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EDITING OF AND DIGITAL PRINTING OF COMICS

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Abstract:
We have focused on the formal, digital processing and implementation potentials, limitations that are associated with the genre of comics. We are describing the problems and phenomena arising in the course of the various digital processing – black & white, grey-scaled and colour resolution – of line graphic made in ink. It has been examined what a method of scanning and which file format would be the most suitable for the reproduction of these drawings.

Keywords: *comics, digital processing of graphics*

1 INTRODUCTION

All over the world, the representatives of these drawn genre are in the focus of interests, still the volume of literature associated with comics is rather small, there are just a few professional publications on comics, not to mention the shortage of these publication in Hungarian. This is the reason why we have chosen comics to serve as the topic of our studies, thereby popularizing this genre, and trying to make up this gap in the technical literature to some extent.

2 HISTORIC OVERVIEW OF COMICS AS A DISTINCT GENRE

Stories told in pictures go back to the very beginnings of mankind, and are much older than the earliest forms of writing. A major advantage of image-based story-telling is that it does not necessitate literacy or the command of any specific language. They can be understood by anyone looking at the pictures as irrespective of sex, place of living or schooling. These presentations of picture literature can be regarded to be the most ancient forms of comics [**2**]. One of the mean reasons of the comics rising to such a popularity since their appearance can be this simple intelligibility.
In the history of comics, a breakthrough was brought about by the introduction of printing, which gave way to the wide-spread circulation of books and stories told in pictures. The form of comics as we know them today was shaped by the hands of European and American artists in the late 19th century, yet they emerged to the role of popular mass media only at the beginning of the 20th century. From many respects, Rodolphe Töpfferone, a French-speaking artist from Switzerland, who worked in the first half of the 19th century, can be regarded as the father of modern comics [**2**]. His pieces used image elements simultaneously with textual references, still independently from them, and he arranged them into panels as separated with dividing lines (*Figure 1*).

*Figure 1: A typical series of Töpffer panels [**2**]*

The 1930–40s were the golden age of the American comics, as these cheap, readily available stories were suitable for describing the economic and social processes, background of the age. That was the period when in America such characters having preserved their fame even today appeared as **Mickey Mouse** (1928) with his creators being Walt Disney, writer and Ub Iwerks, cartoonist; this character still serves as the symbol of the Disney company (*Figure 2.a*), and **Popeye** (1929) : Elzie Crisler Segar's comics, the first character with supernatural powers (*Figure 2.b*). The 1930–1940s witnessed the evolution of European comics, as well. The notable characters turning up in Europe included **Tintin** (1929) created by Hergé in Belgium, as well as **Lucky Luke** (1946): a series by René Goscinny and Morris from Belgium.

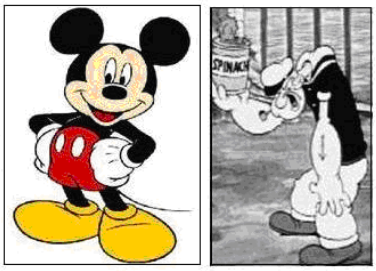

Figure 2: Comics characters appearing in the early 1930s
*a) Mickey Mouse, b) Popeye [**2**]*

From the beginning of the 1950s, comics as a genre were becoming increasingly popular again, partly with the re-created comics heroes, partly with freshly invented, new characters. In the period from the early 1970s to the middle of the 1980s, superhero comics continued to have a key role. On the other hand, more serious topics also found their way to the comics with real, everyday social problems. A characteristic of the 1990s was that the acts of the major characters were split up into different threads, and they were not published in a single comic book, but in several parallel publications. The 1990s also saw the beginning of the publication of manga stories – i.e. expressly Japanese comics – influencing the entire market of comics, while from the 2000s movie adaptations added a lot to the popularity of comics, and became appealing even to those who had not liked the genre before. The most well-known European comics in the second half of the 20th century comic were e.g. **The Smurfs** (1958): Peyo's creation, and published in Belgium (*Figure 3.a*), **Asterix** (1959): a character invented jointly by René Goscinny, writer and Albert Uderzo, comics artist, and a symbolic figure of French resourcefulness (*Figure 3.b*).

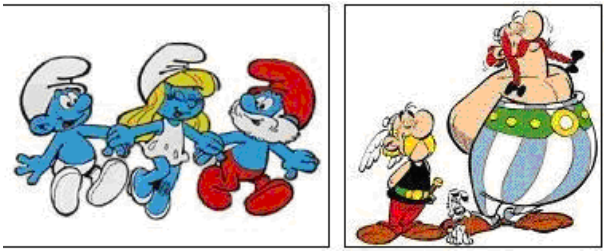

Figure 3: Comics created for kids in Europe
a) The Smurfs, b.) Asterix and Obelix,

2.1 Typography of comics

A comic strip is a series of subsequent drawings or other image elements arranged in a specific order with the purpose of the conveyance of information and/or the generation of aesthetic response in the recipient. It is important that the reader could rely on his own memories in interpretation, otherwise

the desired effect does not surface. In comics, images are usually not watched, but rather read, while the textual references are construed in amendment. The genre itself should be handled as juxtaposed image panels. In most of these works, such juxtaposition is achieved by the framing of the pictures. On the other hand, frames do not only have a role in separating the pictures, as it is these very frames that can be used for changing the perspective and the distance of representation. The panel or the frame can be of regular or irregular arrangement as depending on the creator's intent where to lead the reader's eyes, what to express. The frames, for instance, are also suitable for influencing our sensing of time.

Words can be attached to the panels of the comics in two different manners. On the one hand, text itself can be used in the panel-based arrangement, and in this case the textual references are inserted under or over the panels. The other way of placing tests is the use of the so-called work balloons or word bubbles. Comics as a genre make use of different shapes of word balloons (*Figure 4.a–d*). The most important characteristic of the applied text is the font. For the brevity of the text, the most generally used font type is the serifless linear Antiqua. Today, current fonts are used with increasing frequency, which is applied to express non-verbal human sounds (for instance, humming, coughing) or whisper.

a b c d

Figure 4: Forms of word balloons

a) Speech bubble, b) Thought bubble,
c) Scream bubble, d) Whisper bubble

To accentuate words, almost exclusively bold italics are used. If this accentuation is stressed with underlining, it would express shouting (to reinforce such an increase of the volume of the sound, in general jagged speech bubbles are applied) (*Figure 5*).

Figure 5: Representation of stress and shouting

It is not customary to divide words, because it would make reading and the comprehension of texts more difficult. Typically, the shape of the bubble is changed, and aligned to the words. A special typographic feature is the use of letter "I". As a rule, all the "I" fonts used as spaces should be represented as simple, vertical lines, whereas the serif version should be used only in abbreviations, as well as for the personal pronoun "I".

3 GRAPHICS IN COMICS

With Anna Kármán, applied production and graphic designer, artist we have worked out the story of a future comics alongside the editing parameters. The graphics of the comics featuring conventional framing and texts (*Figure 6*) have been drawn with the use of black technical pens of 0.1–0.5 point on 80 g/sq m, uncoated, bleached paper.

Figure 6: An original page of the comics

3.1 Digital processing of graphics

The original ink drawings created for the comics has been digitalized with the application of 300 dpi physical resolution and three modes of colour resolution, with a Canon PIXMA MP560 type multifunction device. For the bitmap and greyscale colour resolution mode, we have chosen the BMP file format, and the TIF format has been used for the colour scanning of graphics. In this way, although our images have become sufficiently large (*Table 1*), we have been able to eliminate the loss of colour that is typical of certain file formats (e.g. JPEG images).

Table 1. Scanning parameters of the three examined pages of the comics

No. of the page	Method of scanning	Size of the scanned file
17	Bitmap	533 KB
17	Grayscale	4.14 MB
17	RGB scale	12.4 MB

3.2 Videomicroscopic examination of the digitalized graphics

For the videomicroscopic studies, the digitalized versions of ink drawings have been printed with two different types of digital printers: Canon ImagePRESS C1 and Xerox DocuColor 3535. The (colour) differences arising from the various scanning modes are visible on the prints even to the naked eye,

while the differences between the two printers can be seen only in the microscopic images. For the microscopic examinations, a Watkom WAT25-250D type video microscope equipped with a fourfold zoom lens has been used, and then shots have been made with the application of a distortion-free Metric 8.03 Plus software. In the images taken with the video microscope, the digitalized images of greyscale and RGB colour resolution have reflected greyish and reddish–greyish line colours (*Figure 6.a–d*).

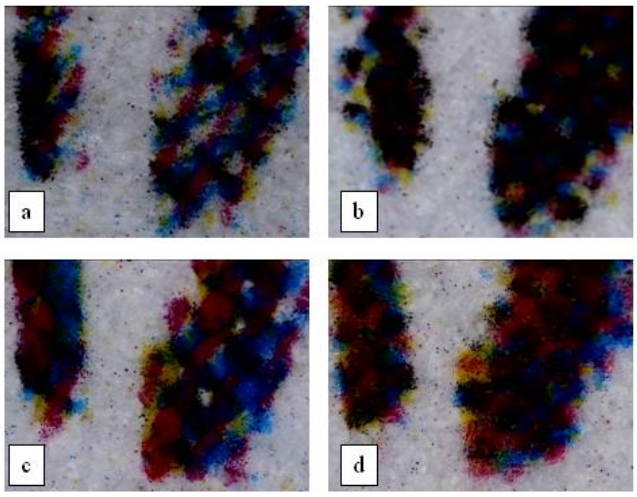

Figure 6: Videomicroscopic images of the prints from the scanned greyscale (a. Canon ImagePRESS C1, b. Xerox DocuColor 3535), and RGB (c. Canon ImagePRESS C1, d. Xerox DocuColor 3535) colour resolution pictures

The images of the prints made with the two digital printers (after scanning in bitmap colour mode) hive proved to be different from each other as a result of the imaging technologies. The differences are visible in the video microscope images. The Xerox DocuColor 3535 digital printer applies toner powder "burnt" on the print carrier, while Canon ImagePRESS C1 uses diffusing ink. In the case of the toner powder burnt on the print carrier, we have seen that the microscopic image of the line is "coarser" (*Figure 7.a*), the curves are relatively angular, yet much fewer toner particles are scattered to inappropriate places, meaning that the paper is not "contaminated" uselessly". The inkjet technology used in the Canon ImagePRESS C1 can yield softer curves (*Figure 7.b*), though in comparison with the curves of the original ink drawing (*Figure 7.c*) the line image remains more angular. In this latter case, the ink particles have become scattered to a larger extent on the paper, but the image of the print has been more uniform, within the lines to be displayed there are no – or at least fewer – parts with insufficient inking.

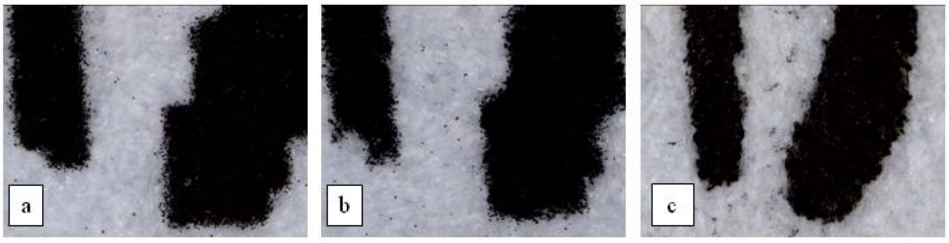

Figure 7: Video microscopic image of the bitmap scan after printing with a. Xerox DocuColor 3535, b. Canon ImagePRESS C1, as well as c. the original ink drawing

4 TYPOGRAPHIC DESIGN OF COMICS

The format of the comics has been planned to be A5, as the graphic artist has drawn the story on A5-sized sheets. Obviously, it would not be difficult to change the ratios on the digitalized images, yet in this case the rich details of the original works may become distorted, the original intents of the artist would be deteriorated. The comics have been made with conventional panel framing. With respect to typographic aspects and our experience earned in the making of conventionally framed comics, we have determined the layout, margins (10 mm for the header and footer; 5 mm for biding; 8 mm for opening), as well as the spacing between the individual panels (5 mm).

As the font of comics, the serifless linear Antiqua is the generally accepted solution, and the textual parts are traditionally made in versal fonts. We have opted for the "Comic Font HUN" font type, which has been designed for comics, and is in fact a serifless linear Antiqua – free and consisting of all the letters of the Hungarian alphabet. This font type does not include current fonts, but it does not raise a problem, because for the conventional framing of the comics we have planned to use texts from traditional, versal fonts. The ideal harmony with the given panels can be effectuated with the use of narrative text parts 8 points and conversations, thought elements of 7 points as the sizes of applied fonts. In places where it has been required by accentuation or the highlighting of certain words, font sizes deviating from the general 7–8 points have been used (*Figure 8*). To present sounds and noises, the "Hobo Std." font type has been chosen in compliance with the associated routines applied in comics and the rules of mixed font typography.

Figure 8: Larger font size for accentuation

The text as been kept in the Microsoft WORD 2003 program. Within a file of the program, it has been designated which lines should be included in speech bubbles, thought bubbles, and which parts will be presented as comments or non-verbal sound effects. In the comics, the dialogues have been inserted into various word balloons (speech, thought, scream and whisper bubbles) (*Figure 9*) so that the details of the graphics should not become deteriorated.

a. b. c. d.

9. ábra: Szövegbuborék formák
a.) Beszédbuborék, b.) Gondolat-buborék,
c.) Kiabálás csipkézett buborékformája, d.) Suttogás buboréka

With the application of three programs – CorelDRAW X4 vector graphic drawing program, Adobe PhotoShop CS2 pixel graphic image editor and photo processing software, as well as Adobe InDesign CS2 OTC publishing suite –, the various word balloons have been created, while it has been analyzed which of these software applications is the most suitable for the task.
In the CorelDRAW X4 vector graphic program, the layer-based program structure has facilitated our work. The given page of the comics has been imported in the background layer, and then the textual parts have been created on a new layer for each panel. As graphic elements, the toolkit of the program offers word balloon shapes, yet they have not been adequate for our purposes, because it has proved to be cumbersome to make the desired word balloon sizes with them. Yet, for the thought bubbles we have applied the pre-defined elements, which we modified in a follow-up manner (*Figure 10*).

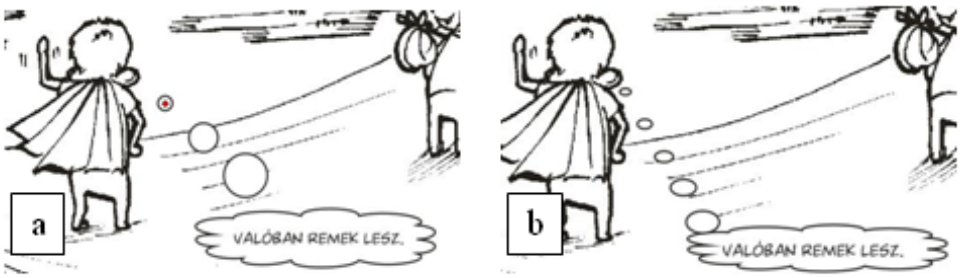

Figure 3.23: Though bubble with a
a. CorelDRAW ready-made shape; b, modified shape

With the use of the InDesign program, the insertion of texts can be similarly carried out – with reliance on a layer structure – as with the vector graphic CorelDRAW.
On the other hand, the creation of texts for the image panels has proved to be more difficult and uncertain in the pixel graphic PhotoShop program than in the other two cases, and therefore this method has been ignored in relation to the elaboration of the entire comics.

4.1 Videomicroscopic examination of the line thickness for the word balloons and graphics

The line thickness of the word balloons created has been selected so that it should harmonize with the line thickness of the original drawings. In the three programs – CorelDRAW X4, Adobe PhotoShop CS2 and Adobe InDesign CS2 –, different line thickness values have needed to be set: nearly identical line thickness has been achieved in CorelDRAW with 0.25 mm, in PhotoShop with 3 pixels and in InDesing with 1 point as the actual measure of thickness.
In the examined prints, both the curves and straight lines have shown even line edge images when the lines of the word balloons are examined with a video microscope. In the videomicroscopic images, it can be seen that in comparison with the artificially created lines the original graphics are more "ragged", uneven (*Figure 10*).

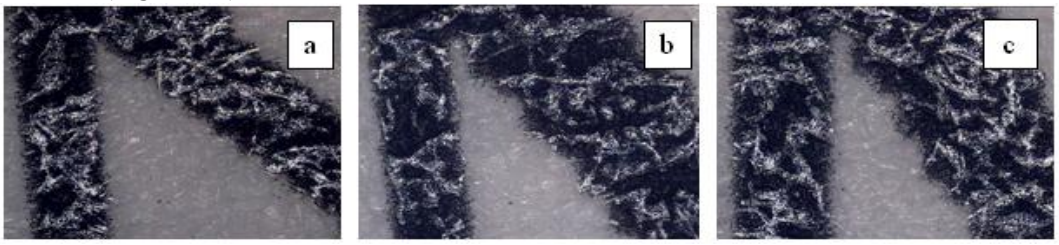

Figure 10: Videomicroscopic line image of the
artificially created line (left) and the original graphic (right)
with the use of a. CorelDRAW program, b. Adobe PhotoShop, c. Adobe InDesign

5 SUMMARY

As a result of our examinations, it can be claimed that to digitalize our comics the optimum solution is bitmap resolution scanning, while for texts the best solution has been to use the CorelDRAW program. To make the makeup of the publication, InDesign program has proved to be the most suitable tool, while for reproduction the Canon ImagePRESS C1 digital printer has been the best device.
In the light of our experience, a recommended development would be the expansion of the font types expressly designed for comics with letters not included in the English alphabet.

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