

Safonova Tetyana

Salvador Dali Institute of art for decorative
modeling and design, Kiev
senior teacher

**THE PHENOMENA OF THE BOOK
(as the synthesis of art and technology)**

The article describes the emerging and convergence of new art styles and trends, latest technologies that were invented during the innovating and creative lives of artists of different kinds - typographers, layout designers, type writers, illustrators and designers - in its connection with the art of the book along different times in different countries.

Key words: *book, the synthesis of the arts, technology, design books, science books.*

During the various periods of the history of book arts the constant changes took place that was especially noticeable after the certain inventions. Changes were about the way of printing, searches for the new fonts, new styles in the art, techniques of the books' illustrations.

Being invented in the East, xylography became very popular in XIV century in Europe. One of the drawbacks of this printing type was the difficulty of the process and limited life cycle of the wooden plates. Creation of the book was a painstaking task – after several copies were done, the next copy demanded the creation of the new template from the very beginning.

Humanistic trends that were emerging in Italy in those times once again opened the classic principles in all cultural spheres like architecture, sculpture, science, literature and philosophy.

Being on the edge of the progress, the German inventor Johann Gutenberg (1397–1468) created the printing press. He invented the printing

process based on the usage of the changeable sets of the iron letters [4]. Before 1501, the printed books, separate sheets and illustrations already existed in Europe and they were known as incunabulas (from the Latin “lullaby”). In 1450-1455 Gutenberg printed the first copy of Bible that was called 42-row Bible, because each page consisted of 42 lines of text combined in two columns. It was 1282 pages in total. All art elements are drawn by hand. The part of the circulation is created on the paper, and the rest was printed on the parchment. Gutenbers implemented the brilliant idea of printing books that looked liked as the well-known works of the medieval scriptories and it became one of the first example when the goods were created as identical copies – in other words it was the mass production goods for the mass market. The idea was quickly spread, and printing houses started to emerge throughout the Europe.

Pamphilio Castaldi from Feltre (Italy) is considered to be the inventor of the moving letters. Venetian publishers used the renascence font types instead of the gothic letters that simulated the hand writing well-spread in Germany that times. The invention of the typography multiplied by the need for knowledge made printed books cheaper and much more available. During the times when Medici family was powerful, the printed and illustrated encyclopedia called the Nuremberg chronicles saw the world in 1493.

William Morris (1834-1896) also became a historical name in the field of design. He was an architect and the well-known book-publisher of the modern times [1,39]. Morris was born in London in a rich family and graduated Oxford University. To become a craftsman was his own choice. Later he owned a company, influenced the European design trends of those times and became a leader of the movement called “Art and craft”. The publishing was just his hobby. It was founded in 1890 to publish luxury books, limited editions, for the art gurus. Printing was not a chip deal. One

of the samples of the book design is the Kelmscott edition that studies the new ideas for books publishing. The style is a feature of this publisher, e.g. the decorated Chaucer's book produced in 1896.

The birth of the Art Nouveau is connected to the following myth. It tells that at the beginning of the XX century sharp edges and straight lines gradually became unpopular, and the Art Nouveau emerged in a pink cloud over the Europe and covered all with the decadent curved lines, vicious curves, looped spirals and rich ornament of the stylized plants. Curves and waves of the Art Nouveau came from Paris due to Samuel Bing (1838-1905). Plants' life is also present at A.G. Makmurdo ornaments. Streamed plants forms on the cover of his book called "Ren Churches in City" (1883) illustrate Morris style well.

The Art Nouveau is well read in the works of the artist named Walter Crane (1845-1915) from London. He illustrated primarily the books for children. His artistic style was very appreciated especially due to the spread of knowledge among kids. Crane not only published books but also wrote them. Some sources consider Crane to have been "the pone of the first color books for children" [3]. These books were sold at a affordable price and were produced in mass quantities – starting from 10K pieces per 1 ordering.

The current changes were supported by Adolf Muha (1860-1939) who was a graphic designer. Posters, menus, calendars and books made him a honored specialist through the whole Europe. It's worth noting the décor of the Robert de Fleur's book called "Ilsa the Tripoli princess". The book cover, title sheet and lot of illustrations well refer to the contents and are done using multiple-color lithography.

The further changes in the publishing evolution were about the typography. New fonts became available, new text allocation styles were introduced. Classic principles were changed by the introduction of the

“Sans serif” fonts – simple letters done with the same thickness lines, without any hitched edges. The condensed and expanded fonts were other newly introduced features. The new technology was adopted by many artists, and it was known as large-scale color lithography. It brought the new design into books; it helped books to become more illustrative. In 1860 the advanced “half-tone print” technology made it possible to convert photos into the dotted images and print them on the paper. And the color printing offered artists the correct reproduction of their works. New technologies and the spread of the paper prints in 1880 increased the printing speed of 1100 sheet per hour, and it boosted the production of the printed materials. All this made the book chipper and much more affordable.

The book publishers got a new easy-readable font from the English calligraphist Adward Johnston (1874-1944). Clearly outlined, those fonts suited those times perfectly. The coming generations of the designers had been creating posters and decorated the books under the cubism and abstractionism motives. Tender pastoral was replaced by the more expressive modern and symbolic style.

In 1919 the call from M. Shagal (1887-1985), who founded the art school in Vitebsk (Belorussia) was supported by K. Malevich, V. Yermolaev, L. Lysitskiy. Malevich represented the “New realism” trend. He founded the new style that he called the “suprematism” – the geometric figures were represented in clear local colors and they were submerged into the transcendental white abyss. Malevich considered white color to be the ground for all suprematic compositions – the white color’s depth and the capacity was like a something uncatchable, undefined but it was existing one. These new compositions were the creation of the free artistic will.

According to the directive from Narcompros Yermolayeva V. (1893-1937) was a teacher at the school. Later she became its dean, and the school was transformed as Vitebsk art and practice university. Under the influence of Malevych, she became fond of subject-less art. Starting from 1920s, Yermolaeva cooperated with children's magazines "Sparrow", "The New Robinson", "Siskin", she also illustrated such books as "Chop-chop-chop" by V. Aseyev, "Many animals" by V. Vvedenskiy, "The Train" by E. Schwarz, decorated the series of tales by Krylov and books by V. Mayakovskiy and D. Harms. Her illustrations and work say that the principles of the vanguard are primarily based not on the simple concept but on the plastics, and she called such a trend as "painting and plastic realism".

In 1900-1935 new radical art trends like the cubism and abstractionism inspired the Russian vanguard. The new concept of the design was born – the constructivism, that considered normal to use the mass-production goods to create new forms: "Cultligs" added to imagination plus social applicability – this is the graphics' formula by Lisitskiy (1840-1941). He was the artist of a new type, he was the inventing artist who propagated the conjunction of the technologies and arts [5]. He looked for a formation principles, and it was successful. "The Prague Legend" by M. Broderzon and decorated by the hand of Lisitskiy looked like a roll in a wooden case – it was an example of the really original packaging. In Berlin in 1923 the Mayakovskiy's book "For a voice" was published, where Lisitskiy used a method of a special structure of a book for the first time. He composed the book like a telephone directory with the register tabs, and it allowed spotting the needed verse quickly.

In 1950s in USA the new era of book arts started when the graphic design emerged. All typographers, advertisement and packaging artists, book publishers who worked around the creation of books started to be

connected with “design”. The majority of the companies continued to use the style created in XX century or just ordered the new image creation at local print shop or advertisement agency. During the half of the century all modern trends regarding design were born in Europe. But later on, America caught up the Europe. American business understood the idea that one should look good in the face of the public. The respectable publishing houses founded at the end of XIX century started to compete with each other trying to get the best designers, photographers and illustrators they could offer.

While the America was busy with modernization of the graphic design, the Swiss international style brought the rationality, order and visual accuracy in. The key person in the creation of this was Max Bill (1908-1988) [2, 36]. He promoted the conjunction of the principles of Bauhaus where he studies with the constructivism of the Williams High School of Arts. The school cultivated the constrained design style. The new Swiss graphics style contrasted the late emotional and exoteric way design. It featured clear images, photography, fonts without notches, and easy composition, in other words – simplicity and practicality that were used in design even up to middle 1970s. So Helvetica font was developed by Max Midingier and Edward Hoffman in 1958 and it describes the Swiss design – constrained, clear and straight one that adds to the attractiveness and implies the confidence. We meet Helvetica font almost every day even probably without noticing that. The font’s authors reworked the standard “cut” font and added some elegance that the design of 1930s lacked much.

The graphic design changed drastically once again after the discovery of several electrons. Who could guess that in 1984 Apple will launch Macintosh 128 and laser printer to mass-market? The settled history of the publishing has changed. Computer programs were more and more powerful, advanced ways of preparing graphics emerged, new types of

graphic design appeared. This era got the name of post-modernism. The time to reconsider the book art came in. Wolfgang Waynard (1914) created new ideas to change the strict Swiss fonts. The idea was quickly supported by young USA designers, because font creators were special people – their task was to simplify communications. One could become famous due to creation of the only one font, others designed tons of them (Friedman, Grayman, Zapf).

This trend is well illustrated by German Zapf (1918) life path that was interrupted during World War II. He became one of the most fruitful designers of XX century. Zapf created the classic roman font called Palantino that became one of the standard fonts of Apple company. He also created the elegant font Optima.

The “design” term initially described only the printed products, but nowadays it is also referred to electronic communication channels. The republishing of electronic copies of old books become more and more popular, especially when we talk about old and rare books. Electronic books are the examples of the product that demands the high quality of reproduction and storage. Special technologies for scanning and reproduction give us a perfect electronic book saved to a multimedia disk. But the new technologies develop and don’t stop on that. One may meet publishers who develop Java-based books for mobile readers and provide access for online books downloading. Poetry and prose, classics and newly created books – all this one can read on the smartphone or cellphone screen.

So the investigation of the matter of book art, new publishing technologies and development of new distribution channels give us the understanding of the fact that a book is the product of synthesis, where artists of different countries provide their expertise, and artistic styles combine together. The contemporary book is the symbiosis of the art and

technology, and it's sustainably evolving by searching for new forms of expression to become the curious phenomena of the human culture.

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