ILLEGIBILITY

DOCTORAL DISSERTATION

Illegibility — the Dichotomy
of Function and Form in Graphic
Design on the Basis of Typography
and Lettering Design.

Original Graphic Interpretation
of the Phenomenon Including
Compilation and Publication
of the Text

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ABSTRACT

This work examines the issue of text legibility in the domain of graphic design — a field of art that has had a significant influence on the development of contemporary social communication. Due to the functional character of the letter, the aspect of legibility is a basic requirement for the realisation of the superior function of text, which is to convey content. For centuries, however, the letter has been entangled in a relationship between the message it carries and its visual representation, which when read, also satisfies the aesthetic needs of the recipient. The form of the glyph is, therefore, an embodied compromise between the established system of meanings, knowledge about perceptual processes, the available technique and technology, prevailing style or fashion, as well as the author's individual expression. These factors determine the form that the text adopts in public space, directly translating into the reception of the encoded message. Not without significance is also the state of visual awareness of the message's recipient, as well as their appropriate intellectual preparation for processing the information.

In the work, an attempt is made to define the areas of typography, which is shaped by the dichotomy of form and function. Polarised theory is discussed in relation to the role of the letter in the visual message, as well as the diverse attitudes of the graphic designers themselves, who through their creative activity, set the limits of text legibility.

KEYWORDS: legibility, typography, lettering, visual communication, grapheme, glyph.

INTRODUCTION

Graphic design centres around the organisation of information by transferring and translating the message into visual language, in order to make the content comprehensible for the recipient in the shortest possible time. This form of language is based on a synthesised graphic structure and therefore, it vividly responds to changing social demand. Visual communication, in which the letter is often a central participant, evolves through a collection of everyday graphic signs and symbols. It is an encrypted system of meanings and one of the most important factors influencing the shape of interpersonal communication and the organisation of social life.

The smallest unit of sound, encoded in the form of a letter sign, is a reoccurring synesthesia of arts, conditioned by the relationship between the sense of hearing and sight. This dependence is accompanied by an equally important, if not essential for the recipient, relation between the function and form of the record. The analysis of the letterform not only recreates the sound encoded in the rhythmically ordered points, lines and arcs of the character, but also allows for the deciphering and synthetic interpretation of the message, manifested in the form of a sign and its spacial arrangement.

As in the case of any spoken or written language, visual code requires the knowledge and direct engagement of the recipient. The ongoing process of perception is an interaction between the intellect, supported by the developing visual awareness in an individual, and the organ of sight, enabling the reception of the message. Knowledge of the code, the appropriate settings for reading it, as well as the ability to use the relevant method of structural analysis of the received content, are necessary to interpret the message in a broader, sociological context. A letter, as an abstract graphic symbol, is inextricably linked with the function of encoding information entrusted to it. Therefore, it is difficult to consider a letter character in any other way than in the context of the content carrier, which for centuries has enabled the broadly understood exchange of thought. Laszlo Moholy-Nagy's remark that: "legibility – communication must never be impaired by *a priori* aesthetics"[1] are justified, especially when one takes into account the genesis of type and the relatively limited field of expression of the glyph. Despite the temptation to modify its form as freely

[1] L. Moholy-Nagy, *Nowa typografia*, trans. Artur Kożuch, [in:] *Widzieć / wiedzieć. Wybór najważniejszych tekstów o dizajnie*, eds. P. Dębowski, J. Mrowczyk, Cracow 2011, p. 17.

2 The glyph understood as "the shape of a given character". J. Mrowczyk, *Glif*, [in:] Idem, *Niewielki słownik typograficzny*, Gdansk 2008, p. 59.

3 Grapheme is "a character that is the written form of a phoneme. One phoneme can be represented by more than one grapheme (...). The distinctive form of a given character". Idem, *Grafem*, [in:] Ibidem.

4 P. Mertens, "Emigre" 1990, no. 15, p. 4.

5 See L. Blackwell, *The End of Print: The Graphic Design of David Carson*, 2nd ed., London 2000, p. 115.

as possible, the glyph[2] remains forced to bear the hallmark of its prototype – the grapheme[3], or, in other words, a record of an idea. Deviating too far from this norm may evoke the question of whether the perceived character is still a letter. According to Peter Mertens "Letters are legible. If some things are not legible, then they are not letters. Illegible letters do not exist. Illegibility does not exist".[4] The limits of legibility, when considering lettering or typographic design, are much more difficult to specify in an unconditional manner. As David Carson argued, readability should not be confused with communication. Legibility alone is not enough, as communication requires something more.[5]

The alteration of certain structural elements of the letter or the construction of its formal layer to the extent that it affects the correct recognition of the sign casts doubt on the legitimacy of using the letter code when reading is genuinely difficult for the recipient. Therefore, a question arises regarding the relationship between the form and function of a letter. Setting the limits of readability is particularly important in the field of graphic design, addressed to a large group of recipients, in which the presence of text serves a specific communication purpose. This is not the case, however, when considering typographic experiments, which fall within the sphere of artistic endeavour, where letter forms balance between pure art and applied practice. Currently, type characters appear in a vast range of various, interdisciplinary media, resulting in unconventional lettering solutions, which open up new areas of visual experiences for the recipient. In so doing, they challenge what one perceives as legible. The greater the flexibility in the visual notation of the letter form, the greater the acceptance of a new social code over time. The successive crossing of boundaries in the way one perceives text affects the constantly developing visual perception of an individual. Furthermore, it not only shapes the way one recognises the letter, but also how the textual exchange of thought in its subsequent, varied scenes is comprehended.

SIGHT

The sense of sight is a perfectly calibrated state-of-the-art mechanism. Sensitive to detail, it seamlessly identifies over "150 different colours with identical illumination"[6] along with their shades thanks to a complex matrix known as the retina. Humans see in RGB – the differentiated cones are high-class photoreceptors sensitive to red, green and blue light. They are responsible for the process of sight, they immediately report the received stimuli to the main core of the human machine as nerve signals.

The human system of visual perception developed out of photosensitive skin cells and evolved into a complex system for collecting data that allows the analysis of visual sensations. First of all, it is a creative system that does not actually reflect the outside world as a mirror, but during processing, participates in its creation. When performing this activity, the human brain analyses the physical phenomena in order to collect as much information as possible.[7] Higher-order brain areas are responsible for sensory information from down-stream areas and sensory receptors to formulate and verify hypotheses, on an ongoing basis. The hypotheses that are put forward are not incidental, they are based on previously accumulated visual experience. By nature, people are highly individualised in their perception of reality. Our memory functions like a library that one constantly reaches into, in order to define a newly encountered image. This knowledge serves as a basis for drawing future conclusions. What "someone sees today is derived from what he or she has seen in the past"[8], but also depends on what he or she wishes to see in the present. The phenomenon of visual awareness (defined as the changing and historically conditioned process developing the area of human sight[9]), contributes to the co-creation of reality that is seen through the mutual influence of "thoughts on seeing and seeing thought. The thought poses questions to which sight has to reply".[10] This dependence determines the personal vision of the recipient, since it is only what he or she wants to see that is consciously received and analysed. The individualised image of the world, formulated by the brain, is only partially created by the image that falls on the retina of the eye.[11] The interaction that takes place is a kind of a reciprocal action between the intellect, supported by the visual awareness that shapes an individual, and the organ of sight, enabling the reception of the message and its interpretation.

6 A. Grabowska, W. Budohoska, *Procesy percepcji*, [in:] *Percepcja, myślenie, decyzje*, ed. T. Tomaszewski, Warsaw 1995, p. 29.

7 See. Ibidem, p. 10.

8 R. Arnheim, *Sztuka i percepcja widzenia. Psychologia twórczego oka*, trans. J. Mach, Lodz 2004, p. 61.

9 See W. Strzemiński, *Teoria widzenia*, Lodz 2016, p. 55.

10 See Ibidem, p. 51.

11 A. Grabowska, W. Budohoska, *Procesy percepcji...*, p. 12.

12 R. Arnheim, *Sztuka i percepcja widzenia…*, p. 59.

13 *Psychologia. Podręcznik akademicki*, vol. 1, ed. J. Strelau, D. Doliński, Sopot 2000, p. 357–358.

As Rudolf Arnheim wrote, "to some modest degree the eyesight of every human being anticipates the ability that characterises the artist, the rightly admired ability to create patterns that, by means of an organised form, accurately interpret sensations".[12] The interpretation of one's surroundings is an automated human reflex, but its essence is creative participation. Humans are not passive but active observers, who are constantly looking for answers to questions concerning the similarity of the observed elements (the law of similarity), the logic of their arrangement (the law of good continuation), their allocation (the law of proximity) or internal consistency (the law of closure).[13] The mechanism that helps people see contours and distinguish shapes organises the image one sees, combining the recognisable sequences and structures of its components into an intelligible whole. The perceived image is also verified through the prism of other sensations that one experiences during this interaction, such as touch or the impression of gravity. Thanks to these adaptive predispositions of the visual system, even a distorted image can be corrected so that its actual form is closer to reality.

When considering the term "an image examined by the eye", it should be remembered, that it is not a single, static image, but a series of fragments of a larger whole, analysed by quick eye movements from one point to another, so as to allow other segments to be processed by the centre of the retina. The six external muscles of the eyeball enable a series of fixations through jumping movements to guarantee sharpness and richness of detail.

A similar mechanism occurs during the reading process – the eye stops at one point and then goes from temporary fixation (lasting about 250 milliseconds) to the next part of the text. These jumps, called saccades, alternate with a fixation of every 7 to 9 letters and last from 10 to 20 milliseconds.[14] Problems with text comprehension arise from 1) regressive saccades (occurring as 10–15 percent of all jumps), when the eye moves in the opposite direction to the reading direction, or 2) re-fixation, i.e., additional focus on a given word, causing longer examination of the text fragment to verify its accuracy.

The recognition of individual words is a complicated mechanism that has been examined over many years of research by psycholinguists. One of the earliest theories, the Word Shape Model[15], is based on the assumption that recognising the familiar shape of a word plays a key role in the reading process. The unique form (Bouma shape[16]), created through minuscule ascenders or descenders and "neutral" x-height letters, is remembered as a type of pattern assigned to a specific word. If a word's components are replaced with other letters that change its spelling, but without affecting the shape of the remembered word, the change may go unnoticed. In such cases, reading can proceed smoothly and the spelling error is much more difficult to spot.[17] Moreover, some studies have shown that alternately mixing minuscule and capital letters within one word changes the form of words that the reader is accustomed to, making the reading process more difficult. Similarly, if the text is set with only capitalised letters, the letters of coherent form are read 5 to 10 percent more slowly.

More recent studies are, however, increasingly distancing themselves from the theory that the shape of a word determines the reading process. Moreover, these studies show that the form of a word does not play

14 K. Larson, *The science of word recognition*, https://docs.microsoft.com/en-us/typography/develop/word-recognition/ [access: 06.10.2018].

15 See Ibidem.

16 See Ibidem.

17 See R. N. Haber, R. M. Schindler, *Error in proofreading: Evidence of syntactic control of letter processing?*, "Journal of Experimental Psychology: Human Perception and Performance" 1981, no. 7, p. 573–579.

18 J. E. Sheedy,
M. V. Subbaram,
A. B. Zimmerman,
J. R. Hayes, *Text Legibility and the Letter Superiority Effect,* "Human Factors. The Journal of the Human Factors and Ergonomics Society" 2005, p. 798–815.

19 See K. Larson, *The science of word recognition...*

20 J. Wasilewski, *O czytaniu, czcionce i poczcie*, [in:] *Biogramy – Plakaty Pisane*, ed. S. Wieczorek, Warsaw 2020, p. 16, https://issuu.com/stgu/docs/biogramy_pisane_katalog/ [access: 1.08.2020].

21 See E. Wolańska, A. Wolański, *Kroje pisma ułatwiające czytanie osobom dyslektycznym*, "Logopedia" 2016, no. 45, p. 227–228.

a key role in identifying spelling mistakes, but rather the form of the letters themselves – for example, the similarity between the minuscule characters "n" and "h". Also, the pace of reading capital letters in longer fragments of text tends to be related to individual habits. As the readers gain more experience in perceiving such composition, the differences in the speed of reading minuscules and capitals becomes undifferentiated. The shape of the word also looses its significance in light of studies on the Letter Superiority Effect, showing that single lowercase characters are 10 to 20 percent more readable than lowercase 5-letter words.[18]

The Serial Letter Recognition Model, unlike the Word Superiority Effect[19], explains the phenomenon of reading as a process of discovering the word, letter by letter. Interestingly, as Jacek Wasilewski points out, "*czytać* (to read) is a frequentative form (such as to sleep (*sypiać*), to be (*bywać*)) of the verb *czyść* (*ja czyę, ty czciesz*, etc. (Old Polish)) meaning to count, so it can be said that reading is rooted in collecting letters".[20] The signs are systematically scanned, one after another, like hints in a search engine, to suite the compiled information. However, this assumption somewhat contradicts the phenomenon of parallel (simultaneous) processing, a theory that emphasises the context in which words appear.[21] It has been shown that a satisfactorily fluent reading of the text is possible even with the wrong order of letters, under the condition that the correct letter is placed at the beginning and at the end of the word, and the right number of letters in the word has been maintained.

The Parallel Letter Recognition Model developed by Keith Rayner and Aleksander Pollatsek presents the reading of a word as a three-step process. The first stage – feature detection – is based on recognising the characteristic properties of a letter character, in particular vertical, horizontal and diagonal elements, as well as arcs. The second – letter detection – is the process of assigning the collected information about the shape of the character to the most similar letters in form. The third stage – word detection – focuses on recognising the word itself, using accumulated knowledge about the shape of the word, the context in which it occurs, or any available lexical knowledge. Sofie Beier in her work *Typeface legibility: towards defining familiarity* draws attention to the results of research by Denis Pella and

Katharine Tillman. Tests have shown that during the process of reading, three separate mental processes cooperate, dividing tasks between themselves (1) (L) – letter-by-letter – examining the word letter by letter, 2) (W) – word-wholes – examining the whole word, 3) sentence-context (S) recognition – focusing on working out the context of the sentence.[22]

Currently, the latest eye-tracking technologies, which can monitor eye movements, are able to analyse saccades and fixations – processes that take place within fractions of a second. This has led to the conclusion that the human eye sees only a fragment of the word with maximum precision, a total of 3 to 4 letters from the focus point. Fixations usually occur in the middle of the word, with a slight left inclination (i.e., closer to the beginning of the word). Information is collected from the three following areas: 1) first from the main fixation point, where the word is recognised, 2) second, wider, including successive letters adjacent to the main fixation point, 3) the furthest from fixation, covers about 15 letters and at the same time gathers information about the length of the next words and contributes to choosing the next place of focus.

Reading is a highly complex and automated activity that requires multi-dimensional engagement from the recipient. Jack Post, referring to the research of the French scientist Anne-Marie Christin, describes reading as "an activity in which a person separates what is meaningful from what is meaningless".[23] It is unclear whether the key to understanding the content is the analysis of single and selective visual stimuli (bottom-up process) or a formulated and then verified hypothesis based on experience and the state of knowledge (top-down process). According to researchers, reading can also be treated as an interactive process, using a number of different abilities, including both automatic recognition, synthesis, and evaluation skills. It also has access to a wide range of expertise, including formal discourse structure knowledge, vocabulary and language structural knowledge, content/world background knowledge, as well as metacognitive knowledge and skills monitoring.[24]

Reading, like the process of seeing, is an activity that the recipient acquires. Olga Tokarczuk compares it to the initiation process in which a developing

22 See. S. Beier, *Typeface legibility: Towards defining familiarity*, London 2009, p. 42–43.

23 J. Post, *Rewolucja cyfrowa*, [in:] *Triumf typografii. Kultura, komunikacja, nowe media*, eds. H. Hoeks, E. Lentjes, trans. M. Komorowska, Cracow 2017, p. 152.

24 E. Wolańska, A. Wolański, *Kroje pisma ułatwiające...*, p. 228–229.

25 O. Tokarczuk, *Czuły narrator*, Cracow 2020, p. 94.

child uses language to obtain a new skill — speech. Reading is also something more — it is the observation of rhythmically ordered marks in the form of points, lines and arcs transforming into understandable code. It is the analysis and interpretation of these elements, a creative act on the brink of the synesthesia of arts, a magical process involving the body, mind and heart. Quoting the words of the Nobel Prize winner, one can read: "Every time we open a book, a miracle, something extraordinary happens between the eye and the surface of the paper. We see rows of letters, and when we move our eyes over them, our brain transforms them into images, thoughts, smells and voices. It is not just that in simple signs specific information is read, because a computer could also do that. It is rather a matter of the sights, smells and sounds that flow from these signs".[25]

THOUGHT, SPEECH AND SCRIPT

Language is an "abstract, socially established system of sounds, signs and rules on how to use them"[26] with a structured nature that can also be viewed through a behavioural prism as "a complex set of habits".[27] There are six to seven thousand languages in the world that are used for communication (of which around 2,500 are threatened with extinction because fewer than 1,000 people use them). According to some linguists, this number will inevitable fall, which will lead to the emergence of two major world languages in the future (most likely English and Chinese). There are also some researchers who predict the emergence of an all-human language of thought[28] – beyond speech or visual record, as pure communication between minds. Adrian Frutiger suggests that when at the beach, people feel an irresistible urge to draw in the sand.[29] This desire to leave a material trace of human existence, just like thousands of years before our time, still remains alive in the essence of a human being. It is difficult to imagine a world in which the immateriality of thoughts deprives us of the pleasure of using the visible and interpreted form of a record to show the interpersonal exchange of emotions.

There are 46 different known types of alphabets that transcribe the languages of the world. Each language has a set of sound units (phonemes) ranging from 16 to 60 items. This number is often greater than the number of the letters in a language, since a phoneme is also formed by combining more than one sign. A person can recognise the sound of about 100 phonemes at a speed of 16 phonemes per second, which are roughly 250 words per minute. Interestingly, studies[30] have shown that a typical reader will read a similar number of words per minute (nearly 240 words) of moderately difficult text at an average pace. In order to read at such a speed, both of these activities must be automatic.

Apart from the representational and expressive function, the basic function of every language is communication[31] – namely, the transmission of thoughts, words and emotions. In a canonical article by Roman Jakobson entitled: *Poetics in the light of linguistics*, the author points out the "constitutive factors characteristic of all speech acts, for each case of linguistic communication"[32] as (apart from the message, sender and recipient) the context, code and contact – "being a physical channel and the mental

26 *Psychologia. Podręcznik akademicki*, vol. 1, eds. J. Strelau, D. Doliński, Sopot 2000, p. 490.

27 See Ibidem.

28 E. Satalecka, *The Art of Writing*, [in:] *Future Graphic Language: New Directions in Verbal Communication*, eds. E. Satalecka, J. Piechota, J. Karpoluk, Warsaw 2020, p. 95.

29 See. A. Frutiger, *Człowiek i jego znaki*, 3rd ed., trans. C. Tomaszewska, Cracow 2010, p. 87.

30 See E. Wolańska, A. Wolański, *Kroje pisma ułatwiające czytanie osobom dyslektycznym...*, p. 225.

31 *Psychologia. Podręcznik akademicki...*, p. 493.

32 R. Jakobson, *Poetyka w świetle językoznawstwa*, "Pamiętnik Literackij" 1960, no. 2 (51), p. 434.

33 Ibidem, p. 434–435.

34 B. Dobek-Ostrowska, *Podstawy komunikowania społecznego*, Wrocław 2004, p. 11.

35 Ibidem.

36 Ibidem.

37 Ibidem.

38 See *Psychologia...*, p. 493.

39 B. Warde, *Kryształowy kielich*, [in:] *Widzieć / wiedzieć...*, p. 40–41.

40 J. Kubasiewicz, *Przyszłość tekstu i typografii*, "Powidoki" 2021, no. 5, p. 177.

41 Ibidem, p. 176.

relationship between the sender and the recipient".[33] The word communication derives from the Latin verb *communico / communicare*, meaning 'to pass a message to someone'[34], and from the noun *communio*, meaning 'community'.[35] This term meant 'entering the community'[36] until the 16th century, when it was given the definition known today as 'transmission'.[37] Interestingly, communication through language changes its character depending on whether one uses speech or script. According to psycholinguists, a word in the form of printed text is detached from a situational context and is deprived of its actual function – i.e., the possibility to modify the message under the influence of the recipient's reaction or the participation of the recipient in its co-creation.[38] The printed text is therefore final; it is a one-sided, independent message in the form of a closed monologue. As Beatrice Warde notes, "it is real magic that by placing black marks on paper, I can have a one-way conversation with a complete stranger at the other end of the earth".[39]

Nowadays, thanks to the latest, widely available technologies, the written word exceeds paper and gains newer areas of functioning, reaching a larger group of recipients. Both the internet and instant messaging – including social media and online discussion forums – have introduced text into a specially designed space where dialogue and interaction have supplanted the closed discourse, influencing the form of text and the way it is perceived. In his article entitled *The Future of Text and Typography*, Jan Kubasiewicz mentions the example of short text messages as a form of contemporary text communication which, thanks to technology, is closer to speech than to the written word. John McWhorter explains that "Texting is not script, but 'finger speech' – a loosely structured dialect that, to some extent, disregards the rules of linguistics".[40] This unique jargon, present in digital communication, is "a mixture of sound symbols, number symbols and self-referential linguistic interpretive symbols"[41] making up a new language structure. The emerging newspeak of modern technology users merges the achievements of phonetic script and the tradition of picture script into a hybrid system. The degree of freedom in using this novelty-chasing system also illustrates very well the growing gap in society between the generations of digital media users.

The origins of interpersonal communication and visual art have a common source. At first, ideographic script was a pattern based on realistic and abstract signs and it functioned as a system of synthetic images representing concepts and ideas. It was only the phonographic script, ascribing syllables to signs that tied the image more closely to sound, thus subordinating it to the system of spoken language, with the appropriate division for speech. The development of phonetic script, in which the number of symbols was limited to transcribe thoughts, increased the precision of communication and slowly contributed to the emergence of the commonly used lettering code. The mechanism of assigning an image or sound to a specific idea or concept is demonstrated in the diversified visual strategy that one uses when reading. The "Phoenician strategy" assumes "correspondence between a grapheme and a phoneme" and requires the reader to "transform the substance of a word from figurative to phonic in order to reach its meaning".[42] The "Chinese strategy", on the other hand, assumes that "the reader uses the graphic image of the word as an iconic code that opens up meanings in the mental dictionary".[43]

Along with greater access to cultural goods and the increase in the number of recipients, the distance between the author, orator and the recipient of the text has also increased, pushing the written word towards intimate meetings alone with the reader. With time, reading aloud in front of a gathered audience was replaced by quiet, solitary contact with the text. The text's one-sided monologue was aggressively joined by complementing elements, helping the secluded reader draw the necessary information from the form of the text to evoke appropriately saturated emotional reflections. The range of these additional elements has grown. After introducing punctuation marks that help in the appropriate division of the sentence, it was time for initials, illustrations and photos. In the next unveiling, the text was accompanied by an extensive graphic interpretation, taking into account typography, composition, colour or interactive elements. Audiobooks, which have grown in popularity, have perversely reversed the developed scheme of silent text reading with the inner voice of the recipient. In so doing, they reduce the active reading process into a passive broadcast, dematerialising the text and all its properties in favour of the interpretation offered in the voice of the lector.

[42] E. Wolańska, A. Wolański, *Kroje pisma ułatwiające...*, p. 228.

[43] Ibidem.

44 H. Richter, *Dadaizm*, trans. J. St. Buras, Warsaw 1986, p. 213.

45 J. F. Lyotard, *Discourse, figure*, Minneapolis 2011, p. 211, as cited in: M. Marek–Łucka, *Do we need illegible writing? A philosophcal approach to abstract calligraphy*, [in:] *Future Graphic Language: New Directions in Verbal Communication*, eds. E. Satalecka, J. Piechota, J. Karpoluk, Warsaw 2020, p. 22.

46 Ibidem.

47 J. Derrida, *O gramatologii*, trans. B. Banasiak, Warsaw 1999, p. 54.

Typography uses all variable components in the formal layer to include as much information as possible about the nature of the text, prompting the recipient to interpret it properly. The typographic layout's designer, whilst aiming to unify the text, often goes beyond providing comfortable conditions for text reception, in favour of bold differentiation of the letter's topic matter. In order to maintain the recipient's interest, strengthen the hierarchy of individual fragments and bring the lifeless text closer to the vivid expression of speech, the designer diverges from the usual solutions treating the text as monotonous grey. It is not difficult to find examples of text composition, using expressive emotive elements aimed at "imitating" a whisper or a shout. Such graphic differentiation of the typographic tissue, through different punctuation or typestyle, may evoke associations with musical notation.[44] These artistic procedures, although often used in the works of Dadaists, are also reflected in contemporary commercial projects, the authors of which try to contaminate the viewer with visible and "audible" enthusiasm. The words of Jean-Francios Lyotard that "Reading is hearing, not seeing"[45] seem to seek an answer to the following question: to what extent should the written word imitate the sonic features of speech? However, the later dictum of the philosopher – "the reader does not see what he/she is reading, but is trying to hear the meaning of what the absent speaker, the author of the text, wanted to say"[46] – prompts reflection on whether the term "listening to the text" tends to involve a form of attentive listening that is understanding, in the proper sense. In this case, the form should not actually include imitative sound elements, but should rather reflect the intentions of the author, the essence of their message. The role of typography goes beyond the mechanical translation of the sound of the author's articulated thoughts expressed in rhythmic code. Indeed, it should be considered that script, while related to speech, is not merely its record. Nor does it aspire to imitate it directly, as stated by Aristotle, as a transformation of speech into the visual, in which "the sounds made by the voice are symbols of the states of the soul and the words written with the symbols of those words are made by the voice".[47] Script is a separate, broader language-related system that is based on the activity of processing and formulating interpretations of both our thoughts and the reality around us. Eric Gill claims that "It is no longer

possible – and it is not known if it has been – to say that a certain letter always and everywhere means one particular sound. (…) The absurdity of letters, however, goes beyond spelling. Letters have not only stopped signifying the sounds of a language, but script has nothing to do with speaking. Speaking has nothing to do with writing down what has been said. Hand script is not written speech, it is rather a translation of it into another, clumsy and difficult medium that has no relation to the temporal aspect of speaking and only a slight connection to its sound".[48]

Communication, first oral (early oral transmission before the development of script), was intended to consolidate the history and traditions of the community. Characterised above all by elusiveness, it required human presence in a given place and time. It was based essentially on memory, which is why a number of mnemonic practices were used, such as formal style, redundancy, rhythm and harmony. For example, apart from its entertainment value, the literary heritage of ancient Greece was used to educate citizens, in the field of ethics, politics and theology. The emergence of script truly revolutionised the Greek community. The development of a durable medium, unlimited in capacity, also opened the door to the development of language studies itself, providing reliable comparative material suitable for further analysis. "The participants of communication processes, freed from the requirement of remembering, could turn more mental energy towards completely new areas of learning about reality and themselves. In other words: mental activity, so far intended for acoustic memory training, has been directed towards more original and abstract thinking".[49]

Nineteenth-century language studies treated visual record as the basic medium necessary for the analysis of spoken language. It allowed for recording the course of oral speech and was a tool for the consolidation of languages, which were not available in the written form and to which scientists had access as part of their colonial and commercial expansion. The developed phonetic notation was also used for these purposes, directly representing the formulated sound, developing the field of linguistics towards the exploration of phonological features and structures of a language. The paradox of this *status quo* was that although science

48 E. Gill, *Esej o typografii*, trans. M. Komorowska, Cracow 2016, p. 120–121.

49 M. Góralska, *Piśmienność i rewolucja cyfrowa*, Wroclaw 2012, p. 41.

50 See. J. Derrida, *O gramatologii...*, p. 54.

51 F. de Saussure, *Kurs językoznawstwa ogólnego*, trans. K. Kasprzyk, Warsaw 1961, as cited in: J. Derrida, *O gramatologii...*, p. 61.

52 J. Derrida, *O gramatologii...*, p. 61.

53 F. de Saussure, *Kurs językoznawstwa ogólnego...*, p. 44, as cited in: Ibidem, p. 60.

54 F. de Saussure, *Kurs językoznawstwa ogólnego...*, p. 44, as cited in: Ibidem, p. 60.

55 Term used by F. de Saussure. See Ibidem, p. 68.

used essentially visual, material record in its research on language, script itself and its relationship with the language were still omitted, and the analysis of figurative sign bore the stigma of biased scientifically groundless speculation. Thanks to Swiss scientist Ferdinand de Saussure, at the beginning of the 20th century not only were the tasks of linguistics defined as an autonomous field of science, but also script was clarified as a separate system, dividing the hitherto linguistic unity of the representation of a linguistic sign into internal and external elements: signed (*signifié*) and significant (*significant*).[50]

The concept of structuralism was based on the separation of the dualistic features of a sign in the form of a concept and image (acoustic or graphic). The script had separated itself as part of the language. The subject of research, however, was the system itself, and the spoken word continued to hold an unchanged and privileged position in relation to phonetic script. Structuralism assigned a narrow, servile role to script in comparison with the originally spoken language. De Saussure did not shy away from criticising the visual record, seeing it as a disturbance of the natural order in the relation between sense and phoneme. Pejorative evaluation of hand script against the background of speech resulted from the threat posed by the graphic form, dominating the language – also through spelling, reading or writing as subjects of early education. Moreover, de Saussure could see a dangerous power in the graphic image, considering the striking effect of the visual record on the viewer as "something durable and solid".[51] According to de Saussure, the true sonic bond could only be found in thought-sound. This relationship is the combination of "signified (concept or meaning) with phonic signifier, thereby subordinating script (visual image) to speech".[52]

Jacques Derrida, in his famous work entitled: *On grammatology*, argues with the theory of de Saussure, for whom script is "the sensual matter and an artificial exterior, (...) perverse, perverted, corrupt and concealing outfit, a festive mask to be exorcised".[53] His moralising rhetoric placed the script as the sinful image of language, covering it not as a garment but as an external, hostile "disguise".[54] The "tyranny of the letters"[55] was tantamount to the tyranny of domination the body had over the soul,

a passion that was an expression of passivity and the sickness that burdened the soul.[56] He feared that de Saussure's reversal of the natural relations of language and sound were based on the observation that "the written word blends so closely with the spoken word, the image of which it represents, that it eventually usurps the main role".[57] In another passage, de Saussure condemns the influence of script on speech with these words: "An inversion of the natural relations would thus produce a perverse cult of the letter-image: the sin of idolatry, 'superstition with regard to the letter'".[58]

The concept of structuralism had a significant impact on the perception of text, and therefore on script itself. The isolation of language as an independent system, despite its distance from the visual record, opened the door to further emancipation of the text both in the field of language research and in literary and artistic works, including those of the twentieth century. Deconstruction, based on the post-structural theoretical background, introduced new areas of autonomy of script, allowing language to resist control and escape beyond the intentions of the author. The well-established meanings of concepts were questioned, and the disintegration of well-established pairs of meanings was pointed out.

This nihilistic changeability and instability is felt in statements by Derrida on the "natural relationship of speech and script", in which "nature is hounded – from the outside – by an agitation that changes it from the inside, distorts it and forces it to move away from itself. Nature distorts itself, separating itself from itself, naturally accepting the outside within".[59] The concept of deconstruction, characterised by instability, the movement of meanings, and a non-linear narrative, strongly influenced experimental typography. "Deconstruction is revealing or it does not exist at all; it is not content with methodical procedures, it opens a passage"[60], which becomes an experimental space for the letter in the constant search for the limits of the message's legibility.

56 See. Ibidem, p. 64.

57 Ibidem, p. 39, as cited in: Ibidem, p. 61–62.

58 Ibidem, p. 64.

59 J. Derrida, *O gramatologii…*, p. 68.

60 J. Derrida, *Psyche. Odkrywanie innego*, trans. M. P. Markowski, cyt. za: *Postmodernizm. Antologia przekładów*, ed. R. Nycz, Cracow 1998, p. 88.

LEGIBILITY

There is a conviction that when a letter is involved, it carries a specific coded content that is inseparable from the sign. Its existence is conditioned by the function of conveying a message; its presence is therefore pragmatic in principle. The disturbance of readability and certain utilitarian aspects of the written word calls into question the validity of using a letter, whose original entrusted function is blurred or completely disappears.

Legibility. Readability. When translated into Polish, both terms are semantically connected. Both legibility and readability serve as definitions meaning the ability to be read; they function as synonyms of the term "legible (easy to decipher)"[61] or "readable (understandable)".[62] This definition reflects the interrelated areas where legibility should be considered. The first one (physical) relates to recognising the form of a sign by the sense of sight, while the second (intellectual) is lined with the processing of the message and the understanding of its meaning.

When describing legibility in design, Gerald Unger refers to Walter Tracy who defined legibility as "the ease of recognising individual signs of a given typeface".[63] This should be considered in the context of character details, and readability as a concept covering the broadly understood ease of reading, taking into account aspects relating to the entire text and not the letters themselves.[64] The term that complements the meaning of legibility seems to be "distinguishability"[65] by Bror Zachrisson (or "visibility" according to H. L. Gage, 1946), defined as "the accuracy of perception of individual text units at a specific exposure".[66] "Perception" and not "understanding"[67] of letters, refers in this case to shorter fragments of text, with or without meaning (logos and advertising slogans). The term "legibility" according to Jacek Mrowczyk refers to the distinction between "a single sign of script and the ease of its identification".[68] Another term used by Michael Mitchell and Susan Wightman is "typeface clarity"[69], which is directly related to the design of the individual glyphs and font size at which the signs appear. A similar explanation of legibility is offered by Allan Haley (the director of Monotype Imaging), who describes the concept as "an informal measure that helps separate individual letters in a printed text (and thus enables the comparison of different typefaces according to this property)".[70]

61 *Legibility* (Polish: *Czytelność*), [in:] *Słownik języka polskiego PWN*, ed. W. Doroszewski, https://sjp.pwn.pl/slowniki/czytelno%C5%9B%C4%87.html/ [access: 13.10.18].

62 Ibidem.

63 G. Unger, *Kiedy czytamy*, trans. A. Bienias, [w:] *Widzieć / wiedzieć…*, Cracow 2011, s.172.

64 Ibidem.

65 See B. Zachrisson, *Studia nad czytelnością druku*, trans. K. Chocianowicz, J. Hyc, Warsaw 1970, p. 36.

66 Ibidem, p. 36.

67 Ibidem, p. 36.

68 J. Mrowczyk, *Niewielki słownik typograficzny*, Gdansk 2008, p.53.

69 M. Mitchell, S. Wightman, *Typografia książki. Podręcznik projektanta*, trans. D. Dziewońska, Cracow 2019, p. 20.

70 R. Reuss, *Perfekcyjna maszyna do czytania. O ergonomii książki*, Cracow 2017, p. 22.

71 See R. Jarzec, *Czytelność krojów pisma w systemach informacji wizualnej*, TypoLub symposium lecture, Lublin 2021.

72 R. Reuss, *Perfekcyjna maszyna do czytania...*, p. 22–23..

73 M. Mitchell, S. Wightman, *Typografia książki...*, p. 20–24.

74 R. Bringhurst, *Elementarz stylu w typografii*, Cracow 2007, p. 27.

75 Ibidem.

76 J. Tschichold, *Nowa typografia: podręcznik dla tworzących w duchu współczesności*, trans. E. Borg, Lodz 2011, p. 15.

Readability as the second aspect of understanding written language refers to continuous typesets governed by different laws, in which the recognition of letters is only a part of the whole process. Robert Jarzec explains this term as "the ease of reading", defined by the level of comfort a reader experiences while reading.[71] Roland Russ however, points out that the evaluation of book typography should be made "in the perspective of readability as intelligibility. The shape of individual letters plays only a secondary role here. (...) It concerns, first of all, the style of the texts, the immanent features of the applied language. It is common to say, for example, that something 'reads well' when the transition from reading to comprehension of the text is assisted by the way in which the text is formulated — a term that refers primarily to texts that have a complex subject matter. Books in which this internal linguistic dimension of the study is complemented by the external – typographic – form of the text are read well. In both complementary spheres, it is about facilitating the crossing of the border between text and meaning, and about the adequacy of the message".[72]

In order for this process to proceed without excessive effort for the eyesight, the designer composing the page has to pair the key elements of design so that the eye of the reader is guided through the meanders of words with maximum comfort. As indicated by the authors of *Book Typography* – Michael Mitchell and Susan Wightman – it is important for the level of readability, that the text be properly calibrated to its intended use, and the parameters of key components should constantly be altered depending on particular implementation conditions. Features like the regularity and uniform rhythm of type, the type size, as well as the word spacing and leading, are worth distinguishing, among others.[73] According to Robert Bringhurst, the optimal conditions are, for example, a quiet "darkening of the column by the lettering material"[74], otherwise known as grey, which "depends on four things: the typeface, letter, word, and line spacing. They are all closely related to each other".[75] Jan Tschichold describes this calm as "an even silvery grey"[76], achieved in the Renaissance period by the use of roman typefaces in exchange for an equal in ductus, but heavy in character blackletter minuscule. In a similar vein, the outstanding British letter designer Nadine Chahine points out that readability is

not an unconditional value for a typeface. Only an appropriate balance of the implementation factors allows the user to perceive the typeface as reader-friendly. The researcher compares the use of typography to spices added to a dish by the chef in order to compose a unique flavour.[77] Just as it is not enough to mechanically mix the ingredients, typefaces cannot be used without reflecting on their individual properties. In order for the "dish" to gain a refined and distinctive taste, individual ingredients must be skilfully dosed. In the case of letters, selecting a typeface, the correct font style or size, and the kerning setting should be used with caution, in the same way as in the case of other elements of the project: colour, background and/or layout. Without certain restraint and sensitivity in dealing with text, individual expressive tastes will dominate, disturbing the pleasure of the visual consumption of a coherent work.

Although the optimal presentation of text is a factor facilitating its comprehension, it does not guarantee understanding. Thus, readability in the context of longer texts can be interpreted both through the ongoing physical process, based on the comfortable execution of eyesight when reading longer texts, as well as through the intellectual process: i.e., understanding the content. In such a consideration of readability, the dominant medium for the text is, of course, a book of large volume, complex structure, often devoid of additional visual attractions. Interestingly, although movable type was developed to meet the demand for books, for some designers, book typography is "the least appreciated style of typographic communication".[78] Michael Mitchell and Susan Wightman list the key functions that book typography must face: organisation, navigation, consistency and readability.[79] Since reading is a continuous and lengthy process, and at the same time based on a certain type of repetition, anything that disturbs its steady rhythm and consistency transpires to be a barrier between the reader and the words. It can distract the recipient and, above all, make it difficult to focus, because it gives the impression of error.

Nadine Chahine measures the legibility of a text as the ease of extracting information from a visual record so that its processing can begin. In her opinion, understanding the message – i.e., the final result of this process – is not something that defines readability. In the lecture *Designing*

77 See N. Chahine, *Designing for Split-Second Clarity*, https://www.mono type.com/resources/ webinars/designing-for-split-second-clarity/ [access: 6.10.2018].

78 M. Mitchell, S. Wightman, *Typografia książki...*, p. 18.

79 Ibidem.

80 See N. Chahine, *Designing for Split-Second Clarity…*

81 B. Zachrisson, *Studia nad czytelnością druku*, trans. K. Chocianowicz, J. Hyc, Warsaw 1970, p. 34.

82 Ibidem, p. 35.

83 Ibidem, p. 33.

for Split-Second Clarity, the author distinguishes the factors influencing text readability as: language, reader, task, medium, distance, size, typeface, typography, and context.[80]

"Language" determines the difficulty of the message – i.e., the number of unknown words that a given message contains or the degree of complexity of the literary language. "Reader" refers to the characteristics of the recipient of the text, their age, how long they has been in contact with the text language and the frequency with which they have had contact with the written word. This also includes the aspect of bilingualism, which may affect the reception process. "Task" is the purpose of reading. This factor includes assumptions as diverse as: reading for pleasure, cursory browsing or searching for a specific part of the text, or checking short messages with the intention of obtaining specific information. "Medium" indicates where the text appears (whether it is a printed page or a mobile device screen). "Distance" as well as "size" conditions the contact of the recipient with the type size and the clarity of recognition of individual glyphs. The factors "typeface", "typography" and "design" determine the form of the letters and the way they are used, while the context describes the immediate environment in which the text appears.

According to Bror Zachrisson, legibility is also related to the ease with which visual information reaches us, but should primarily be considered as "accuracy in understanding a text with a specific meaning".[81] The researcher claims that "to postulate that ease of reading is *a priori*, a credible criterion for assessing legibility would cause confusion to the consideration of the issue".[82] Zachrisson determines a set of main factors involved in the reading process, as the reader, text, typography and technical factors, as well as situation and observation. Observation includes, among others: attention (interest, attitude), understanding, rendering, speed, fatigue and aesthetic evaluation. In observation, the author considers the factor of understanding to be key.

According to Zachrisson, readability "never solely depends on the text, the functional reader-text situation must always be taken into account".[83] If one wants to consider readability in the context of the recipient's reaction

to the stimulus (i.e., the text), they must also take into account the broadly understood attitude of the reader to the text itself, as well as their experience of communicating with it. Therefore, the concept of "text accessibility" was very important for the author – i.e., the subjective assessment of the recipient regarding whether a given text is attractive to the eye.[84] During his conference presentation[85], Martin Tiefenthaler, a lecturer at the Viennese *die Graphische*, presented an example of a test that fell within the scope of his research on text reception. The test involved reading a simple recipe, designed in two versions: first – taking into account the habits and predispositions of readers; second – made subtly more difficult to read. The test showed that the recipe rated by participants as more difficult to recreate was also more difficult to read. It was enough to introduce minimal disturbances in the composition for the recipient to experience greater effort in reading, which could effectively contribute to discouragement and final abandonment of the task. Although one can occasionally hear printing professionals talk along the lines of the latin phrase *epistola non erubescit*[86] – paper endures all – the reported feelings of the recipients prove how influential the typography design is, as it quietly impacts everyday life decisions.

One of the areas where the presence of the letter is burdened with the greatest responsibility towards its recipients is way-finding systems, particularly those dedicated to traffic. Significant in the Polish context is the 200-page *Manual of Road Signs and Signals* created within a six-week time frame by Marek Sigmund. This thorough study unifying the landscape of Polish road signs from 1975 was a comprehensive project commissioned by the Ministry of Transportation. It included the alteration of road signs throughout the country; their graphic form, hierarchisation, as well as the design of new lettering. The technological possibilities of implementation required the characters to be created using a stencil method of drawling, with the use of a ruler, brush and calliper. The result was a strongly geometrised, sans-serif letter with distinctive perceptible symmetry.

Today, letters precisely cut from reflective foil reveal the weaknesses of the design, which while still in use, did not stand the test of time. Marian

84 See Ibidem, p. 35.

85 M. Tiefenthaler, *O emocjonalnym wpływie dobrej i złej typografii*, TypeTalks symposium lecture, Poznan 2011.

86 The letter does not blush

87 M. Misiak, *Polskie pismo drogowe. O historycznym projekcie Marka Sigmunda i propozycji jego redesignu*, "2 + 3D" 2012, no. 43, p. 34–36.

Misiak, while presenting his proposal for redesigning the existing project, points to "the lack of optical correction of both horizontal elements and the connections of the letter's main elements (the so-called stem), which reduces legibility. (…) The circular form of characters such as "o", "p", "b", "d", "c", "e", "O", "G", or "C" reduce the economy of the typeface, which is essential for long city names. The diacritics are surprisingly light and do not correspond with the weight of the letters, making them difficult to recognise".[87] The relatively low x-height, the small eye of the letters, and the similar height of the capitals to the ascenders line, which create a close resemblance between the capital letter "I" and the lowercase letter "l", also remain a problem. This critic of the typeface design is dictated by Misiak's analysis of other, tested typeface systems, created by international teams. The designer points to a number of properties that ensure better legibility in road sign typefaces. The key aspects are: a large aperture and x-height, significant space between letters, the use of two types of typefaces – a thinner and thicker – depending on the background colour, the use of lowercase for typesetting and uppercase at the beginning of a word, and a clear distinction between numbers and letter characters that are similar in form.

The design process behind the creation of the Clearview typeface, implemented on road signs in the United States, serves as an example of a rigorous subordination of the form of the letter to legibility. The typeface was subjected to an in-depth analysis by the design team, which included specialist graphic designers, engineers, and researchers in human factors and psychology, supported by the Texas A&M University Transportation Institute and the Larson Transportation Institute at the Pennsylvania State University. The thickness proportion of vertical and horizontal letter elements was set as 1:5, a ratio found in other typefaces of a similar utility function. Mechanically constructed elements of the letters were eliminated and small lower elongations and articulated upper elongations of the minuscule were used, improving the arrangement of text and straightening the role of the word shape. A particularly important decision involved the development of two versions for each of the six styles developed for the typeface. It was found that every fifth user of national roads is a driver over 65 years old, with impaired visual acuity, slower reaction time and

increased sensitivity to contrast at night. The difference in the weight of the characters in the dedicated versions of the typeface counteracted positive and negative contrast. On bright, reflective backgrounds, the letter seemed optically thinner and needed to be thickened to neutralise the effect of illumination. The form of the designed letters also made ergonomic use of the area available on boards, without the necessity of having them enlarged, and often even allowing the reduction of their size. Already in the 1960s in Great Britain, during the ongoing media dispute over the appearance of new signs on the emerging M1 expressway, David Kindersley raised the issue of their size. As a close associate and student of Eric Gill, he drew attention to the problem of large signs, which according to the designer, were not only expensive and spoiled the appearance of the landscape, but also escaped the driver's field of view when driving at night.

Road signs are primarily characterised by a short numerical or verbal message, viewed from a considerable distance and in a short time. The legibility features of a typeface used for such a specific task differ from the requirements that a letter in continuous typesetting should meet. Readability studies consider narrowly defined issues in a very controlled context. On the one hand, the compilation of long-term results of these studies allows us to draw general conclusions regarding formal solutions in the letter, helping typographers optimise the design for its dedicated function. On the other hand, these conclusions are strongly subordinated to specific conditions and are not free from variable factors which, in the case of a complicated reading process, make it impossible to formulate an unambiguous, universally applicable rule. Newly created typefaces are rarely accompanied by a thorough, analytical research process that confronts the design with the reader's experience. Sofie Beier notes that "Most of the previous empirical studies into typeface legibility are based on the comparison of different fonts in a retrospective manner after the development has taken place, and not as a part of the design process. These fonts vary so much in overall appearance that it is difficult to say exactly which of the qualities of the individual fonts make them perform as they do in different test situations".[88] The researcher cites four categories of methods on which readability tests are based, including continuous

88 S. Beier, *Typeface Legibility: Towards defining familiarity*, London 2009, p. 19.

89 Ibidem, p. 24–33.

90 J. Scaglione, *Font jako cyfrowy nośnik pisma*, [in:] C. Henestrosa, L. Meseguer, J. Scaglione, *Jak projektować kroje pisma. Od szkicu do ekranu*, trans. N. Pluta, Cracow 2013, p. 107.

reading (measured by reading aloud, reading speed, or the number of mistakes made), word/letter search, visual accuracy threshold (word or letter identification, distance and short exposure character recognition) and the reader's preference (the subjective opinion of the test participant).[89]

The development of movable type, the invention of the Linotype machine, or the use of phototypesetting, verified the letter form in the context of new text distribution techniques. The digital age, as noted by José Scaglione, also imposes its own limitations on the letter. According to the typographer, the problematic issues are the "resolutions of transcribing devices and the different possible variations of reproducing the same typeface".[90] Once, the heavily lead-filled drawers of the printers housed sets of characters for each typeface that was used. The convenience of instant scaling of digital fonts, however, deprived the letter of the manual alterations to its form, carefully executed by the engraver, preventing the deformation of the character in the smallest text sizes. Optical font scaling or size-specific design, which takes into account a different version of the character for small typeface sizes, is still rare. Typography, although considered a seemingly egalitarian field, forces designers to have specialist knowledge of both the technological aspects of generating the record and the awareness of the conditions of their later processing on a specific medium. In a sea of available typefaces, legibility is often a factor that distinguishes a font from other competing typefaces. The design of the Sitka typeface – as the authors themselves suggest – is proof of a successful cooperation between the world of science and the world of typography. Kevin Larson's collaboration with Matthew Carter was marked by 13 tests monitoring readability at various design stages. This allowed the form of the letter to be adapted to its functionality in the digital environment. The design decisions, formulated by these specialists, are an important voice in the discussion about what affects legibility and what features a font dedicated to continuous typesetting should possess.

One of the elements that constitute the complicated process of reading is the ability to distinguish individual characters. The relatively large x-height of a typeface is often treated as the basic factor determining legibility. According to tests carried out on the Sitka typeface, it was

found that a large x-height has a positive effect on the perception of letters with a neutral height, although an increase in its value negatively affects the recognition of characters with ascenders and descenders. The letter "e", which most often co-forms words in English, was characterised with the best recognition score among all characters. According to the authors, there is a strong relationship between the frequency in which letters appear in words and the ease with which we can identify them. We recognise the signs we see more often. While analysing the research of various readable typefaces, the authors of Sitka also noticed that in each typeface, a different letter was best recognised. The letter "s" was characterised by the best legibility score in the Verdana font, while the letter "m" was most legible in the DIN font. Research by Sofie Beier and Kevin Larson, verifying different variants of a character within one project, proved how the construction of a letter and the design of its details affects perception. The aforementioned letter "e" is characterised by a standard width and structure based on an arc. Characters with these properties, located within the x-height such as "c", "a", "s", "n", "u", and "o", are exposed to frequent mistakes. The second category of characters with a high risk of being misread are narrow letters composed of one vertical stroke, such as "i", "j", "l", "t", "f".[91]

Letter width is also associated with recognisability. Narrow characters are more difficult to identify, so the Sitka typeface was significantly expanded. The authors also noticed that the identification of characters is different when the letters are in isolation, as opposed to when they are accompanied by other characters, as is the case of reading. Single letters, as well as three-letter character sequences, with the specific letter in the middle, were tested. During the study, it was crucial to ensure that no words were formed. Narrow letters such as "t" or "l", when combined with other characters, were often mistaken for wider letters such as "h" or "k". The letter "i" was often confused with "j" or "l", but only when the character appeared alone. Increasing spacing to counteract the crowding effect in longer text has its limitations. During the tests, it was also found that the letter's closed aperture made it difficult to recognise the character in a sequence, but did not affect its readability when the letters were presented in isolation.

91 See. S. Beier, K. Larson, *Design Improvements for Frequently Misrecognized Letters, Typeface Legibility: Towards defining familiarity*, "Information Design Journal" 2010, vol. 18, nr 2, p. 118–137.

In the book *Studies in the Legibility of Printed Text*, Zachrisson distinguishes the three main tasks of print as transfer of information, duplication of information and the securement of the finished product for a specified period of time.[92] Transfer of information also includes the interpretative aspect of the text, which the author describes as typography. Zachrisson states that "as long as the purpose of typography is to facilitate the perception of information, it must be studied from the psychological point of view".[93] Although this statement may seem to extend to the competence of the designer, it is difficult to consider typography solely in terms of the formal properties or technical aspects of the designed letters and type. As an applied art, the role of typography has always been fused with the recipient with their condition, knowledge, habits, as well as with their practiced taste, shaped by specific aesthetic preferences of a given period, otherwise defined as the style or fashion prevailing at the time the work was created.

"The transmission of thoughts, ideas, and images between minds"[94] was for Beatrice Warde the overriding goal of typography. A functional but not intrusive, almost invisible typesetting was the determinant of a well-implemented project. Using the comparison to a crystal goblet, which is noble in its form, the designer in her most famous lecture of the same title promoted solutions in which "the eye looks through the script and does not focus on it".[95] Beatrice Warde argued that thanks to the maximum readability and ergonomics of text, the design should not compete with the content, but rather expose it through appropriately selected proportions of key elements. According to Warde, print "can be delightful for many reasons, but its importance is primarily determined by the fact that it performs a specific function".[96] This function should be a "signpost" for designers, conditioning formal decisions. Their actions should be humble and disciplined, devoid of the selfish need to develop an individual visual language. According to the designer, "a printed work should not be called a work of art, as this would suggest that its main purpose is to express beauty for the sake of beauty and to provide pleasure to the senses".[97] Typography, which carries information in all contexts, is supposed to provide content in an accessible way, without resorting to fancy solutions, described by the author as "vulgar ostentation".[98] Following this

92 B. Zachrisson, *Studia nad czytelnością druku...*, p. 25–26.

93 Ibidem, p. 27.

94 B. Warde, *Kryształowy kielich...*, p. 40–41.

95 Ibidem, p. 44.

96 Ibidem, p. 41.

97 Ibidem, p. 41.

98 Ibidem, p. 44.

99 J. Tschichold, *Nowa typografia...*, p. 13.

100 E. Rudner, *Typografia porządku*, trans. A. Sak, [in:] *Widzieć / wiedzieć...*, p. 73.

101 Ibidem.

102 G. Unger, *Kiedy czytamy*, trans. A. Bienias, [in:] Ibidem, p. 172.

103 E. Rudner, *Typografia porządku*, trans. A. Sak, [in:] *Widzieć / wiedzieć...*, p. 75.

104 J. Tschichold, *Nowa typografia...*, p. 29.

line of reasoning, the pleasure one derives from a well-designed work results not so much from the genuine expression of the typographer, but from the perceptible balance between the adopted form of communication and the embedded content within.

The postulates of Jan Tschichold, the author of *The New Typography*, resonate in a similar vein. He saw beauty as "an attribute of the rightness and purposefulness of construction"[99] – something that should be treated rather as a side effect of a well-performed task, than a value in itself. For the creators of applied art in the spirit of modernism, function was a starting point in developing a collective culture that would respond to the new needs of the normalisation of all spheres of life. Emil Ruder, the developer of the Swiss style, pointed out that "typography is considered primarily as a way of organising various components of the layout of a publication"[100] by looking for functional answers to everyday problems. According to Rudner, "the principle rule, from which there are no exceptions, is that the text should be legible. It is only after this elementary condition is met that one can start talking about the question of form".[101] He claimed that "a printed word that cannot be read becomes a pointless product"[102], and the project is not a space for the implementation of rigorous artistic demands. Rudner also held that one of the most difficult elements was to find the right balance between the function of text and its form, because "even a slight weakening of the role of one of these aspects may cause domination by the other".[103]

Designers, responding to the challenges at the turn of the nineteenth and twentieth century, were to give up "personal vanity – erroneously referred to as personality"[104] in order to devote their efforts to unified and logical creativity responding to specific needs. Artists ceased to dominate the work; the realised form, no longer a fantasy, was derived as a result of the function, material or structure of the designed object. In everyday items, technology originated from nature's organic construction lead the way. In typography, the form was obediently subordinate to the content. In both cases, the design was supposed to clearly represent the essence of things, its purpose and aim. The text was free of unnecessary elements including the ornament, that was considered to be a manifestation of infantile

attitude. Text was saturated with contrast in both the typographic layer, as well as in directions, colours, light and shapes. Strict logic and consistency, adapted to the manner of reading prevailed. The preferred letter typeface was the grotesque, characterised by a clear form. Tschichold puts it this way: "The new typography differs from the previous ones, in a way that it is the first to try to derive the external form of the text from its functions. The content of the printed text must be given a clean, direct expression, and its form must result from function, as in the products of nature and technology. Only in this way one will create typography that will be appropriate for the present spiritual stage of development of the modern man. The function of text is to communicate, emphasise (the importance of the word) and organise the content logically".[105]

Despite the passage of time, the contemporary audience's stage of spiritual development, described by the eulogist of modernism, has not greatly changed. The reader at the turn of the century, just like the contemporary consumer of information noise, was overwhelmed by the excess of prints and the increasing production of graphic materials, resulting from the speed of the new technical progress. Tschichold drew attention to "the pace with which today's consumer of the printed word has to assimilate it, as well as the general lack of time that forces them to the highest economisation of the reading process, inevitably requiring the form to be adapted to the conditions of modern life. As a rule, we no longer moderately read line by line, but instead look at the whole text and only when something arouses our interest, we closely study it".[106]

No wonder, that along with the growth of media, which provide information in the form of text, the question returns as to what extent overly aesthetic solutions with the use of letters tire the recipient and disturb the function of the sign. Krzysztof Lenk drew attention to the challenge faced by contemporary visual communication designers, whose projects must "generate a signal"[107] loudly enough to break through the information noise. A busy recipient with limited time struggles with the difficulty of focusing their attention necessary to assimilate or process subsequent doses of graphic culture. On the other hand, Paul Stiff in his article *Understanding reading* accuses designers experimenting with text of

105 Ibidem, p. 67.

106 Ibidem, p. 64.

107 K. Lenk, E. Satalecka, *Podaj dalej. Design, nauczanie, życie*, Cracow 2018, p. 83.

108 P. Stiff, *Zrozumieć czytanie*, trans. J. Mrowczyk, [in:] *Widzieć / wiedzieć...*, p. 207.

109 R. Bringhurst, *Elementarz stylu w typografii*, trans. D. Dziewońska, Cracow 2007, p. 20.

110 Ibidem, s. 22.

111 Ibidem, s. 27.

112 D. Depcik, *Nieczytelność i nieprzezroczystość. Dwa wymiary wizualności tekstu*, "Humaniora Czasopismo Internetowe" 2020, vol. 32, no. 4, p. 78.

discarding the available knowledge about the reading process, thus ignoring objective factors influencing the comfortable course of this process. In his opinion, design, understood as a "factor of competition, influencing the choices made by the reader in the conditions of a free market"[108], unfortunately has a negative impact on the decisions made during the creative process. Aesthetics, understood as the main determinant of quality, contribute to the loss of the original and superior function of text in favour of formal solutions chosen as a result of the prevailing fashion or the subjective preference of the author.

Robert Bringhust sees typography as the essential, but silent creator of applied design, whose most important role is based on the ability to operate within the framework of the adopted convention with set elements. According to Bringhurst, "the typographer is for the text what the director is for the film script or the musician for the musical score"[109] – both the co-creator and the impersonator of the created work. The role of a typographer is based on perceiving the meaning and structure of the matter in order to work with it so as not to overwhelm its reception. By properly analysing the content and adjusting the means of its presentation, the typographer, like a "musician, discovers the internal order of the performed piece. (...) Typographers – like other artists and craftsmen – are there to play their role and disappear".[110] Their own stylistic preferences should be subordinated to the requirements posed by the subject, and not by the need to satisfy their own creative ambitions. On another occasion, Bringhurst portrays the typographer as a skilled scribe, creating woven works of art in which any "composing device, be it a computer or a poem, acts as a weaving workshop. (...) Well-chosen letter forms create a living, uniform texture; carelessly inserted spaces between letters, lines and words can make the fabric come apart".[111] According to Bringhurst, the workshop of a typographer is a master's workshop and they a sensitive craftsman who contributes to the creation of the perfect work.

On the other side of this spectrum, is the term "marked typography"[112], a highly polarised concept of typography described by Johanna Drucker in *The Visible Word*. The main difference in this approach is how the role of the author and the text itself is presented. Through its form, the word

in the visual state (i.e., the carrier of information), is challenged to interpret and deliver the message through its form, and in so doing, enters the space dominated by the image. This interpretive and perhaps almost illustrative role of type manifests itself in all forms offering the recipient a specific idea, such as logos, advertising posters, magazine spreads, as well as a whole range of experimental typography falling into the sphere of pure art.

According to Gerald Unger, reading and seeing are two different activities that cannot be performed simultaneously. Thus, in a text dominated by form over content, the automaticity of the entire reading process is turned off, which slows down reception and forces attention.[113] Małgorzata Dawidek-Gryglicka describes this type of seeing as "looking". This is a "superficial, viewing-oriented"[114] seeing process, activity passive in its core. Looking is "focused on the form"[115] and thus "is not tantamount to understanding or reading the meaning hidden in the text. (…) So seeing can look, looking doesn't have to see".[116] In another passage, she describes looking as the "leaven of cognition"[117], an introduction to subsequent processes. While looking, we find ourselves like an audience in a foyer, waiting for an event to which we are about to be invited. It is "reaching under the surface of the text and image (…), revealing the meaning obscured by the shape and, at the same time, covering the shape extracted by the content. Revealing words and pictures through their simultaneous presence (…) is a process of constant learning about the value of both spheres".[118]

The author describes the process of communing with visual text from the perspective of the art recipient. However, it is not difficult to find some similarities between these experiences and those of applied art viewers who interact with typography and lettering projects. These realisations emphasise on the one hand expressive values and aesthetic impressions of text, and on the other – the experience of the recipient, freed from the set schemes of using the written word. The extensive formal layer of these projects, contradicting the reoccurring implementation of the standing rules, is characterised by actions of an authorial nature, in which the function of typography escapes its communicative obligation. Examples of such

113 See G. Unger, *Kiedy czytamy*, [in:] *Widzieć / wiedzieć…*, p. 182.

114 M. Dawidek-Gryglicka, *Historia tekstu wizualnego. Polska po 1967 roku*, Cracow–Wroclaw 2012, p. 33.

115 Ibidem, p. 33.

116 Ibidem.

117 Ibidem, p. 36.

118 Ibidem.

119 Ibidem, p. 36.

120 M. Marek–Łucka, *Do we need illegible writing? A philosophcal approach to abstract calligraphy*, [in:] *Future Graphic Language: New Directions in Verbal Communication...*, p. 20.

practices can be seen in the achievements of the New Wave movement, characterised by a set of exceptional design personalities who introduced the deconstruction of the word to the rank of the prevailing fashion in graphic communication. Just like their predecessors – the authors of both pure and applied arts – they drank from the common source of visual text's rich history, be it from Filippo Marinetti's "released" words, Apollinaire's calligrams, or from the optophonic poems of the Dadaists. In all of the mentioned examples, the recipient is faced with the challenge of reaching the content *via* a winding road of untamed structures, which sometimes even lead the viewer astray. In between the text and the image, the existing form "requires the viewer to perceive in a way other than what they are used to when reading belles-lettres. This is why the existence of an "unreading" way of seeing, in addition to a "reading" way of seeing, is an absolutely necessary condition for a "questioning" glance in general. The combination of these two methods of viewing forms a new type of recipient – the division into reader and viewer disappears, and in its place a synchronous recipient appears: reader / viewer = recipient".[119]

Monika Marek-Łucka presents a hypothesis that illegible script introduces a unique category of communication through chaos, as opposed to effective communication based on order and consistency of text.[120] It can be assumed that the anarchy in disorder reflects the need to oppose the generally functioning rules of society, in which script – as one of the most constant social contracts – is disturbed within its framework. These emotions are often perversely taken advantage of by the advertising industry, which plays on the concept of rebellion to build an individualised image of brands. The elite world crafted by commercials is accessible for a special price, although ironically, the message is aimed at simultaneously inviting as many potential customers as possible. It is therefore, in fact a message to the masses. Type in advertising follows the current trends, on the one hand, innovative enough to stand out from its competitors, and on the other, schematic enough for the average recipient to recognise the context. It is a message that is designed to both intrigue and inform, to surprise and offer familiar and understandable visual solutions. Short slogans are an example of how the dichotomy of form and function in advertising typography varies between the refined form of a hermetic

visual code dedicated to the demanding consumer, and a straightforward readable message accessible by all.

Typography is a kind of bridge spanning somewhere between what is ordered and universal and, at the same time, what is intuitive and original. It is between the logically argued solutions, enforced with technical perfection, and the need for innovative expression, bearing the trace of the author. Charles Peignot called these two approaches, where one focused on continuous texts and the other on the perception of short messages, "typo-vision" (visual) and "typo-lecture" (reading) schools.[121] Gerald Unger describes this spectrum as two distant "poles": "The first is complete easement, calm, discipline and convention, the second – freedom and variety of typography, which differs depending on the medium, subject, moment and personality of the designer. On posters, brochures, T-shirts, invitations, folders, etc. – i.e., texts aimed at a small audience – the typefaces change too quickly to distinguish between current trends and experiments. However, when the texts become longer and the readership becomes larger, the typefaces usually regain control, and there is peace again. (…) still, it is about different functions: on the one hand, we have a few words that can be read or involuntarily grasped in one blink, on the other – texts that require time and attention (…)".[122]

The time of reception, the recipient's awareness, their experience with typography, or the context of the text, known to authors as elements of design assumptions, create a framework in which visual communication specialists operate. One can presume that the greater the familiarisation of the eye with the letter and the longer time available to read the message, the greater the potential for inducing individual reflection in the recipient and the greater the possibility of complicating the graphic layout. This works in a similar way with regards to the context. Consuming books for scientific or recreational purposes is an activity that admittedly requires, effort, although varied in intensity. Naturally, an experienced designer, when submitting a work for printing, tries to minimise this effort using a number of proven methods. Each work, regardless of its substantive content, has its own unique context, which should be reflected in the typographic solutions proposed by the designer of the project.

121 See B. Zachrisson, *Studia nad czytelnością druku…*, p. 96.

122 G. Unger, *Kiedy czytamy*, [in:] *Widzieć / wiedzieć…*, p. 183–184.

123 P. Stiff, *Kiedy czytamy*, [in:] *Widzieć | wiedzieć...*, p. 183–184.

124 *Typografia XXI wieku*, „NN6T" 2017, no. 114, p. 150–152.

Text typography is reluctant to accept solutions that go beyond familiar practice. Paul Stiff rightly observes that "it is the letters that make themselves remain as they are. This at least applies to the long-timers among typefaces. When letters do a good job, readers count on them and are happy to cooperate with them. Anyone who reads a lot wants to stick to familiar shapes".[123]

It is not surprising that the once legible Gothic script, filling block books in the hands of the first printing recipients, would be misunderstood today. Habit is not so much a reader's second nature as it is its determinant. Typeface designs that stray from the conventional standards by proposing alternative rules for grapheme construction, risk marginalisation from the start. An individualised visual language has the characteristics of hermeticity. Experimental projects, although tempting as an attractive exploration of the boundaries of ideogram recognition, are often limited to a small group of recipients. An example of such an attempt is the creation of a new phonetic writing system by Władysław Strzemiński, one of the outstanding representatives of Polish functional typography of the 1920s.

The typeface published in the second issue of the magazine *Komunikat grupy "a.r."* in 1932, rejected the established structure representing language by introducing a unified alternative, lacking decorativeness. The author decided on the dominance of straight lines and arcs, with a clear direction and shape, in hope of creating a letter form that would have economic features in a modern style. The result were characters that embodied the cult of modernity, geometric in form, but at the same time avoiding symmetry. Artur Frankowski, responsible for the digitisation and transformation of the project into a fully functioning font called "FA Komunikat", did not hide that he was captivated by the radicalness of the concept in terms of typeface legibility. As he himself recalls, "Today, it is recognised that legibility is one of the most important features of a good typeface. Among typographers there's a cult of solutions, derived from calligraphy, that are easy to read. Strzemiński rejected all the typographic canons developed over the centuries and proposed a new, daring lettering form".[124]

The situation is different with texts that in terms of content, aim to create unique formal conditions, forcing the recipient to exercise their intellect. It is said that the taste of hardship to extract the message is inherent to the work's essence. On this occasion, it is worth recalling the excellent issues of the magazine *Emigre*, offering its readers specific, substantive reading, framed in a unique aesthetic experience. To this day, the graphic design of Rudi VanderLans and Zuzana Licko, is a source of inspiration as an example of how technological limitations can be a pretext for examining the limits of readability.

In a somewhat similar spirit, contemporary typographic posters build an image that forces the recipient to decipher individual elements of the message. The satisfaction of viewing a surprising form or sophisticated type layout dominates over the comfort of efficient reading. Crafted lettering, freely modelling a letter sign, gains importance in the poster design by escaping standardisation. The letter, as a key element in building the composition of the image, contributed to the international success of the Polish School of Poster artists the 1960's. The letter became co-responsible for the visual, and in so doing, strengthened the artistic value of the poster as a medium. In the words of Mateusz Salwa, "the difference in the typography used on the poster results from the fact that it belongs to the universe of writing only partially. As an element of a work of visual art, it also belongs to the world of images, and thus it is to be not only read, but also – if not primarily – viewed".[125] Instead of perceiving the varied implementations of typography as polar opposites, it is worth treating the role of typography in communication as a spectrum with varying intensities, depending on the external factors it faces.

125 M. Salwa, *Lorem ipsum*, [in:] *Biogramy – Plakaty Pisane*, ed. S. Wieczorek, Warsaw 2020, p. 43, https://issuu.com/stgu/docs/biogramy_pisane_katalog/ [access: 1.08.2020].

It is difficult to ignore the importance of vernacular typography for building letter awareness, especially in the context of legibility. Public space is a living, changeable organism, filled with a variety of applied art genres developed with moderate precision or technical correctness. This space does not like boredom. The noise that pedestrians hear in the streets seems to correspond with the visual noise they are exposed to. Faded signs, peeled off advertisements, shabby posters. Ubiquitous order and refined lettering are nowhere to be found. Lettering is subjected to the forces of nature, but often to an even greater extent, it falls prey to the fantasy of the clients, the primitiveness of materials or the immeasurable tolerance for error. The text, apart from the book format, especially in the outdoor context, is as diverse as the city dwellers who view it. As Bogna Świątkowska notices, "Who determines what is ugly and what is attractive? (…) It is important to show exchange, negotiation, commitment and interest in multiplicity. This variety of signboards is, after all, an expression of the aesthetic preferences and message form chosen by the owner of a given place".[126] The Polish context that deserves special attention is an aesthetic phenomenon in typography referred to by Jakub Hakobo Stępień as TypoPolo.[127] The political and economic changes of the 1990's and the accompanying national enthusiasm resulted in a visual language subordinated to the needs of developing groups of small and medium-sized entrepreneurs. Abnegation of the principles of aesthetics and the will to use DIY solutions "on the spot" were embodied in cheap advertisements and questionable signs, contrary to the typographic tradition practiced in urban space. As Rene Wawrzkiewicz, the editor of the album dedicated to this phenomenon puts it, "TypoPolo proves that aesthetics are the result of negotiations of various groups and social forces, and that visual language is not only a method of neutral communication, but also a tool for developing segregation".[128]

The typography of the street is highly heterogeneous: on one hand, it is democratic and emotional, and on the other, it is transparent and predictable. People value wayfinding systems, maps and road signs for consistency and universalism inherent to their function: they are suppose to provide information, not emotions. They present a command, which the recipient is to obey without reflection, seeing no reason to oppose

126 *Litery to cała gama emocji. Rozmowa z Bogną Świątkowską*, [in:] *Typohistorie. Wywiady i artykuły o typografii i projektowaniu pisma*, eds. B. Bartecka, M. Majchrzak, I. Matkowska, Wroclaw 2019, p. 10.

127 K. Czerniewska, *Litery dookoła głowy*, https://www.dwutygodnik.com/artykul/5221-litery-dookola-glowy.html/ [access: 6.10.2018].

128 *TypoPolo. Album typograficzno-fotograficzny*, https://beczmiana.pl/typopolo-album-typograficzno-fotograficzny/ [access: 6.10.2018].

it: "Stop", "Turn right", "Crossing ahead." Interestingly, the most important text messages in public space are usually accompanied by an image. A pictogram, the use of colour, or a synthetic visualisation clarifies the message, ensuring its legibility. However, when the information is meant as an invitation to a specific group with profiled preferences, typography becomes dominated by the visual, and in so doing, no longer is just an instrumental carrier of text. The form of the characters contributes to the image and is responsible for guiding the message to its appropriate context.

The growth in the meaning of mass culture, also pejoratively referred to as low culture, contributed to the rejection of the prevailing standards in unified design doctrines in favour of the authenticity and intuitive actions of an individual. With the popularisation of phototypesetting, photocopiers, personal computers and real-time software, designers quickly took advantage of these newly acquired territories, abandoning the order to which their predecessors had been dogmatically attached. Music offered an individualised area to implement original solutions, providing a breath of fresh air from the mainstream trends. No wonder psychedelic poster designs of the hippy and punk underground served as a source of inspiration. Many future prominent designers, including the founder of the Berlin-based Hort studio, Eike König and Paula Scher, took their first steps in designing album covers. The fanzines of the 1970's demonstrated a similar mood of ambition-free enthusiasm in the spirit of DIY. Free from any moralisation, the projects created in the 70's, 80's and 90's, focused primarily on expression and feelings. The letters drawn from the aesthetics of error were distorted, cut out, processed, and gave the impression that logic and science were losing their importance. Collage and raster also became popular, and some of the leading artists of the period (such as Neville Brody) used primitive tools and simple materials. Therefore, it came as no surprise that the embodiment of the postmodern era, were self-taught artists such as David Carson or Edward Fella, free from the burden of indoctrination at renowned universities. Amateur designs, just like the *art brut* movement, shook up the scene. With time, established communication methods were questioned. They had lost the power to keep the viewer excited in their struggle for the functionality and legibility of the message they were providing.

The best commentary are the words of Woflgang Weingart, derived from the heart of the Swiss typography tradition in the spirit of Emil Ruder and Armin Hofmann: "Why make it legible if nothing inspires us to pay attention to it?"[129] Weingart (as opposed to Carson, who considered the grid of the project as an irrational solution at that time), made the most of the flexibility of the imposed scheme, building spatial compositions in a highly hierarchical typographic arrangement. Actually, at first the author still showed his attachment to transparent layouts, grids and the popular sans-serif typeface – Akzidenz-Grotesk – used by his predecessors. However, with time he began to introduce greater differentiation. By partially adding fragments of photos, raster elements and the multiplication of layers, he achieved a complex structure in which the text completed the image. As Weingart recalled, "It seemed as if everything that made me curious was forbidden: to question established typographic practice, change the rules, and to reevaluate its potential. (…) I was motivated to provoke this stodgy profession and to stretch the typeshop's capabilities to the breaking point, and finally, to prove once again that typography is an art".[130]

The borders have shifted. Fella focused on the light between individual letters in a message, disrupting the rhythm of the text, modifying sizes, proportions and line spacing, as well as introducing freehand sketch elements. Carson was researching the borders of readability. By cutting out fragments of text that obscured the key parts of the message, he disrupted the structure of the publication, leaving the reader in an aesthetic confusion. An example of this boldness was the transformation of a magazine text by Bryan Ferri – described by Carson as boring, with disarming frankness – into pictograms taken from the Zapf Dingbat font, making it impossible to read.

The functional solutions developed in modernism slowly disintegrated, while the designers sought their well deserved recognition. The transcription of the message was still an important role of the text, but the content it carried was only part of the journey that the designer led us on. Postmodernism left unanswered questions, throwing the viewer into a chaotic reality, as pernicious as the changing landscape of technical

129 P. Cramsie, *The Story of Graphic Design. From the Invention of Writting to the Birth of Digital Design*, London 2010, p.301.

130 R. Poynor, *No More Rules: Graphic Design and Postmodernism*, New Haven 2003, p.20.

131 Ibidem, p. 12.

132 E. Lupton,
Narodziny użytkownika,
trans. K. Szymaniak,
A. Puchejda, [in:]
Widzieć / wiedzieć..., p. 213.

133 R. Kinross,
*Współczytelnicy. Uwagi na
temat wielorakości języka*,
trans. D. Dziewońska [in:]
Widzieć / wiedzieć..., p. 127.

innovations and blurred world authorities. The new typography was replaced by processed, imperfect typography, which was a parody or a pastiche of recycled ideas. The relation between the text and the reading process were investigated, allowing the viewer to carefully observe the resulting image in search of meaning, order or hierarchy. Designers associated with the Cranbook Academy of Art, such as Katherine McCoy, drew inspiration from structuralism, deconstruction and letrism. They dealt with semiotics, analysing the basis of interpersonal communication. Rick Poynar draws attention to the openness of the new trend, in which "the postmodern object *problematises* meaning, offers multiple points of access and makes itself as open as possible to interpretation".[131] Design began its interaction with the audience, inviting them to a new area of visual experiences, in which the form of unconventional lettering or typographic realisations influences the development and expansion of the plasticity of the socially used text code. In the words of Ellen Lupton, "Typography becomes a mode of interpretation, and the designer and reader (and the designer-as-reader) competed with the traditional author for control of the text".[132] Projects belonging to the pomo (postmodernist deconstructionism) visual style were strongly marked with an individualised graphic vision and authorial execution, becoming utility works that perversely manifested independence from the recipient. As Paul Stiff notes: "the printed sheet is not indefinite, and the real reader is left with only the confusion or sterility proposed by the designer, frozen at the point where it has been transformed from a digital form into a material one. The deconstructionist project is far from leaving the reader the freedom of interpretation; it forces us all to understand the text via the designer".[133] Increasing awareness of the role that design plays has also generated more interest in the entire process. The changes that were taking place had an impact on the perception of designers, not only as craftsmen, who do the job well according to instructions from clients and ethos, but above all as authors/artists.

The development of visual communication and the increase in consumer awareness raised the expectations of the twenty-first century recipients as to the aesthetics of applied graphic design. With progressing technological development, access to graphic creation tools, both at the amateur

and professional level has been growing. The superficial effect of both of these levels is comparable. Thanks to the ideal configuration of equipment aiding in key aspects of the designing process, as well as new platforms enabling publication, the path to implementing amateur projects is dramatically shortened. It is enough to compare the technological quality of a mid-range mobile phone camera with the technical capabilities of a professional camera available a few years back. Light control or image correction are performed automatically, generating effects at a professional level that used to require technical facilities, the participation of specialists or a tedious production process. Nowadays, it is not only immediately available at the fingertips of the most ignorant device owner, but remains on standby to assist the participant of the visual discourse, in case they require it. The seemingly positive results of this change, however, have become a trap for the industry in the long run. The multitude of visual messages about the value of technical perfectionism, resulted in a flood of high-quality images devoid of authenticity, unreal or causing distrust. Smoother faces, whiter teeth, shinier hair. The rendered reality of faultless structure, often based on similar models, has become re-unified by technological progress, thereby generating fatique.

In this context, a creative return to the crude, imperfect technical solutions from the 1990's became noticeable. The widespread fatigue and degradation of the value system called into question professional perfectionism, thus negating the elitism of the design industry. Primitive means of expression are used as the building blocks of aesthetic graphic solutions. Manifesting the lack of trust towards the pampered, retouched vision of the world, this quite hermetic trend once again uses collage, raster and simple artistic creation tools to juxtapose with the latest technology using movement, interactivity and hypertext potential of the Internet. The niche, avant-garde character, devoid of any signs of commercialisation, appeals to the recipient with its naive authenticity. The poor screen resolution, simple forms simulating basic programming, as well as the vidid screen colours bring to mind the first Apple computers. By using means that apparently do not require manual skills, this trend appears at times as random and amateur, but in fact celebrates the joy of creation and the imperfection that is in each one of us. Its attractiveness is in line

134 R. Poynor, *No More Rules: Graphic Design and Postmodernism*, New Haven 2003, p. 11.

135 W. Niebrzydowski, *Brutalizm w Architekturze – geneza kierunku*, "Architecturae Et Artibus" 2009, no. 1, p. 47.

136 *Le Corbusier. Oeuvre complete 1946–1952*, [in:] *Les Editions d'Architecture*, Vol.5, ed. W. Boesiger, Zurich 1966, p. 191. as cited in: W. Niebrzydowski, *Brutalizm w Architekturze – geneza kierunku*, "Architecturae Et Artibus" 2009, no. 1, p. 51.

137 Ibidem.

138 S. Heller, *Cult of the Ugly*, "Eye Magazine" 1993, vol.3, no. 9, http://www.eyemagazine.com/feature/article/cult-of-the-ugly/ [access: 6.10.2018].

with the principle that "modernism sought to create a better world, and postmodernism (…) appears to accept the world as it is".[134]

The very name of the trend – brutalism – refers to the nomenclature of the 1950's architecture style, which stood in opposition to the "smooth, sterile aesthetics of the machine"[135] and the perfect lightness of functional forms present in modernist buildings. Stripped, with visible structural elements, the brutalist architecture showed traces of wooden formwork like a translucent skeleton of an animal. The raw, full of strength and expression buildings seemed to reflect the current needs of the recipient in order to break with the existing order and abandon the existing patterns of beauty in favour of aggressive individualism. Concrete, a commonly used building material, became an aesthetic guide. The structural imperfections of this readily available material were used as an asset in the buildings form. Contrasting blocks were enriched with various textures so that the bare concrete brought out "the smallest inaccuracies in the joints, fibers and thickening of the boards, knots".[136] The authenticity of these solutions was in the essence of the matter. Using a quote from the father of brutalism, Le Corbusier, one might ask the question: "Are wrinkles and birthmarks, hooked noses, countless peculiarities not to be seen in men and women? (…) Errors lie in the nature of man; they are our contribution, our daily life".[137]

Steven Heller points out that "ugly design can be a conscious attempt to create and define alternative standards. Like warpaint, the dissonant styles which many contemporary designers have applied to their visual communications are meant to shock an enemy – complacency – as well as to encourage new reading and viewing patterns. (…) Ugliness is valid, even refreshing, when it is key to an indigenous language representing alternative ideas and cultures. The problem with the cult of ugly graphic design emanating from the major design academies and their alumni is that it has so quickly become a style that appeals to anyone without the intelligence, discipline or good sense to make something more interesting out of it. (…) Ugliness as a tool, a weapon, even as a code, is not a problem when it is a result of form following function. But ugliness as its own virtue – or as a knee-jerk reaction to the *status quo* – diminishes all design".[138]

CODED COMMUNICATION

Along with technological advances, a new era has arrived – the era of "machines with soul"[139], in which computers and artificial intelligence penetrate deeper and deeper into the lives of their principals, shape the cognitive patterns of user communities and automate activities previously performed by humans. Already in the previous century, Friedrich Kittler noticed that with the nineteenth-century destabilisation of the printing monopoly due to differences in optics, acoustics and script, machines, instead of just replacing muscles, began to take over functions of the central nervous system.[140] The essence of "man" melted into the machine. Quoting the words of Martin Heidegger, it can be concluded that this had also affected the script, which as a result of standardisation was "torn out" from the "essential realm of the hand, i.e., the realm of the word"[141], which inevitably led to both its deconstruction and degradation, making it a means of communication.

People born after the year 1980 grew up alongside developing technology and in close proximity to a collective database organised in a democratic, virtual structure. The generation of "digital natives"[142] are familiar with technology, constantly relying on the Internet and multifunctional devices with intuitive navigation. For communication purposes, they use multimedia space to participate in short, quick and extensive interactions. For "digital natives", complicated, long textual content generates problems in comprehension and remains difficult to acquire, pushing them towards short, slogan "tag lines", coexisting in a space filled with images, all of which are part of their daily lives.

Along with the shifting base of the recipients' experiences, the printed word, and hence the text itself, has been forced out of mass communication by the image. Graphic design, often in the form of an abbreviated message built on the principle of a sign, assumes a synthetic form and an easy-to-perceive message. This trend inevitably contributes to the decline in readership, focused around solitary contact with the text, in favour of active participation in crowded and immediately rewarding social networks.

At the opposite extreme of "digital natives" is the patient print generation, of "digital immigrants".[143] This group, although taking advantage of the conveniences brought by the development of technology, maintains

139 J. Kubasiewicz, *Przyszłość tekstu i typografii*, "Powidoki" 2021, no. 5, p. 176.

140 F. A. Kittler, *Gramophone, Film, Typewriter*, Stanford 1999, p. 16.

141 Ibidem, p. 198.

142 M. Prensky, *Digital Natives, Digital Immigrants Part 1*, "On the Horizon" 2001, vol. 9, no. 5, p. 1–6.

143 Ibidem.

144 J. Kubasiewicz, *Przyszłość tekstu i typografii*, "Powidoki" 2021, no. 5, p. 174–175.

145 N. Chahine, *Designing for Split-Second Clarity*, https://www.monotype.com/resources/webinars/designing-for-split-second-clarity/ [access: 6.10.2018].

a certain reserve towards it. "Digital immigrants" are mainly used to a linear narrative in which the content runs in a serially systematised way within a consistently organised medium containing perceptible boundaries – that is, the traditionally printed book. Contrary to digital text, print has material properties that satisfy one's sensual needs, such as touching the paper on which it was applied or the perceptible weight of the edition, making the reader aware of the volume of work. Locating the information by recalling its placement on the page by image, is another mechanism, enabled by tactual print, that helps recall and thus, allows an easier formation of mental representations related to the text structure. Script in the context of shaping the modern man is a relatively new invention, so the reading process is also a relatively recently acquired skill. As Jan Kubasiewicz rightly points out, "on the timeline of about 200,000 years of homo sapiens history, half of it is the development of the spoken language. People started using images for graphic communication 40,000 years ago. The invention of linear script only dates back 5,000 years. If one assumes that mankind has been around for 24 hours, script would have appeared only less than an hour ago".[144] After birth, humans are not yet fully accustomed to the reading process and our extremely flexible minds have to adapt to this activity. In response to cognitive and perceptual demands, the human brain undergoes restructuring depending on the medium or even the selected system of script with which it comes into contact. As part of the learning process, new neural connections between brain regions responsible for language and face and object recognition are formed while existing circuits take on new roles or are pruned away.

As Nadine Chahine puts it, people live in a "permanent Times Square"[145], located in the middle of the intersection of visual and auditory stimuli ruthlessly striving for attention. Technology and access to the tools of graphic creation are no longer an obstacle in creating a message, but have started to become an obstacle in receiving it. The disappearing process of "deep reading" – a connection with the text, in which the pace of reception allows for insightful and analytical interaction with the content, especially suffers from this phenomenon. It is during "deep reading" in the ongoing cognitive processes that one looks for analogies, uses deduction, critical and perspective thinking; all the accumulated knowledge about

the world and about the word being read is applied. Maryanne Wolf explains this process as going beyond the wisdom of an author to reach one's own wisdom. This is where thought and enlightenment are born, and new, revealing conclusions and reflections are formulated on the basis of the read material. The development of this skill is a long-term process that accumulates all previous experiences of working with text.

In this context, an interesting experiment was the design of a typeface called Sans Forgetica, created by Stephan Banham's team at the Royal Melbourne Institute of Technology. A slight inclination of the glyphs and visible defects in their construction reduced the legibility of letters and in so doing, forced the recipients to read more slowly. According to the authors, this allowed for deeper cognitive processes using the effect of desirable difficulties to be activated, contributing to a stronger fixation of the message in the memory. However, research by scientists verifying assumptions after the publication of the font did not prove the promised benefits of its use. Tests based on a comparison of the typeface with the commonly used Arial font showed, that it not only did not improve the memorisation process, but it also disturbed the fluency of reading.[146]

At present, the process of deep reading is fading away in favour of quick, superficial scanning of text in search of key words. This new habit is particularly noticeable when users interact with digital text while using multimedia devices. These multi-purpose carriers, however, can distract readers with a frequency of up to 27 times per hour, impairing concentration and weakening the power to remember information. For an educated adult reader with well-formed neural connections and a mature structure of analytical thinking, the new medium can be tedious. However, as Maryanne Wolf warns, the threat is especially relevant for the youngest users, who are still in the process of developing their "reading brain".[147] It can, therefore, be concluded that the modern reader must be equipped with the proper tools to participate in the unique interaction with modern text. Their predisposition to do so goes far beyond linguistic proficiency. In the era of fake news and half-truths, the growing demographics of users, who superficially perceive content not only poses a threat to readability in the context of in-depth understanding of the text, but also deprives

146 See A. Taylor, M. Sanson, R. Burnell, K. A. Wade, M. Garry, *Disfluent difficulties are not desirable difficulties: the (lack of) effect of Sans Forgetica on memory*, https://www.researchgate. net/publication/341141106/ [access: 26.08.2022].

147 M. Wolf, *The Changing Reading Brain in a Digital Culture*, https://www. youtube.com/watch?v= XmiFDLUQV8U&t=0s/ 14.07.2015, The Long Now Foundation's "Conversations at The Interval" Salon Talks, San Francisco [access: 6.10.2018].

148 M. McLuhan, *Galaktyka Gutenberga*, trans. A. Wojtasik, 3rd ed., Warsaw 2021, p. 48.

149 Ibidem, p. 48.

recipients of the opportunity to develop specific thought processes that advance visual intelligence.

In an article from 1992 with the meaningful title *The End of Books*, Robert Coover drew attention to the emancipating properties of hypertext on which the Internet is built. This freedom that allows the reader to free themselves from the domination of an author, offers them a multitude of discourses without an unequivocal, final statement. The invention of hypertext is often placed next to the great inventions of script and printing, as the third significant discovery, profoundly influencing the development of culture and public awareness. In the hypertext structure, both the author and the reader become participants and co-authors of the narrative. They function equally in the boundless infinite space in which the exploration of successive views of information is like a journey through unknown territory. However, it should be considered that every journey, no matter how dynamic, takes time and the impatient modern user treats the tool they dogmatically relies on quite superficially, demanding immediate results. The Internet's carefully woven web of interconnected sub-categories and endless associations of meaning is not always able to meet this demand at a satisfactory pace.

Marshall McLuhan describes the time of the technological revolution as "an unprecedented crisis in the history of mankind"[148] in which "our technologies, as well as our senses, must begin to interact with each other, and the relations between them must enable rational coexistence. As long as human technologies like the wheel, the alphabet, and money were slow, they were separate, closed systems, which was socially and psychologically acceptable. It is not so at present, when the image, sound and movement are simultaneous and have a global reach".[149]

CONCLUSION

Phonetic symbols are part of one of the oldest universally recognised social contracts. The ideogram of a letter, as a signpost established over the centuries, regulates the extent to which text develops in interpersonal communication. And while each language assigns different phonemes to the same signs, extending the system to suit its needs, the fact that phonetic script has become the common denominator for culturally diverse communities in various latitudes is undoubtedly one of the most important achievements of mankind.

Communication is not only language, script or speech. It is the colour of symbols, gestures and calibrated behaviours, to which one relates familiar mechanisms or schemes for formulating conclusions and associations. This extensive system of analysis hides a deep need to understand and control the thoughts and emotions of its principals. Visual communication participates in the development of a community, shapes tradition and customs, and contributes to setting norms and boundaries, directly influencing the daily life of an individual. Managing social communication is therefore an equally responsible task, as conducting an orchestra with a baton in order to direct simultaneous sounds along a common musical line with a distinctive tune. The proper organisation of the multitude transforms noise into symphony.

While the legibility of text, understood through the prism of understanding the content, assumes triggering a specific reaction to the delivered message individual character signs have no less potential to evoke a reaction based on the presence of the letter itself, regardless of the context. The visual text influences the viewer on the one hand, on the rights of an image, and on the other, directs the attention of the viewer far beyond purely formal considerations around the object of contemplation, relying on the meaning of the visual recording of the sound. The letter is treated in advance as a conventional message carrier, as the embodiment of an educated thought. The thought materialised in the static form of text is more than just a trace, a mark. It is a materialised intention, waiting to be picked up and read. Brought to life in a physical form according to a predetermined pattern – the idea of a sign – invites reading, even if its form is an integrated part of an image.

Automatic reading of letters and searching for purposefulness in them is unstoppable, even if the form hinders or slows down the reception of the sign. The formal gameplay, which is played with signs of script, although it often uses the texture of the text as a pretext in itself, is not free from well-established references to the semiotics of the script. The word, detached from the pure informational transmission, remains a notation with the intention of reading. In the same manner, a letter sign, although devoid of any function, will not completely lose the attributed sound. The reaction to the shape and structure of a letter takes place on a plane that goes beyond the substantive content of the message it develops or could develop. The reception of a sign takes place deeper than the consciousness of the viewer, on the basis of empirically acquired knowledge about the world and the visual culture developed by the society, from which the form of letters is derived.

The process of communicating at all cognitive and physical levels is a creative process. Interpersonal interaction is always a unique experience for the participants. It is similar with the interaction that takes place with the participation in visual communication. The formally defined materialised word is always the result of the act of creation, the final stage of which is the activation of the passive medium space and the breaking of the visual silence. The thought shaped in text is a registered action that disturbs the neutrality of the voicelessness. It is a way for an immaterial intention to come into being through a decision made while forming a graphic stimulus. Reception is conditioned by sensitivity to the thought taking part in the work's creation and the tuning of human receptors to various interpretations of its visual incarnation.

In case of a text equipped with content of a defined function, the form follows the developed mechanisms of managing the letter in a specific context. The legibility of the message and mutual understanding seem to serve as a barometer of the state of consciousness the two parties involved in communication possess, applying the code based on its precise encryption, implementation and final processing. The prime condition of the sender of each message, in particular the text message, is anticipating the needs and expectations of its target recipient. Empathy

towards the habits of both sides, taking into account the limitations of the medium, the responsible choice of form to the content, as well as taking into account the predisposition of space in which the interaction takes place, are just some of the parameters influencing the transparency of the received message. The readability scale, measured by the level of mutual understanding, often surpasses the technical conditions of the text, which can be controlled during the graphic creation. Although the choice of a typeface, its size and the nature of the composition can be adjusted to the requirements of the selected target group, the comprehensive control of the visual awareness of the recipient is still not entirely possible. While lively conversation is a mutually determining action and reaction, the printed word will forever resonate with a mute audience. Over time, published text drifts away from the modern audience, without the possibility of updating or enriching it with new contexts, loosing its universality and legibility. That is why a lack of understanding is possible, taking for example, the probability of the text ending up in the hands of a substantially unprepared recipient. Visual communication must anticipate the changing situation in the system of meanings in order to complete its task. The form of the text should evolve as quickly as the visual awareness of society expands, and to which it is addressed. The limits of this readability can be defined as a constantly vibrating membrane, in constant motion. The legibility of interpersonal communication is an interdependent, flexible value, susceptible to influences and fragile in its durability. It is intertwined in a network of connections woven from patterns developed over generations, drawn from observation of the laws of the natural world and the world of human culture and art. In brief, it is derived from the heritage that mankind has at its disposal, but rarely takes full advantage of.

Readability is the cataloging of multiplicity, setting chaos into structure. Arisen from "disorder and wasteland, out of the vastness of waters and darkness"[150], it is the Great Designer of Creation's work of art, completed just before the Sunday deadline. It is a temporarily captured order, the separation of light from darkness, knowledge from thoughtlessness (like day and night, good and bad, truth and falsehood, fullness and emptiness, silence and sound). Readability and illegibility, like darkness and light,

[150] It can be read in the Bibile (Gen. 1, 2): "In the beginning when God created the heavens and the earth, the earth was a formless void and darkness covered the face of the deep, while a wind from God swept over the face of the waters". *Biblia Tysiąclecia Online*, https://www.biblia.deon.pl, [dostęp: 6.10.2018].

white and black are a duality rooted in the human core. At the heart of this rivalry are interpenetration and an eternal compromise in maintaining balance. In this ongoing battle of extremes, illegible is both the new and the old, that which goes beyond the standard, which requires greater effort and commitment. Illegibility is a temporary state, a moment of wandering, in which the viewer loses the meaning offered by the author in order to rediscover the significance of the image they are viewing. The designer is the intermediary in this delicate meeting of the two sides. They are the organiser of the moment, during which a sign, abstract in form, carriers a promise to connect, for even a fraction of a second, the thoughts and feelings of two complete strangers.

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