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ANATOMY, VECTORS OF DEVELOPMENT AND AREAS OF PRACTICAL APPLICATION OF INFOGRAPHICS IN THE CONTEMPORANEITY

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Abstract. Main objective of the study. *The main purpose of this article is to fill scientific gaps in the study of information graphics in the segment of visual communications and, in particular, graphic design, as well as drawing up a comprehensive picture of what infographics is in a constructive sense. **Methodology.** In carrying out of this scientific research, evidence-based methods of deduction, induction, analysis of international scientific literature of the design vector and examples of infographics developed in different countries of the world were used, which are available in the general information field. **Results.** The results of this scientific study showed that each scientist who thoroughly studied the infographic phenomenon as a tool of visual communication made some individual significant contribution to the approximation of understanding how infographics is developed, for what purposes, how to correctly code the key message, what recommendations to follow when creating infographics to maximize its bottom line. **Significance.** This article contains essential knowledge on the anatomy of infographics (its integral parts), vectors of development of infographics (modifications in the temporal mode and thematic mode), the potential of using infographics as an effective method of informing the population using figurative and conventional combining of infographic components is considered.*

The problem statement. Infographics is widespread in mass media and educational literature, as an advertising technique and other options. However, today the deficit of deductive structural descriptions of the parameters of infographics from the point of view of polyauthorized extraction of scientific knowledge is clearly manifested.

Recent research and publication analysis. Information graphics has been considered by scientists from the perspective of design developments since the second half of the twentieth century. The pioneer of the detailed study of infographics as a communication design tool is Edward Tufte with his debut work "The Visual Display of Quantitative Information" in analytical design. Also, infographics is the object of research in the scientific fields of statistics, software data visualization,

journalism, information sciences and other multidisciplinary areas. The insights, based on the sources analyzed in the article, show that it becomes clear that there is a scientific gap about algorithms for design visualization of data arrays, infographic modifications and constructional features of infographics, which the author of this scientific article explores with evidence-based methods.

Purpose of the article. The purpose of this compiled research study is to familiarize the scientific community of the design segment with the essence of anatomical features, vectors of artistic and imaginative development, as well as the potential for practical application of infographics as a phenomenon of visual communication of the last decades and the near future.

The main part of the article. Infographics (abbreviated combination of the terms "information" and "graphics") is a graphical visual representation of information, data sets or knowledge, designed for quick and clear presentation and assimilation of information [1, p.7]. Information graphics is a separate genre of visual communication, which combines general signs, illustrations, a minimum amount of text (scripts), data visualization and information to create an informative and interesting description of the situation and more. Information graphics is a type of graphic and communication design, it has the ability to improve cognition, using graphic images to deepen the ability of the human visual system to recognize patterns, trends, patterns [2], as it is proved that up to 85% of perception, learning and cognition view [3, p.122].

Information graphics is a realized product of divergent thinking of a designer. Divergent thinking is a way of thinking in which many ideas are generated through the cognitive study of many different, unlimited solutions [4]. The list of tasks of infographics includes: data visualization, presentation of information using images, information architecture and information design [5, p. 27].

In recent decades, there has been an active development of infographics in mass communications, including journalism, it is popular among small and medium-sized businesses, non-profit organizations and large corporations due to the fact that it provides information to the target audience more interesting and accessible. Examples of infographics can be found in traditional media, such as magazines and newspapers, among digital channels, where social networks have played an important role in promoting information graphics [4]. Information graphics include the following types of graphical representation: derived from tables (the group includes graphs, information tables, diagrams), derived from maps (the group includes cartograms, maps), schemes (abstract, specific), information stories [5].

An important aspect of studying the field of information graphics is the differentiation of the concepts of "infographics" and "data visualization". Data visualization (often abbreviated data viz from data visualization [6]) is an interdisciplinary field that deals with graphical representation of data. This is a particularly effective way of graphical communication when there is a lot of data, such as time series [7]. From an academic point of view, this representation can be seen as a reflection between the source data (usually numerical) and graphical elements (lines or points on a chart). The mapping determines how the attributes of these elements change depending on the data. Since the graphic design of the map can negatively affect the readability of the chart [7], mapping is the main competence of data visualization [8].

There is also a well-argued scientific view that information graphics should be considered as a product of manual design work (manual visualization - optional) for a specific data set, and data visualization - as software work, partially automated [9],

at the same time terminological confusion is based on the interpretation of the term "visualization", which, according to Merriam Webster's dictionary, should be understood as an act or process of interpretation in visual terms or introduction into visible form (the act or process of interpreting in visual terms or of putting into visible form). This confirms the synonymy of the terms "visualization" and "information graphics" in a sense [2]. In the second decade of the XXI century, the distinguishing feature of the press is the visualization, which was caused by the constant competition of print media with electronic media resources and the World Wide Web, which focus on images. As a result, printed publications now practice the "mosaic" principle of information, block structuring of the text, the use of multicolor [10].

The author Edward Tufte has formulated the necessary characteristics that "graphic displays" of infographics must have in order for them to be considered indicative: data demonstration, encouraging the viewer to think about the essence and not about graphic design, methodologies, graphic production technologies and other factors, providing many numbers in a small space, connectivity of large data sets, no distortion of data interpretation, prompting the viewer's eyes to compare data, disclosure of data at several levels of detail, from a broad overview to a finer structure, serving a clear purpose (description, research, tabulation or design) , close integration with static and oral descriptions of the data set [11, p. 13].

It is important to note the sufficient advantages of infographics over more traditional means of presenting information (non-illustrated text): infographics contain color, content, images and movement that are more attractive than printed words, infographics help to scan and obtain the necessary information, helps to better remember data. Usually the infographics is available for easy exchange between different websites and social networks, there is an opportunity to enhance the value of a particular product to increase brand awareness and reach, competent infographics encourage action, so it is an effective tool for advertising communications [12] .

Information graphics has three components: visual element, content and knowledge. The visual content consists of colors and graphics. There are two different types of graphics - thematic and link graphics. Thematic graphs are included in all infographics and demonstrate a basic visual representation of the data. Reference graphics are usually icons that can be used to point to certain data, although they are not always found in infographics. Statistics and facts usually serve as content for infographics and can be obtained from any number of sources, even census data and news reports. One of the most important aspects of infographics is that they contain some idea of the data they represent and knowledge [13]. Infographics is effective due to their visual element. Fifty percent of the human brain is dedicated to visual functions, and images are processed faster than text. The brain processes images simultaneously, but processes the text in a linear manner, which means that obtaining information from the text takes much longer [14].

Trends in online information retrieval, such as the shorter attention span of Internet users, have also contributed to the growing popularity and effectiveness of infographics. When developing the visual aspect of infographics, a number of factors must be taken into account to optimize the effectiveness of visualization. There are six components of visual coding: spatial coding, labels, combining, embedding, retinal properties and time coding. Each of them can be used in its own way to represent the relationship between different types of data. However, studies have shown that spatial position is the most effective way to present numerical data and leads to the fastest and easiest understanding by viewers [15, p.60-61].

There are also three main provisions of communication that need to be assessed when developing information graphics: treatment, understanding and retention. "Appeal" is the idea that communication should engage the audience. Understanding implies that the viewer must be able to easily understand the information presented to him. Finally, "saving" means that the viewer must remember the data presented by the infographic. The order of importance of these provisions depends on the purpose of the infographic. If the infographic is intended for the impartial transmission of information, for example, in the field of science, first you need to consider understanding, then preservation, and finally appeal. However, if the infographic is used for commercial purposes, the appeal becomes the most important, followed by retention and understanding. When infographics are used for editorial purposes, such as in a newspaper, the appeal is again more important, but it is first understood and then preserved [16, p.92-109].

It is proved that the development of infographic images should begin with the search for a word or phrase that should penetrate the mind of the viewer, that is, should visually depict a gestalt that would correspond to the associative verbal series formed on a given topic. However, there is a paradox: to maximize the effectiveness of the method sometimes have to to some extent neglect the verbal content [17, p.30].

The author Randy Krum believes that everything in infographics is secondary, except for accuracy, which means that visualizations must be consistent with the numbers. It is important for a graphic designer to understand that the dimensions of objects are correlated with the area they occupy, not height or location, as numerical values are one-dimensional and visualization is two-dimensional. Therefore, for individual figures it is advantageous to set the correct dimensions, as their area is proportional to one of the dimensions of the figure [18, p. 300-318].

In information graphics, as well as in the information field in general, there are so-called trend topics. They are so popular that they attract the maximum attention of readers, as well as directly increase the traffic of the resource when it comes to placing infographics in cyberspace. However, there is no consistency in fashion on a particular subject. It is important to note the trend of the commercial market: some companies resort to the following method of attracting attention to their business, using infographics on "hot" topics, even if the information displayed is not related to segments of goods sold or services provided. The distribution of infographic material on ambiguous topics for indirect commercial purposes works in a similar way [18, p. 319].

The author Justin Beegel reports in his book "Infographic for dummies" that over time in the infographic work it is possible to establish a "voice" (this refers to the emotional impression of each particular information graphics): the works of some designers look very authoritarian, an important step in finding this "voice" is to identify the purpose of creating infographics, it is possible to vary the "voice" if necessary [19, p.19-20].

Different types of communication use a wide variety of tools (matrices, tables, maps, graphs, charts), in the case of illustrating quantitative data, five main types of diagrams are used: histogram, graph, scatter plot, pie chart, bar chart. For the correct choice of the diagram there is the following algorithm: 1) idea, 2) comparison, 3) type of the diagram. The type of chart is determined not by the data, not by certain parameters, but by the idea, what the designer is going to convey, the meaning that needs to be conveyed. The aspect of the data to be paid attention to is expressed by means of one of five types of comparison: positional, frequency, component, time,

correlation. The final stage: comparison of the selected type of comparison of one of the types of diagrams [20, p.19-30].

The scenario of infographic development is as follows: collection of statistical information and data, their coding using circles, columns and colors. The viewer is invited to decode the meaning of the infographic and conduct their own analysis of what he sees. To facilitate the process, the care should be taken of labels, captions and legends, as their absence may make it impossible to decode arrays of information, it is also important to assign names to the axes of graphs. The presence of data source instructions is critical [21] .

It is impossible to miss the factors of importance of the target audience for which the information graphics and ways of its demonstration are intended. Here are some examples: if a presentation is shown on a projector, the diagrams should be simple and readable, because otherwise they can be seen only by people sitting in the front rows, but if infographics are part of a poster that can be viewed closely, the designer can be allowed to develop it in more detail. The materials visualized for medical students and retirees will also differ in the scale of the components, will be made in different styles [22, p.31-40].

Consider the following integral principle of infodesign as an integral part of information graphics: images, presented in perspective and panoramic, provide free orientation of the viewer in the visual imaged space, and the viewer in the process of perception enjoys this freedom cognitively, so he has the opportunity to compare images and form their conclusions. Small details of the image bring a calming factor, they can be viewed with interest and pleasure, they can be immersed. This technique is universal, it is based on a person's ability to identify and assimilate information flows. We conclude that the synthesized and detailed elements of infographics work productively in combination for any graphical interpretation of information. We are talking about the functioning of the context of multi-layered reading, which allows the consumer to bring infographics many nuances and details [23, p. 33].

It should be emphasized that the effectiveness of the infographic work is based on the phase of perception: the first stage - orientation, general mood, created by format size, mass distribution, color scheme, predominant color, the second stage, the stage of organized perception - interpretation of certain compositional and psychological means used. by the author, who lead the viewer's attention and attention according to the infographic developer's plan, the final stage is acquaintance with details, identification of semantic connections, unification of all elements into a holistic image and formation of evaluative attitude (emotional, intellectual, aesthetic [1].

High-quality information graphics convey information, but it is always part of the whole, the context that ensures its relevance. Effective infographics complement and respond to related information materials, both in terms of content and in terms of style and layout.

When information graphics are built, designed and drawn well, it will look spectacular. A set of categories or groups of data, which are decorated in different ways, can make completely different impressions. There are some basic guidelines to follow when creating a visualization. Sequence plays an important role (graphic sets should be performed in a similar style when using equivalent scaling), it is useful to place the infographic close to the text (on the same page or on the pages of any text related to it), it is advisable to calculate the optical distance graphics should not be too small, too large, it is important to consider the format of the page or

display) [11, p. 54-79]. Let's consider the problem of visualization of scientific data. Currently, most graphical techniques emphasize either a global or local perspective when visualizing vector or scalar data, but ideally it is desirable to have simultaneous access to both perspectives.

A global perspective is needed to navigate and develop a common gestalt, and a local perspective is needed to extract detailed information. Most imaging techniques reflect either global variations or local variations. When someone uses a global operation, such as drawing a vector in each cell, navigation is not possible due to the visual occlusion of many vectors. The term occlusion in computer graphics means a situation in which two objects are located on approximately the same line, where one object is located closer to the viewing point, thereby partially or completely obscuring the visibility of another object. However, local methods, such as vector slope, which prevent this occlusion by limiting the sampling rate, do not give a general idea of the main field. In addition, it is easy to miss interesting phenomena during such research. Scientists lack many methods that convey details in a general context [24].

Infographic material can have a "cover", ie an advertising image. If we consider the information graphics of the social category as an advertising product depending on its life cycle, it will be classified as persuasive advertising. Persuasive advertising is based on the advertising image, and the advertising image - in turn on the plot, aimed at motivating the recipient. Making sure the story should work even without the verbal element [25]. That is, in the case of infographics there is an identification of the advertising image and the infographic image.

Dealing with such a complex integrated product of visual communications as information graphics, a graphic designer must act as a multi-instrumentalist, expanding his professional range, to create a truly highly effective infographic result that will be remembered. Such extended professional factors include the powers of the infographic art direction.

A person who acts as an art director, creates a psychological mood, forms a visual image of the product, devises the components of attractiveness to the audience to which it is displayed, works on modeling the feelings that should evoke the product of visual communications. There art direction actually preceded the formation of the discipline of graphic design [26, p. 9]. The visual result of the infographic product will depend on the results of work in the art direction segment. The tasks of professional art direction consist of the formation of concepts, clear communication, typography, construction of images and visual assemblies that correspond to each other within the visual space and within the intended [27, p. 4]. For the art director, the image is not an end in itself (however, it must be done with taste, have artistic advantages), for him the image is a sales tool (in the case of commercial advertising), a means of communication with the viewer, he needs to communicate the product or ideas. There is no advertising without a message [28, p. 129].

There is a critical connection between graphic design and art direction. The key experience is image creation, graphic identity, advertising images and image branding. The collaboration of the areas of graphic design and art direction is designed to solve long-term tasks: to create and maintain the company's brand image (this is to create and maintain the construct of the desired lifestyle). Dimitri Jeurissen, Art director BASE (Barcelona, New York) compares art direction with orchestra conducting [27, p. 75–76].

Conclusion. Infographics of various genres and different visual representations, regardless of the informative complexity of the embedded material,

represent significant potential for practical use in mass media and educational programs to maximize the correctness and ease of assimilation of a particular material by groups of people of various sizes and diverse cognitive preparation.

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