

THE IMPACT OF THE HISTORICAL DEVELOPMENT OF TYPOGRAPHY ON MODERN CLASSIFICATION OF TYPEFACES

Mario Tomiša, Damir Vusić, Marin Milković

Original scientific paper

One of the definitions of typography is that it is the art of arranging typefaces for a specific project and their arrangement in order to achieve a more effective communication. In order to choose the appropriate typeface, the user should be well-acquainted with visual or geometric features of typography, typographic rules and the historical development of typography. Additionally, every user is further assisted by a good quality and simple typeface classification. There are many different classifications of typefaces based on historical or visual criteria, as well as their combination. During the last thirty years, computers and digital technology have enabled brand new creative freedoms. As a result, there are thousands of fonts and dozens of applications for digitally creating typefaces. This paper suggests an innovative, simpler classification, which should correspond to the contemporary development of typography, the production of a vast number of new typefaces and the needs of today's users.

Keywords: *character, font, graphic design, historical development of typography, typeface, typeface classification, typography*

Utjecaj povijesnog razvoja tipografije na suvremenu klasifikaciju pisama

Izvorni znanstveni članak

Jedna je od definicija tipografije da je ona umjetnost odabira odgovarajućeg pisma za određeni projekt i njegova organizacija s ciljem ostvarenja što učinkovitije komunikacije. Da bi korisnik mogao odabrati pravo pismo za svoje potrebe treba prije svega dobro poznavati optičke ili geometrijske značajke tipografije, tipografska pravila i povijesni razvoj tipografije. Osim toga, velika pomoć svakom korisniku bila bi i dobra i jednostavna klasifikacija pisama. Postoji mnoštvo različitih klasifikacija pisama temeljenih na povijesnim ili na optičkim kriterijima, kao i na kombinaciji istih. Posljednjih tridesetak godina računala i digitalne tehnologije otvorile su posve nove kreativne slobode. Zahvaljujući tome, danas postoji na tisuće pisama i deseci programa za digitalno kreiranje pisama. U ovom radu predlaže se nova, jednostavnija klasifikacija, koja treba biti u skladu sa suvremenim razvojem tipografije, produkcijom velikog broja novih pisama i potrebama današnjih korisnika.

Ključne riječi: *font, grafički dizajn, klasifikacija pisama, pismo, povijesni razvoj tipografije, slovni znak, tipografija*

1 Introduction

Typography (greek: typos - stamp + graphein - write) is a term which can be defined as follows: the art of using typographic characters, the skills of creating, arranging and functionally using types, or the science of types. Typography has its own technical, functional and esthetic rules which may be broken when using modern design. Furthermore, typography is a unique blend of art and technique and a proficient typographer or designer can use types and create technical works of art of special quality. Typography is also the art of choosing appropriate typeface for a specific project and its arrangement in order to achieve a more effective communication. [1]

Typography is the craft of endowing human language with a durable visual form, and thus with an independent existence. Its heartwood is calligraphy - the dance, on a tiny stage, of the living, speaking hand - and its roots reach into living soil, though its branches may be hung each year with new machines. So long as the roots live, typography remains a source of true delight, true knowledge, true surprise. One of the principles of durable typography is always legibility; another is something more than legibility: some earned or unearned interest that gives its living energy to the page. It takes various forms and goes by various names, including serenity, liveliness, laughter, grace and joy. [2]

Keywords in typography are as follows: type, type geometry, word, typeface, font, font style, typeface family, typographic measurement system, typeface size, baseline, kerning, word spacing, leading, alignment, hyphenation and emphasis. [1, 3] Type is the main

element of typeface. Arranging types creates lines, arranging lines creates columns which make a part of a block. Typeface consists of uniform and identically shaped types. Typeface consists of: uppercase types, lowercase types, extenders, punctuation types, special and expert types as well as mathematic operations types. All types within a particular typeface have something in common. Those are actually elements which form a type; although it does not necessarily mean that every type includes all of them. The most common and most important geometrical elements of types are the following: initial line, curve, final curve, ascender, descender, clip, strikethrough and serif, [4, 5]. In today's digital era, the word font is almost always used as a synonym for typeface and even for a typeface family. The font style is a particular style of a typeface. One typeface can have more than one different style and as many as two dozen (bold, italic, black, heavy, thin, ultra-thin, condensed...). All styles of a typeface make a typeface family.

This paper shall analyse the most widely known typeface classifications and use them, along with the historic development of typography, to suggest a brand new classification which must be in accordance with contemporary typography and the needs of today's users.

2 Typographic measurement system

During the hot lead typesetting era, typographic measurement system used to have great importance. After the development of offset printing it has been used less and less, but it still has a historic value and it is accepted as a valid system in Europe (DIN 16507-2). In the last

thirty years, during the desktop publishing era, it is precisely that system that has represented in its core so it is important to mention its basic features. The need to introduce a unitary system for determining typographic and arranging materials arose as early as the Guttenberg times. The first serious attempt at standardization was done by Joseph Moxon in England in 1683. However, the first practical results were achieved by Pierre Simon Fournier who introduced a typographic measurement system whose basic size is a typographic point (French *point typographique*) - pt. In 1775, a Frenchman Francois-Ambroise Didot with his son Firmin, introduced his typographic system which is still accepted today. The system is duodecimal where 12 typographic points make a cicero.

In 1875, a German typesetter Hermann Berthold, converted the Didot system into the metric system. He determined the precise type meter whose length of 30 cm divides into 133 nonpareils with 6 typographical points, from which follows that type meter has 798 typographical points, or 66 1/2 Cicero. Anglo-American countries use the English point system in which one point has a 0,352 mm or 0,013832 inches and English Cicero (Pica) is 4,212 mm or 0,1666 inches. Since 1866 typographic measure is based on a length of 35 cm divided in 166 nonpareils and 996 pt. In the past, different type sizes had their own names which are no longer used. Type sizes on typesetting table drawers were marked with precisely these names. We will mention their names for historic purposes: Brilliant - 3 pt, Diamand - 4 pt, Pearl - 5 pt, Nonpareil - 6 pt, Minion - 7 pt, Petit - 8 pt, Bourgeois - 9 pt, Garmond - 10 pt, Cicero - 12 pt, Mittel - 14 pt, Tertia - 16 pt and Paragon - 20 pt. Type sizes are not defined by either the height of uppercase types, such as "H" or "A" in a particular typeface, or determined by the distance from the top of typeface ascender (i.e. the highest point of letter "b") to the bottom of descender (for example the lowest point of letter "p"), and it depends least of all on the type width, which varies from one type to another [6]. The starting point of creating a typeface is the available space for every type. With hot metal typesetting the space was determined by the surface of a letter cone, and with typesetting programs that is the surface on which we can create a type. The height of the surface is the actual size of the type and it is expressed in typographic points. It is precisely due to that "imaginary" type size versus typeface user that the type sizes vary considerably from one typeface to the next. Therefore, typeface Times made of 10 pt will take up considerably less space than Bookman typeface made in the same size. These variations in the difference of space usage are the consequence of the possibilities to use the entire type surface for the creation of a type, or to leave marginal space empty.

Baseline is one of the most important categories for an aesthetic, harmonized layout appealing to the human eye. It is a fixed imaginary line upon which all of the types of a particular typeface lie, arranged into a line of text. Letters such as L, a, b, m, h, H, N... lie on it, and descending lines of letters such as g, j, p etc. go below it. Still, the slightly curved bottom of the letters s, o and some others slightly go under the baseline, thus harmonizing and unifying the pleasure of reading. The

most important role of the baseline is to prevent different typefaces and types from appearing erratic, but to appear unified and harmonized. Kerning is an important feature which greatly influences the legibility of a text. The lack of kerning is easy to notice in a text written on a typewriter or in typefaces imitating that style. That style gives the same space to each letter (for example, the same space for letter "i" as for the letter "m") so the spacing between types is the same. In such a text, the letters should be brought closer together, which is especially visible in the following pairs: "Va", "AV", "Ti", "Ta", "Ts", but also with "V. " and "V, ". [4, 5] Nowadays, professional digital typefaces come with kerned pairs but graphic applications and page layout applications still offer options for manual kerning.

It is difficult to pinpoint the optimal spacing between words. It primarily depends on the length of words, that is, the longer the words are in a language the smaller the space between them needs to be. However, there are two main rules for the spacing between words: the space should be larger than that between individual types, and yet smaller than the spacing between lines of the text; the spacing should be equal to the most often used type in the text. The second rule depends on a language which means that, statistically speaking, in a Croatian text the spacing should be the width of a lowercase "a", and in German it should be the width of a lowercase "n", whereas in Anglo-Saxon world it is usually the width of uppercase "I". It has, however, become a non-written rule to use the width of a letter "n". Regardless, the spacing between words should be unified or at least as consistent as possible throughout the text. That can be achieved in left-aligned texts, right-aligned texts or in centrally aligned texts, whereas it is visible that the spacing differs from line to line in a text aligned both to the left and right. Leading is not the white space between two lines of text but the spacing between two baselines of two neighbouring lines in a text and it is extremely important for the legibility of the text. If the spacing is too small, the text will appear dense, and if it is too big, the text will appear too spread against the white of a page. In both cases the text will be difficult to read. The size of leading is usually measured in typographic points or with the percentage of the font size. As standard leading, it is customary to use 120 % of the font size which means that in a 10 pt font, the leading would be 12 pt. Text editing begins with defining the left and right border. This is called alignment. [5] In practice, a text is usually designed stretched to a "full format" with aligned columns on both left and right side. Three other ways of alignment are common: "left justified" – the text is aligned on its left side, with its right side being ragged, "right justified" where the left side is ragged and the right side is aligned and "centre" – both left and right sides are ragged and the lines are centered. The latter three methods are most often arranged with the same sized spacing between words throughout the whole text. Using the justified full format should certainly contain an activated hyphenation program. The hyphenation is there for one reason only – to achieve similar spacing between words on a whole page.

Emphasis can be direct and indirect. [4] Direct emphasis is not achieved through features, but directly – by using types: we use clear contrast of their shape (font

style or font size). Each emphasis is unusual, which presupposes the existence of something ordinary and usual. Differentiating in any way creates disturbance so any needless emphasis and division should be avoided. Disturbances may seem lively but they are also unorganized. Where everything is emphasized, nothing is emphasized! Direct emphasis can be divided to: shadow contrast (using bold); light contrast (increasing the kerning); direction contrast (using italics); using initials (first letter is bigger and usually decorative); using uppercase. Indirect emphasis includes emphasis through setting or colour. The usual way to indirectly emphasize is through the indentation of particular parts of a text. Narrow line format disturbs the eye coordination and compels the reader to temporarily adapt to shorter lines which intensifies his attention, which is precisely the purpose of emphasis.

Similar, yet opposite effect will be achieved by extracting first lines of paragraphs – as a method for dividing and emphasizing each paragraph. That style of emphasis is called "hanging indent" and is most often used for page breaks in dictionaries, address books and phone books. A frame is also one of the emphasis methods: what is within a frame is more important than what is outside of it. A white border framing the page may also be considered a frame, as can the leading framing each line with white space. The gap in the text does not necessarily have a restraining function; it can be an appreciated formatting tool which will balance the text and improve its presentation to a greater or lesser extent.

3 Historical development of typography

In order to analyse typography, typographic formatting and typeface classification we need to look at the historic development of typography. The first attempt at recording (painting) we can see in caves cannot be considered writing as there is no reliable coding and decoding system, which is a prerequisite for letterforms. [6] Those original drawings are now called pictograms. Our ancestors did not stop at unrelated drawings and paintings, but developed a further repertoire of signs as well as the coding and decoding system. One of the solutions on which the entire consequent development of letter depended was an agreement. All subsequent systems function upon the agreed principle and that is where the study of letters should commence.

3.1 The earliest records

The historic development of typography can be outlined chronologically through the following timeline, pinpointing the most important events which contributed to the development.

- 1400 BC – The earliest found examples of alphabet letters were discovered in 1928 on the Mediterranean coast of Syria.
- 800 BC – The Greeks adapted the Phoenician alphabet to their needs. They first noticed the importance of kerning as an important element for the understanding of the overall written message.

- VII century BC – After the Roman state was established, the development of the archaic Latin alphabet began from western Greek alphabet, the so called Chalcidice alphabet.

- VI century BC – The oldest inscription in Old Latin was found: The Brooch Palestrina (*lat. Fibula aurea Praenestina*).

- II century BC – During the Roman reign of Mediterranean, Latin script was spread throughout the entire area suppressing other, local scripts of local people.

- from II to VII century AD – Several Latin scripts were used in the Roman Empire: rustic capitals, square capitals, monumental capitals and Roman Italics.

- III century - Mutual influence of the Roman capital and Italic letters, as well as the general cultural pursuits, at the time of the late Roman Empire (during the reign of Diocletian), produced a letter full of curves and pronounced arches - uncials.

- V century - During the collapse of the Western Roman Empire, Europe lost its solid centre that orchestrated the development of letters. That state led to the emergence of numerous national letters, and more or less specific features.

- VI century – By combining younger italic letters and uncials and through their mutual influence semi-uncial script was created. It emphasized ascenders and descenders, or the strokes going above and below the baseline of the majority of other letters.

- VII century - After the establishment of the Frankish Kingdom and the rule of Charlemagne there was a desire to re-establish a uniform system of writing. There was the need to find a clear and simple script that would replace the diverse and hard to read national letters that had spread across Europe. This resulted in Caroline or Carolingian minuscule appointed by Charlemagne. Apart from reforming the layout of the script which was simple, visually attractive and legible, many other accompanying elements were introduced which, in turn, made reading faster. The use of lowercase letters was established, hence the name miniscule.

3.2 Medieval scripts

- XII century - Influenced by the Gothic, medieval scribes lengthened letters of the Carolingian minuscule and added new elements of new aesthetic aspirations. It is assumed that the script (which, depending on the scribe, always had a somewhat different form) was attempted to be given the elements of geometric rules in order to obtain a uniform typeface and thus allow scribes different abilities to write an equally nice script. That is how Gothic script, Gothic or Gothic minuscule, more accurately, was formed.

- Late XIV century – During the development of humanism in Italy, humanists opposed the former "black" world that they called barbaric or Gothic and they searched for support in ancient times, especially in ancient Rome and Greece. As the classic Greek and Roman culture was especially fostered by the Frankish Kingdom, humanists found the largest number of articles about ancient Rome and Greece printed in Carolingian script, and therefore considered it the authentic classical script. On the basis of these observations, and having Caroline as a model, they created the script called littera

antiqua, hence the origin of the name of antiqua, which although incorrect is still in use today.

- Early XV century - The emergence of "dual" letter we now take for granted: Majuscule or uppercase types and miniscule or lowercase types. For uppercase types they used types based on stable, capital letters of ancient Rome. On the other hand, lowercase types derived from Carolingian soft and warm script. Humanistic minuscule finally managed to unite both alphabets and thus set the standard that applies to this day.

- Mid XV century - Johann Gutenberg developed movable printing letters. Since his first letters were modelled by handwritten models, while keeping in mind that at the time the texture was customary book script, it was also the first script prepared for printing.

- around 1470 - Venetian type designer Nicolas Jenson tried to overcome the optical difference between uppercase and lowercase letters. His typeface, which still had all the basic features of humanistic script, was certainly clearer and has more elegant proportions – which resulted in the creation of Renaissance Antiqua.

- About 1480 - Italian type designer Francesco Griffo da Bologna cut the first cursive letters for the famous Venetian printer Aldus Manutius. The main reason Aldus ordered such a typeface was that it was concluded that the cursive forms of the letters take up considerably less space than normal. Since its printing activities were primarily tied to, then popular, paperbacks, spatiality was very important.

3.3 New age typefaces

- About 1530 - French type designer Claude Garamond improved Nicolas Jenson's typeface. The main improvement of his typeface when compared to Jenson's was the pronounced use of serifs and connecting strokes which gave the general layout of the typeface a more calming expression and enabled a better visual cohesion of letters which, in turn, made reading considerably easier. Garamond was the first type designer who realized his typeface in Italics. Since then, it was becoming more common to make cursive version of a typeface, along its lowercase and uppercase versions

- Around 1735 - Pierre Simon Fournier introduces a unique typographic measurement system which is still used today in Europe.

- Around 1750 – a famous and, at the time, the most recognized English printer and type designer John Baskerville created a legible typeface of optimal differences in thickness and connectors. His typeface is also characterized by a vertical axis of types.

- Around 1780 - Francois-Ambroise Didot (the most prominent member of the French printing family Didot) created a famous typeface with the characteristics of a classicistic antiqua.

- About 1785 – Italian type designer Gianbattista Bodoni, based on the works of family Didot, created his own antiqua which is characterized by prominent contrasts between basic and connecting strokes as well as a long and thin serif.

- Early XIX century - With the strong influence of industrial developments, simpler forms of typefaces began to emerge, in which the difference in diameter were

equalized and the form of types were simplified. The first such typeface was named Egiphtena (French Egyptienne), probably because it occurred simultaneously with Napoleon's military expedition to Egypt. Egiphtena typeface is characterized by simple rectangular thick serifs.

- Mid XIX century – Typefaces which appear at this time completely reject the use of serifs, and type forms are simplified to the extreme. As this occurs at the time still dominated by classicistic antiqua, the new typefaces were seen as vulgar and distasteful and were therefore named grotesque.

- 1832 - London type designers William Thowgood and Vincent Figgins made their typefaces called Grotesque and Sans surryphs (French *sans serif* - without serifs). Both terms are used today for the two typefaces.

- Late XIX century - Thanks to the development of the printing industry and the discovery of the lithographic printing process, there was a whole range of different decorative letters that had special aesthetic value or were based on the logical development of a typeface. Their authors simply explored the technical capabilities the printing at the time allowed. Such typefaces were used solely for decoration while book typefaces still used classic antiqua.

- Early XX century – Secession influenced the new type of typeface called jugend style, as well as other similar styles emerging under different names in many European countries. Jugend style typefaces were round and soft and seemed floral.

- 1919 – The founding of Bauhaus, German school for architecture and fine arts. Simple typeface forms were experimented with at Bauhaus, types were given geometrical foundation and special emphasis was put on grotesque.

- 1930 – In Munchen, Paul Renner, influenced by Bauhaus, completed the creation of his grotesque typeface Futura. The typeface was accepted as early as 1930s and is still very popular today.

- 1933. - A group of authors led by the English typographer Stanley Morrison created The Times legible for the London newspaper, with types of short ascender and descender height and small capitals to maximize the use of space. Today, the Times is one of the most popular and the most space-saving typefaces in desktop publishing.

- 1950 - Herman Zapf, German calligrapher and typographer, inspired by some older styles, created Palatino. The typeface was characterized by narrower italics and left a harmonic impression of Renaissance typefaces.

- 1957 – Swiss typefoundry Haasische Schriftgiesserei published grotesque typeface created by Max Miedinger and Eduard Hoffman under the name Haas Grotesque, modeled after Akzidenz Grotesque. After it was published in Germany (in the early 1960s) the typeface was renamed into Helvetica. Herman Zapf introduced his typeface Optima during the same year, with high narrow and almost invisible serfs which gave the impression of having the main strike appear narrow in the middle. That kind of typeface will later on be known as semi-grotesque.

- 1963 – Swiss-French typographer Adrian Frutiger completed the creation of his grotesque typeface called Univers. The typeface was elegant and at the time very popular. It was delivered in 21 styles.

- 1971 - Frutiger completed the creation of his grotesque typeface called OCR-A, created for the purpose of easy visual recognition. It was a typeface made for easy reading but also for easy deciphering by visual type recognition machines which started emerging at the time.

- 1980 – At Californian University Stanford, Donald Knuth presented his theoretical and philosophical foundations for methods of creating typefaces in a digital environment under collective name Metafont [6].

During the last thirty years computers and digital technologies have enabled brand new creative freedoms. Owing to that, there are thousands of typefaces today as well as dozens of programs for typeface digital programming. What used to be Aldus, Garamond or Bodoni has become Spiekerman (Meta), Brody (Industria, Insignia, Arcadia, Blur), Blockland (Trixie) or Rossum (Just Left Hand).

4 Typeface classification

Categorizing and classifying typefaces is important in order to find one's way among a large number of existing typefaces and to easily use a particular typeface for a specific purpose. There have always been two basic ideas related to the division of typefaces: one idea was to classify typefaces according to historical criteria, chronologically, and the other was to divide typefaces according to their visual and geometrical properties. Many circumstances are in favor of the historical criterion, as each era gave characteristic forms, and there is a considerable number of terms that are already common in art history. The difficulty lies in the fact that (for example) typographic typefaces originating during Baroque (late XVI to mid XVIII century), such as Baskerville, have nothing in common with what is usually considered baroque style (too kitschy). Systematizing the wealth of typefaces does not come automatically, nor does it have its own logic, as it is done in botany, zoology or geology for example. With typography this can only be achieved through agreement. Therefore, the classification of typefaces will always remain a matter of compromise and typeface-related terminology will always have the characteristic of imprecision [4].

Gerrit Noordzij divides typefaces according to how they were originally written with a pen: broken and continued writing strokes while doing ascending and descending strikes. Both structures can be divided into two subcategories: depending on the strike contrast – translation and expansion. Contrast is a scale of a kind according to which pure translation and expansion represent theoretical extremes. During the emerging of computer programs for the production of typefaces the need to precisely describe each specific part of a stroke arose. That kind of description can be expressed through counterpoint size and orientation. The nature of contrast is defined by the way those values have been set up. The trace ink represents the first and the fundamental form. *Script* is single stroke writing. *Drawing* is writing through building shapes. From the typographic point of

view, forming typographic typefaces is a separate branch of writing, fundamentally completely different from drawing. [7] This division represents the essence of creating types, all of which form one typeface. Although important for designers and typographers, from the user's point of view (how to find and choose the right typeface for a specific project as simply as possible), it is not very useful.

A very successful typeface categorization was done by a French typographer Maximilien Vox in the 1950s. He divided the typefaces into nine basic categories, mostly based on visual criteria. Although his classification was officially recognized by the international typographic organization in 1962 (ATypI, from *French. Association Typographique Internationale* [8]), it was never accepted by users. Vox-ATypI [9] classification (Vox's classification was supplemented by ATypI organization), divides typefaces into three main categories or fourteen including sub-categories: Group 1 *Classicals* (*Humanist, Galarde, Transitional*), Group 2 *Moderns* (*Didone, Mechanistic, Lineal*, which are further divided into: *Grotesque, Neo-grotesque, Geometric, Humanist*) and Group 3 *Calligraphics* (*Glyphic, Script, Graphic, Blackletter and Gaelic*).

Classical Group of typefaces includes *Humanist* which contains Centaur and Cloister, *Galarde* with Bembo and Garamond, while *Transitional* includes typefaces such as Baskerville and Times Roman. According to this classification *Moderns* typefaces are divided into *Didone* (sub-categories Bodoni and Walbaum), and *Mechanistic* (with sub-categories Clarendon, Egyptienne and Rockwell). Furthermore, *Lineal* typefaces are divided into *Grotesque* (and further into Headline, Monotype and others) and *Neo-grotesque* (with famous sub-categories Helvetica and Univers). The *Geometric* Group has Eurostile and Futura while *Lineal Humanist* Group has Gill Sans and Optima. Calligraphic typeface group *Glyphic* includes Albertus, Copperplate Gothic and Trajan, *Script* includes Shelley, Mistral and Francesca. *Graphic* Group is represented by Banco and Klang, and *Blackletter* by Fraktur and Old English, while *Gaelic* Group, which was added in 2010 is represented by Duibhlinn typeface.

Another classification, which combines historic criterion and technical features, was made by Franjo Mesaroš. [4] He classifies typefaces into: *Basic shapes* (Renaissance, Transitive and Classicistic antiqua), *Individual shapes* (Art antiqua, Semigrotesque, Newspaper antiqua), *Technical shapes* (Grotesque, Egyptienne, Italienne), *Special shapes, Scripts* (Bold stroke, Alternating stroke, Uniform stroke, Quill stroke) and *Profile shapes* (Contour typefaces, Shaded typefaces, Hatching typefaces and Decorative typefaces).

Visual features of the Renaissance antiqua are as follows: oblique starting line of lowercase types and oblique curves (25 do 45° ascent), gradual transition and moderate contrast between basic and connecting strokes (ratio from 1:2 to 1:4). Softly shaped final lines (serifs) gradually grow from basic and connecting strokes. The most famous representatives of Renaissance antiqua are: Garamond, Garaldus, Imprint, Sabon Antiqua, Trump-mediaeval, Bembo, Plantin, Trajanus and Lutetia. Visual features of the Transitional antiqua are as follows: slightly

oblique ascender lines and curves (10-30° ascent) and a somewhat stronger contrast between basic and connecting strokes (ratio from 1:4 to 1:7). Furthermore, the serifs are flatly shaped. The most famous representatives of Transitional antiqua are: Baskerville, Imprimatur, Cochin, Aster, Paganini, Caslon, Times New Roman and Perpetua. Classicistic antiqua has the following visual features: lowercase ascenders are horizontal, and curves are vertical. There is a strong contrast between the thickness of basic and connecting strokes. There is a brusque transition between basic and connecting, finishing strokes (serifs). The most famous representatives of Classicistic antiqua are: Bodoni, Mondial, Walbaum Antiqua, Onyx and Didot. Artistic antiqua is done in a calligraphy freestyle. It is mostly based on handwriting, hence its name in literature – “written antiqua”. The most famous representatives of Artistic antiqua are: Palatino, Klang, Post-antiqua, Diotima, Quirinus, Codex, Dominante, Jacno and Melior.

Semigrotesque is a transitional shape between antiqua and the grotesque. Serifs were replaced by slightly thicker ends of basic and connecting strokes. The difference in the thickness of strokes can be slight or more prominent. The most important typefaces in this group are: Optima, Americana and CopperPlate Gothic. Group of typefaces called Newspaper antiqua was developed in the attempt to create a highly readable typeface, intended primarily for newspapers and magazines. A hybrid shape was created by merging Antiqua and Egyptienne. It shows a moderate difference in the thickness of basic and connecting strokes and has highly emphasized serifs. The most famous representatives of Newspaper antiqua are: Excelsior, Volta, Century Schoolbook, Clarendon and Egizio. Typeface group called Grotesque has visually equal thickness of basic and connecting strokes and it is sans-serif. The most famous representatives of the group are: Futura, Gill Sans, Univers, Helvetica, Microgramma, Permanent, Unica, Hallp, Signum, Neuzeit-grotesque and Folio. Typefaces in group Egyptienne have a visually equal thickness of basic and connecting strokes and serifs. The most famous representatives of the group are: Rockwell, Memphis, Beton, Calvert, Welt-antiqua and American Typewriter. Italian group of typefaces has visually equal thickness of basic and connecting strokes and prominent serifs. The famous representatives of this group are as follows: Playbill, Magnet and Pro Arte. Typographic typefaces are based on classic scripts before the invention of printing - the lapidary, square and rustic capital as well as uncials and semi-uncials, are called *Special forms*. The most famous representatives of the group are: Peignot, Albertus, Matura, Mosaik, Cooper Black, Augustea, Solemnis and Neuland.

Script typeface includes all typefaces which attempt to imitate handwriting. The representatives of Bold stroke are all typefaces which seem to have been written with a very thinly pointed quill: Diane, Juliet, Virtuosa, Primadona or Lithographia. Typefaces in the group Alternate stroke imitate a text written with a thick quill. This group includes: Legende, Coronet, Muriel, Ondine, Fluidum and Raffia. The group called Uniform stroke has all typefaces imitating a round quill: Signal, Gong and Energos. The final group of script typefaces – as the name itself says – includes all typefaces resembling brush

strokes: Stop, Slogan, Choc, Ashley Script, Impuls, Papageno, Reporter, Mistral, Saltino and Express. Typeface group called *Profile shapes* includes different headline typefaces which are created to have a spatial, 3D effect. Those typefaces usually contain only uppercase alphabet, punctuation and numbers. The most famous representatives of the group are: Largo, Columna and Smaragd as Shaded typefaces; Castellar, Duo and Chisel as Outline typefaces; Flash, Christal and Stencil as Shading typefaces and Saphir, Mole Foliante and Lettres Ornees as Embellished typefaces.

Famous software company Adobe, which owns numerous software for designers and graphic artists (Photoshop, Illustrator, InDesign, After Effects, Acrobat...), based on ATypI classification, made its own typeface classification, [10] in order to make them as user friendly as possible (and easier to buy). Adobe Type Library classifies typefaces in the following twenty-seven groups: *Adobe Originals, Blackletter, Capitals, Computer Related, Cyrillic, Decorative & Display, Didone (Modern), Expert Collection, Garalde Oldstyle, Glyphic, Greek, Hand-tooled + Inline + Outline + Stencil, Japanese, Mathematical, Monospaced, OpenType Pro, Optical, Ornamentals, Phonetic, Sans Serif, Script, Slab Serif, Small Caps & Old Style Figures, Swash, Symbol, Transitional and Venetian Oldstyle*.

Nowadays, many different typeface classifications can be found on the Internet but most of them are based on the ATypI classification. A well-developed classification (based on all previously stated qualifications) was published by a designer Jacob Cass under the title *Type Classification Handbook* [11]. Cass divided typefaces into 10 groups: 1. *Humanist* (including: Centaur, Stemple Schneider, Italia or ITC Berkeley), 2. *Garalde* (most famous representatives: Bembo, Garamond, Plantin, Caslon and Sabon), 3. *Didone* (typefaces: Bodoni, Didot, Walbaum, Century), 4. *Transitional* (representatives: Baskerville, Times New Roman and New Caledonia), 5. *Lineal* (includes three subcategories: *Grotesque* - Franklin Gothic, Helvetica, Arial, Swiss and Univers, *Geometric* - Century Gothic, Avant Garde and Futura, and *Humanist* - Gill Sans, Optima, Frutiger, Shannon and Myriad), 6. *Mechanistic* (most famous typefaces: Memphis, Clarendon, Woodtypes, Lubalin, Rockwell, American Typewriter), 7. *Blackletter* (includes typefaces: Old English Text, Linotext, Goudy Text or Cloister Black), 8. *Decorative* (representatives: Jokerman, GiddyUp, LoveLetters, Stencil, Rosewood and Critter), 9. *Script* (most famous typefaces: Kunstler Script, Bickham Script Pro, Edwardian Script, Snell Roundhand and Brush Script) and 10. *Manual* (typefaces such as: V Hand, Christopherhand and Rage Italic).

5 Conclusion

Before forming typography, it is important to firstly define the purpose of the new typeface. Each new typeface should be (as should design in general) relevant to a certain group of users (as well as a type of project or purpose) and it should be original and different than any other typefaces. [12, 13] One of the definitions of typography is that it is the art of arranging typefaces for a

specific project and its arrangement in order to achieve a more effective communication. In order to choose the appropriate type, the user should be well-acquainted with optical or geometric features of typography, typographical rules and the historical development of typography. Additionally, every user is further assisted by a good and simple type classification. During the last thirty years, computers and digital technology have enabled brand new creative freedoms. Young designers publish hundreds of new, individual typographic solutions, create new groups and classifications (for example dafont.com [14]) and famous world associations of graphic designers organize exhibitions and issue publications on the subject. As a result, there are thousands of types and dozens of applications for digitally creating types. There are many different typeface classifications based on historic or visual criteria, as well as the combination of the two.

A novel, simpler classification is proposed, based on visual features of typography, and in accordance with the modern development of typography, the production of new typefaces and the needs of a modern user. The classification is based on four fundamental groups of typeface: 1. *Serif typefaces*, 2. *Sans-Serif typefaces*, 3. *Script typefaces* and 4. *Other typefaces*.

When compared to Vox-ATypI classification, the first group includes all typefaces which have a final stroke or serif. This includes all typefaces in the following groups: *Classicals (Humanist, Garalde, Transitional)* and *Moderns* (subcategories *Didone* and *Mechanistic*). The second group includes all sans-serif typefaces. This includes Vox-ATypI classification groups *Moderns* and *Lineal* subcategories (*Grotesque*, *Neo-grotesque*, *Geometric*, *Humanist*). The third group includes all typefaces which imitate handwriting style such as *Calligraphics* group (subcategories *Script*, *Graphic*, *Blackletter* and *Gaelic*). All other typefaces are included in the final group. If we compare the Franjo Mesaroš classification, the first group would include all typefaces from *Basic shapes and Individual shapes* as well as *Technical shapes*, subcategories *Egyptienne* and *Italienne*. The *sans-serif* typefaces would include the subcategory in the *Technical shapes Grotesque*. *Script* shapes as well as *Special and Profile shapes* would be included in the *Other typefaces* group. This classification would considerably simplify the choosing process for designers. The 21st century users (unless they are typographic experts) have little use of name such as *Classicals* and *Moderns* from Vox-ATypI classification or *Renaissance*, *Transitional*, *Classicistic* and *Newspaper Antiqua* from Mesaroš's classification. Besides, Vox-ATypI has two groups called *Humanist*: as a subcategory of *Classicals* typefaces (serif typefaces) and as sub-subcategory of group *Moderns* and *Lineal* subcategory (sans-serif typefaces). Moreover, *Moderns* group includes serif typefaces (subcategories *Didone* and *Mechanistic*), but also sans-serif typefaces from the subcategory *Lineal*. Similar occurrence happens in Mesaroš's group *Technical shapes* where the subcategory *Grotesk* is sans-serif while subcategories *Egyptienne* and *Italienne* are not.

Everything stated in this paper, as well as the suggested classification can be the basis for the continuance of research and creation of several subcategories in each of the proposed four typeface

categories. The other way to continue the research or more precisely sub-divide each category is by using labels, marks and tags. In such a way each typeface could be given several tags, that is, be concurrently placed in several subcategories.

6 References

- [1] Tomiša, M. Transformacija vektorskih podataka kod prikaza digitalne tipografije na ekranu, magistarski rad, FOI, Varaždin, Sveučilište u Zagrebu, 2007., pp. 4-27.
- [2] Bringhurst, R. The Elements of Typographic Style, Hartley & Marks Publishers, 3.2 edition, Vancouver, 2008., pp. 10-11.
- [3] Tomiša, M.; Sabati, Z. Kvantifikacija odstupanja slovnih znakova kod ekranskog prikaza, Tiskarstvo 08, 2008.
- [4] Mesaroš, F. Tipografsko oblikovanje, Viša grafička škola, Zagreb, 1981., pp. 70-99.
- [5] Žiljak, V. Tipografski rječnik, URL:<http://public.carnet.hr/~viziljak/>, 2006., (20.12.2009.)
- [6] Vidi magazine, Vidi-to, Zagreb, 1997.
- [7] Noordzij, G. Potez: teorija pisanja, Odsjek za dizajn vizualnih komunikacija Umjetničke Akademije u Splitu, Split, 2012., pp. 9-12.
- [8] ATypI (Association Typographique Internationale), URL:<http://www.atypi.org>, (01.07.2013.)
- [9] Vox-ATypI classification, URL:http://en.wiki-pedia.org/wiki/VOX-ATypI_classification, (01.07.2013.)
- [10] Adobe Type Library, Type Classification, URL:<http://www.adobe.com/type/browser/classifications.html>, (04.07.2013.)
- [11] Cass, J. Type Classification Handbook, URL:<http://justcreative.com>, 2013. (04.07.2013.)
- [12] Tomiša, M.; Mrvac, N.; Milković, M. Determination of Graphic Design Qualitative Criteria. // TTEM, DRUNPP. 7, 1(2012), pp. 49-56.
- [13] Tomiša, M. Određivanje kvalitativnih kriterija dizajna grafičkoga proizvoda u procesu grafičke komunikacije, doktorska disertacija, Grafički fakultet, Zagreb, Sveučilište u Zagrebu, 2012., pp. 77-80.
- [14] Dafont.com, URL:<http://www.dafont.com>, (04.07.2013.)

Author's addresses

Mario Tomiša, Ph.D., Assist. Prof.
Polytechnic of Varaždin,
J. Križanića 33/6, 42000 Varaždin, Croatia
E-mail: mario.tomisa@velv.hr

Damir Vusić, Ph.D., Assist. Prof.
Polytechnic of Varaždin,
J. Križanića 33/6, 42000 Varaždin, Croatia
E-mail: damir.vusic@velv.hr

Marin Milković, Ph.D., Assoc. Prof.
Polytechnic of Varaždin,
J. Križanića 33/6, 42000 Varaždin, Croatia
E-mail: dekan@velv.hr