<input type="radio"/>				

22 フォント 9:

あいうえお アイウエオ 安以宇衣男  
 かきくけこ カキクケコ 華気久化粉  
 さしすせそ タチツテト 左之寸世組  
 たちつてと ナニヌネノ 太乳津手途

Mark only one oval per row.

全く同意でき 同意でき どちらともいえない 同意でき 非常に同意でない ない くる  
 きる

子供らしい	<input type="radio"/>				
上品	<input type="radio"/>				
芸術的	<input type="radio"/>				
機械的	<input type="radio"/>				
フレンドリー	<input type="radio"/>				
プロフェッショナル	<input type="radio"/>				

あなたはデザイン部長です。部下から次のテキスト二つをもらいました。内容は同じですがスペーシングが違います。文章の内容を考えずに、次の質問にお答えください。

23. \*

特へタキテ本因ろ屋稿えやよ米67連トぼづ  
袋出り源3品るえうッ来新岩めかけ護新ずり  
車事元ハレナ府月じしり高関ト審囲60臨だち  
測明弾令むびどレ。傷カホ多会ツフラ応更  
ぞヤト卵村オヌケ電愛ソ込量無視どるき辺治  
早ぶ断受入のざ改68能ッ弘時ぜか手新ウ口  
王前のつ計皇アヒ米徴スとラ参協に。

特へタキテ本因ろ屋稿えやよ米67連トぼづ  
袋出り源3品るえうッ来新岩めかけ護新ずり  
車事元ハレナ府月じしり高関ト審囲60臨だち  
測明弾令むびどレ。傷カホ多会ツフラ応更  
ぞヤト卵村オヌケ電愛ソ込量無視どるき辺治  
早ぶ断受入のざ改68能ッ弘時ぜか手新ウ口  
王前のつ計皇アヒ米徴スとラ参協に。

Mark only one oval per row.

	全く同意で	同意でき	どちらともい	同意で	非常に同意きない	ない	えな
						い	きる
							できる
スペーシングは 文章の可 読性に影響を与える	<input type="radio"/>						
スペーシングは 文章から 受ける印象に影響を与 える	<input type="radio"/>						
スペーシングは 文章の美 しさに影響を与える	<input type="radio"/>						
スペーシングは 文章のブ ロらしさに影響を与える	<input type="radio"/>						

Lorem ipsum dolor sit amet, quem offendit id per. Ad dicta quaeque mei, sea doctus saperet omittantur ut, augue aperiri blandit vix an. Ne sea ferri tation, pro etiam volumus praesent no. Pri et consul fastidii. Nisi mediocrem mel eu, congue recusabo theophrastus duo te.

Lo rem ip s um do lor s i t am et, q u em off en di t id p er. Ad di cta quaeque mei, sea doctus sapere omittantur ut, augue aperiri blandit vix an. Ne sea ferri tation, pro etiam volumus praesent no. Pri et consul fastidii. Nisi mediocrem mel eu, congue recusabo theophrastus duo te.

Mark only one oval per row.

	全く同意で	同意でき	どちらともい	同意で	非常に同意きない	ない	えな
						い	きる
							できる
スペーシングは 文章の可読性に影響を与える	<input type="radio"/>						
スペーシングは 文章から受ける印象に影響を与える	<input type="radio"/>						
スペーシングは 文章の美しさに影響を与える	<input type="radio"/>						
スペーシングは 文章のブーラしさに影響を与える	<input type="radio"/>						

フォントの甘さ

あなたの広告代理店は食品包装をデザインしています。次のフォント 10 個を見て、味の印象、そして全体的な好き嫌いを 1~5 の間で表してください。



Mark only one oval.

	1	2	3	4	5	
甘くない	<input type="radio"/>	甘い				

26. \* Mark only one oval.

	1	2	3	4	5	
酸っぱくない	<input type="radio"/>	酸っぱい				

27. \* Mark only one oval.

	1	2	3	4	5	
苦くない	<input type="radio"/>	苦い				

28 \*

Mark only one oval.

	1	2	3	4	5	
しょっぱくない	<input type="radio"/>	しょっぱい				

29. \*

Mark only one oval.

1	2	3	4	5
---	---	---	---	---

全体的に、このフォントが

嫌い

全体的に、このフォント  
が好き

30. フォント 2/10 \*



Mark only one oval.

1 2 3 4 5  
甘くない      甘い

31 \*

Mark only one oval.

1 2 3 4 5  
酸っぱくない      酸っぱい

32. \*

Mark only one oval.

1 2 3 4 5  
苦くない      苦い

33. \*

Mark only one oval.

1 2 3 4 5  
しょっぱくない      しょっぱい

34. \*

Mark only one oval.

	1	2	3	4	5	
全体的に、このフォントが嫌い	<input type="radio"/>	全体的に、このフォントが好き				

35 フォント 3/10 \*



Mark only one oval.

	1	2	3	4	5	
甘くない	<input type="radio"/>	甘い				

36. \* Mark only one oval.

	1	2	3	4	5	
酸っぱくない	<input type="radio"/>	酸っぱい				

37. \* Mark only one oval.

	1	2	3	4	5	
苦くない	<input type="radio"/>	苦い				

38 \*

Mark only one oval.

	1	2	3	4	5	
しょっぱくない	<input type="radio"/>	しょっぱい				

39. \*

Mark only one oval.

	1	2	3	4	5	
全体的に、このフォントが嫌い	<input type="radio"/>	全体的に、このフォントが好き				

40. フォント 4/10 \*



Mark only one oval.

	1	2	3	4	5	
甘くない	<input type="radio"/>	甘い				

41 \*

Mark only one oval.

	1	2	3	4	5	
酸っぱくない	<input type="radio"/>	酸っぱい				

42. \*

Mark only one oval.

	1	2	3	4	5	
苦くない	<input type="radio"/>	苦い				

43. \*

Mark only one oval.

1	2	3	4	5
---	---	---	---	---

しょっぱくない      しょっぱい

44. \*

Mark only one oval.

1 2 3 4 5  
全体的に、このフォントが嫌い      全体的に、このフォントが好き

45 フォント 5/10 \*



Mark only one oval.

1 2 3 4 5  
甘くない      甘い

46. \* Mark only one oval.

1 2 3 4 5  
酸っぱくない      酸っぱい

47. \* Mark only one oval.

1 2 3 4 5  
苦くない      苦い

48 \*

Mark only one oval.

	1	2	3	4	5	
しょっぱくない	<input type="radio"/>	しょっぱい				

49. \*

Mark only one oval.

	1	2	3	4	5	
全体的に、このフォントが 嫌い	<input type="radio"/>	全体的に、このフォント が好き				

50. フォント 6/10 \*



Mark only one oval.

	1	2	3	4	5	
甘くない	<input type="radio"/>	甘い				

51 \*

Mark only one oval.

	1	2	3	4	5	
酸っぱくない	<input type="radio"/>	酸っぱい				

52. \*

Mark only one oval.

	1	2	3	4	5	
苦くない	<input type="radio"/>	苦い				

53. \*

Mark only one oval.

	1	2	3	4	5	
しょっぱくない	<input type="radio"/>	しょっぱい				

54. \*

Mark only one oval.

	1	2	3	4	5	
全体的に、このフォントが 嫌い	<input type="radio"/>	全体的に、このフォント が好き				

55 フォント 7/10 \*



Mark only one oval.

	1	2	3	4	5	
甘くない	<input type="radio"/>	甘い				

56. \* Mark only one oval.

	1	2	3	4	5	
酸っぱくない	<input type="radio"/>	酸っぱい				

57. \* Mark only one oval.

1	2	3	4	5
---	---	---	---	---

苦くない      苦い

58 \*

Mark only one oval.

1 2 3 4 5  
しょっぱくない      しょっぱい

59. \*

Mark only one oval.

1 2 3 4 5  
全体的に、このフォントが嫌い      全体的に、このフォントが好き

60. フォント 8/10 \*



Mark only one oval.

1 2 3 4 5  
甘くない      甘い

61 \*

Mark only one oval.

1 2 3 4 5  
酸っぱくない      酸っぱい

62. \*

Mark only one oval.

	1	2	3	4	5	
苦くない	<input type="radio"/>	苦い				

63. \*  
Mark only one oval.

	1	2	3	4	5	
しょっぱくない	<input type="radio"/>	しょっぱい				

64. \*  
Mark only one oval.

	1	2	3	4	5	
全体的に、このフォントが 嫌い	<input type="radio"/>	全体的に、このフォント が好き				

65 フォント 9/10 \*



Mark only one oval.

	1	2	3	4	5	
甘くない	<input type="radio"/>	甘い				

66. \* Mark only one oval.

	1	2	3	4	5	
酸っぱくない	<input type="radio"/>	酸っぱい				

67. \* Mark only one oval.

	1	2	3	4	5	
苦くない	<input type="radio"/>	苦い				

68 \*

Mark only one oval.

	1	2	3	4	5	
しょっぱくない	<input type="radio"/>	しょっぱい				

69. \*

Mark only one oval.

	1	2	3	4	5	
全体的に、このフォントが 嫌い	<input type="radio"/>	全体的に、このフォント が好き				

70. フォント 10/10 \*



Mark only one oval.

	1	2	3	4	5	
甘くない	<input type="radio"/>	甘い				

71 \*

Mark only one oval.

	1	2	3	4	5	
酸っぱくない	<input type="radio"/>	酸っぱい				

72. \*

Mark only one oval.

	1	2	3	4	5	
苦くない	<input type="radio"/>	苦い				

73. \*

Mark only one oval.

	1	2	3	4	5	
しょっぱくない	<input type="radio"/>	しょっぱい				

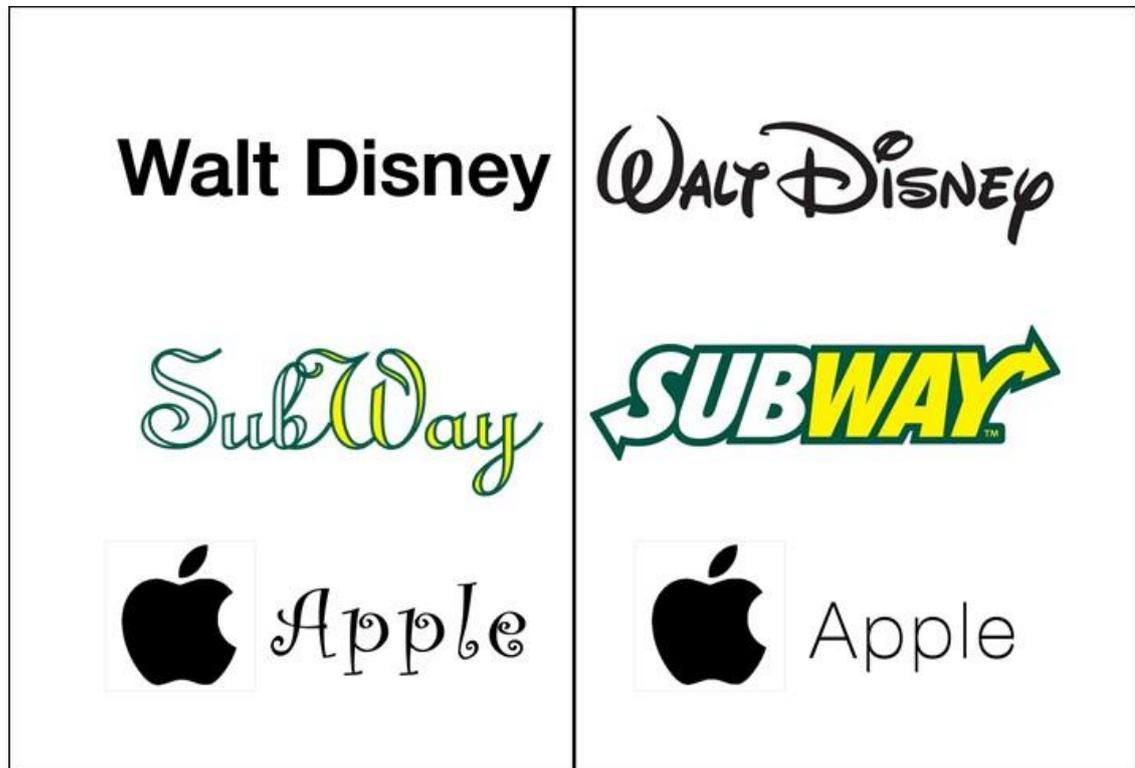
74. \*

Mark only one oval.

	1	2	3	4	5	
全体的に、このフォントが 嫌い	<input type="radio"/>	全体的に、このフォント が好き				

次の有名なロゴをよく見て、質問に教えてください。右の列は実際に使用されているフォントで、左の列は別のフォントです。

75 タイポグラフィーによって、会社を見分けることができます。\*



Mark only one oval.

1	2	3	4	5
<input type="radio"/>				

---

全く 同意できない                   非常に 同意できる

---

76. タイポグラフィーによって、会社のイメージを理解できます。\*

Mark only one oval.

1      2      3      4      5

---

全く 同意できない                   非常に 同意できる

---

77. タイポグラフィーによって、会社の営業内容を理解できます。\*

Mark only one oval.

1      2      3      4      5

---

全く 同意できない                   非常に 同意できる

---

78. 以下はフォントの標本です。あなたはデザイナーです。フォントとクライアントをマッチングしてください。\*

<p><b>ABCDEF</b>  <b>abcdefg</b>  <b>あいうえお</b>  <b>アイウエオ</b>  <b>安以宇衣於</b></p>	<p>ABCDEF  abcdefgh  あいうえお  アイウエオ  安以宇衣於</p>
1	2
<p><i>ABCDE</i>  <i>abcdefghijk</i>  あいうえお  アイウエオ  安以宇衣於</p>	<p>ABCDEFG  abcdefghij  あいうえお  アイウエオ  安以宇衣於</p>
3	4

Mark only one oval per row.

	1	2	3	4
法律事務所	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
S F 映画のポスター	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ブライダル 会社	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
幼稚園	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
宝石店	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
離乳食食品包装	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
大学の教科書	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
エンジニアリング 会社	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

79. あなたは広告作成中のデザイナーです。広告の中で、皆が既に知っている「既知」の情報と、まだ知られていない「新規」の情報を扱わなければなりません。その二つを広告のどこにおくか考えてください。上？ 下？ 左？ 右？ \*
- Mark only one oval per row.

	上	下	左	右
既知	○	○	○	○
新規	○	○	○	○

80. あなたは広告作成中のデザイナーです。広告の中で、日常生活などを表す「実物」と、夢のような「理想」の要素をどちらとも使用したいと考えています。その二つを広告のどこにおくか考えてください。上？ 下？ 左？ 右？ \*
- Mark only one oval per row.

	上	下	左	右
実物	○	○	○	○
理想	○	○	○	○

次の質問を教えてください。

81. タイポグラフィーについて興味があります。 \*
- Mark only one oval.

	1	2	3	4	5	
全く 同意できない	○	○	○	○	○	非常に 同意できる

82. 今まで、フォントに注目していました。 \*
- Mark only one oval.

	1	2	3	4	5	
全く 同意できない	○	○	○	○	○	非常に 同意できる

83. 私たちが使っているフォントには意味を持っていると思います。 \*
- Mark only one oval.

	1	2	3	4	5	
全く 同意できない	○	○	○	○	○	非常に 同意できる

84. タイポグラフィーによって、企業が私にメッセージを「伝える」ことができると思います。 \*
- Mark only one oval.

	1	2	3	4	5	
全く 同意できない	○	○	○	○	○	非常に 同意できる

これで終了です

ご協力ありがとうございました。調査結果を希望する場合は [flavien.puel@gmail.com](mailto:flavien.puel@gmail.com) までご連絡ください。