

III PMMIS 2019
Post mass media in the modern informational society
"Journalistic text in a new technological environment:
achievements and problems"

NATIONAL FEATURES OF INFOGRAPHICS

Svetlana Simakova (a)*, Elizaveta Ivandaeva (b)

*Corresponding author

(a) Candidate of Philological Sciences, Associate Professor, Head of the Department of Journalism and Mass Communications, Chelyabinsk State University, 454084, Pobedy ave., 162B, Chelyabinsk, Russia, simakovi@mail.ru

(b) Master student of the Department of Journalism and Mass Communications, Chelyabinsk State University, 454084, Pobedy ave., 162B, Chelyabinsk, Russia, sipotra@mail.ru

Abstract

Traditionally considered the territory of the verbal, newspapers and magazines are starting to give more space for photos and infographics, television and cinema, cultivating image content in non-stop mode, are becoming more spectacular. Visual elements of content stopped being just an addition or illustration to textual information; verbal content becomes something like a commentary to a visual series, and a visual image turns out to be the semantic center of a journalist's message. We observe infographics in the modern mass media on the daily basis. It acts as an addition to textual information in some materials, in others it can almost completely replace the journalistic text and be the semantic center, the "core" of the journalistic message (when a solid infographics and short text annotation is presented in the article). Moreover, infographics can be one of the segments of a large multimedia article, including photo galleries, video and/or audio files, etc. This kind of visualization has come to us from the English-language media, and it has taken a strong position in the Russian media space. That is why it seemed to us important to consider the use of infographics in the Russian and English editions. In our opinion, there is not enough research on the differences and similarities between English-speaking and Russian-speaking infographics that complement / accompany journalistic materials today, and it doesn't provide a complete understanding of the specifics of using this method of information visualization in the context of online media. This is the novelty of our research.

© 2019 Published by Future Academy www.FutureAcademy.org.UK

Keywords: Infographics, visualization, visual content, illustration.



This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 Unported License, permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

1. Introduction

1.1. About visualization of information

Today's readers are no longer interested in the text without any visual elements accompanying it. That's why there appeared such a term as information visualization, meaning presentation of information through a visual image. This is “a method of presenting information in the form of an optical image, for example, in the form of drawings and photographs, graphs, diagrams, block diagrams, tables, maps, etc. One of the most important visualization functions is the presentation of initially non-visual information” (Polyakova, 2012, p. 180). No site or print edition today can do without the visualization of content. “Visualization of information has become a media brand of modern times, it manifests itself in almost all types of media - news, cultural, educational, sports, etc.” (Simakova, 2015b, p. 163).

1.2. Infographics is a modern way to visualize information

Infographics, no doubt, is one of the most popular ways to visualize information. Edward Tufte, who is considered the father of infographics, means by this term the visual presentation of information that is the most accessible to a specific audience, and also saves time for understanding it. The visual information is perceived by the human brain the faster than anything and subconsciously the person mostly pays attention to this kind of information. The main goal of any infographic is graphic ordering of information, visualization of it. It is convenient for processing the results of research, statistics, and, of course, it is actively used by the media. Infographics is a way to visualize information, which allows you to quickly and clearly present data to the reader. Infographic tools may include images, graphs, charts, flowcharts, tables, maps, lists (Trushko, 2017). Today infographics not only visualizes the text, but also visualizes itself. By the illustration in infographics, we understand the graphic forms of content, which have not so much information as aesthetic purpose.

Many researchers believe that the history of infographics dates back to times of deep antiquity. The infographics of that time can be considered as cave paintings. In more familiar form infographics originated in modern times, researchers also call it the “Golden Age of Infographics”. Then area maps, schemes, etc. began to appear for the first time (Woo, 2015). Researcher Shevchenko (2014) wrote that visualization, infographics in particular, expanded journalism capability, provided the media with more opportunities to provide a significant amount of data that would not be perceived well by readers as a text. And Simakova (2015a) believes that in its most general terms, infographics can be defined as a synthesis of information-analytical journalism and design.

In the media, English-language newspapers were the first to use infographics, but today we can't imagine a single issue of a Russian-language print publication without an illustration or infographic in it. This was the reason why we chose the English and Russian editions for the study. Since today almost all newspapers have an Internet version, we considered it possible to analyze their Internet editions.

1.3. About visualization of information

As an example, we chose two static infographics: an infographic to the material “The best universities of the world” (Ivanov, 2012), published in the journal *Russian reporter* and «Why democrats' gain was more impressive than it appears» (Cohn, 2018). The choice of these particular publications is

associated with 1) their high ratings in America and Russia; 2) infographics, as a means of visualizing journalistic content, is a constant element in these publications. We deliberately choose different types of media: a newspaper and a magazine. The analyzed materials are selected by random sampling; they are not united by subject or date. We considered this possible for an initial analysis to determine the future prospects of the study.

2. Problem Statement

The theme of infographics today is not completely new. The study of this phenomenon is devoted quite a large number of works, and their number increase by year. The range of such studies is extremely diverse. We have classified the available scientific papers and identified seven thematic groups: 1) the definition of infographics; 2) the genre nature of infographics; 3) the history of infographics' formation and development; 4) typology of infographics; 5) specific features of infographics in terms of processing and broadcasting information; 6) interactive infographics; 7) essential specifics and infographics' role in modern media.

It is noticed that a large portion of publications on infographics considers it in connection with the phenomenon of information visualization.

Thus, with sufficient representativeness of the theoretical and methodological basis of our work, there remain significant lacunae, allowing to develop a full-fledged study in the out area of interest. We note that there is not enough research on the differences and similarities between English-speaking and Russian-speaking infographics that complement / accompany journalistic materials today, and it does not provide a complete understanding of the specifics of using this method of information visualization in the context of online media.

3. Research Questions

3.1. Typology of infographics

Typography infographics can be carried out in different ways.

By methods of providing information: a reference book is used when information has an explanatory, educational nature, in this case, infographics allows to break information into semantic blocks, to emphasize the main idea); constructor shows the constituent elements of a whole; comparison contrasting and comparing the data (Bokareva & Romanovskaya, 2014).

By the number of elements contained in the infographic: monocomponent use only one element; polycomponent use several elements. Monocomponent infographics can take the shape of statistics, timeline, maps, charts, hierarchies, matrices, algorithms, photos, comparisons, etc. Polycomponent infographics can combine several of these elements (Avidenko, 2016).

In addition, we emphasize static (motionless) and interactive infographics (the user is able to perform various manipulations with infographics).

Another criterion for the typology of infographics can be considered the principle of their creation. It is important to understand that each infographic can combine several principles: high or low compression

(archiving) of information; the more the object is detailed, the more information is lost; the presence or absence of elements of development, linking or subordination of information blocks (Nikulova, 2010).

Let us also note one more criterion of typology, it is the principle of information self-sufficiency: independent and complementary (supplementing other materials) (Tarasenko, 2011).

3.2. Visual image of infographic

By the nature of the information visualization, infographics can be used to represent quantitative (numerical) data (graphs, charts, histograms, etc.), to represent a collection (for example, hierarchies) of objects and qualitative data.

Also, within our research we will consider the parts of which infographics are composed during the analyze. This means we will track how much the infographics itself is visualized. Let us highlight the most common parts of infographics.

Charts: pie chart (pie, bar); histogram shows data with a time change; Gantt chart visualizes tasks and time of their implementation; pictographic is a column of pictures; cumulative bar chart shows how a large indicator is divided into small ones; tree diagram portrays hierarchy; funnel and pyramid display the components of the phenomenon plus hierarchy; in Sun Rays chart each segment of a circle is divided into proportional parts; Venn's diagram is an intersected circles to show the general; network chart shows interconnections; illustrative visualizes a sectional object; line graph helps to see the dynamics of development (Silantyeva, 2018).

Schedules or a block diagram reflect a clear sequence in solving problems, an algorithm of actions.

Drawings, schemes.

Mental maps of knowledge, processes, entities (Buzan, 2018), geolocation: a map with data is a regular map containing certain information; tree map reflects the hierarchy; bubble map is a map with highlighted dots; if the user clicks on them, then information about the region, city or any other object will appear; Intellectual map allows you to track the train of thought of the author; relationship map; interactive map shows how events developed on the ground; word cloud allows you to highlight accents (Silantyeva, 2018).

The numeral focuses attention on the numeral as the information carrier.

Pictograms, icons, indexes (Nikulova & Podobnykh, 2008), illustrations.

The photo.

It should be noted that infographics that provide quantitative data may contain some elements of qualitative infographics. Thus, we see an example of elements that can be used in one big infographic in the classification by qualitative and quantitative data.

3.3. Criteria for analyzing research materials

By summarizing the theoretical information of sections 3.1 and 3.2, we formulate the criteria of analysis of the infographics in our study: the method of providing information; the number of elements (polycomponent, mono-component; specify the exact number of elements); by the presence of interactive elements (static, interactive infographics); by the principles of creation (degree of compression, elements of development); by self-sufficiency (independent, complementary); by the nature of visualization (qualitative, quantitative); by the elements present in infographics.

In addition to the criteria that were identified after studying the works on infographics by other researchers, we will evaluate materials and describe impression from the information consumer's point of view. We will consider infographics according to the following criteria: clarity, infographic design, level of use of technical means, creative presentation of information, as well as the completeness of the information transmitted. All infographics will be rated on a scale from 1 to 5. The assessment is submitted by the authors of the article and may be subjective. It requires further testing by the focus group, which will be done in further research.

4. Purpose of the Study

The purpose of this article we formulate as follows: to consider the specifics of using infographics as a way to visualize information in the English and Russian-language media.

To accomplish the goal, we will solve the following tasks: to compare several English-speaking and Russian-language infographics according to common criteria. To find similarities in infographics. To determine what elements are used most often and why. To understand the specifics of using infographics in the context of online media. To create a brief instruction for creating a successful infographic.

In the course of the material analysis we will answer these questions: What are the similarities and differences of technical means and design of the infographic? Which infographics better convey the essence of the material to which they are made for? How are the technical means and completeness of information transfer connected? What attitude does the infographic's look create?

5. Research Methods

In the study, we use a set of research methods. First of all, this is a synthesis. We study several classifications of infographics by different researchers and make one extensive one, according to which we will analyze the infographics we have chosen. Secondly, the description of what the infographics consist of, what emotional and aesthetic load their elements carry. Thirdly, the case study method to study of the features of the infographic.

6. Findings

6.1. «The best universities in the world» Infographics

Infographics for Russian Reporter magazine (Ivanov, 2012) was created on the basis of statistical data provided by Shanghai Jiao Tong University.

1. The method of information provision is a comparison, because in infographics data are contrasted and compared at different levels: where most universities were in the top 500, top 200, contrasting 2004 and 2012, according to the dynamics of the Moscow State University. Attention is not focused on this; the reader himself sees how much the data differ in different countries and an explanation for this is not required.

2. By the number of elements this infographic is polycomponent, because there are five elements in it.

3. By the presence of interactive elements the infographics is static.

4. The principles of creation: the degree of compression (archiving) is low, the objects are not very detailed and the information is complete, the elements of development are absent, the parts of infographics are related to each other only by topic.

5. By self-sufficiency it is independent. Explanatory text is an element of infographics. It is located at the very beginning. The text explains what the infographics is about, and also contains some data (like how many Russian universities are on the list, how many universities were considered in the process of rating creation).

6. By the nature of visualization it is quantitative, processes are not considered in infographics, only statistical data provided.

7. Elements present in infographics:

7.1. Charts:

– pie chart plus an illustration in the form of a map (element: «The number of universities from the Top 500 in different regions of the world»). The chart helps reader to see that a large proportion of such universities are in Europe, that is why the circle with the corresponding inscription is larger. The number 202 in the circle helps this as well.

– bar chart (element: «Russia: innovation and commercialization of development») clearly shows the leaders among Russian universities.

– line graph (element: «Rating MSU»). The main task of linear graphs is to show the progress or regress of the phenomenon. In this case, we see a regression, as the line of the graph goes down.

7.2. Map with data (element: «The number of universities among the top 200»). In this case, we see a map of the world, in which countries with universities in the top 200 best educational institutions list are highlighted in red.

7.3. Pictogram. Next to the map with data, there is pictograms near each country, they contain elements that we are accustomed to ascribing to the architecture of large universities, columns. It is immediately clear for anyone who looks at infographics, that its author wanted to visually show where the universities are most. The number of pictograms with columns corresponds to the number of universities in each country.

7.4. Illustration (element: «Ten best universities in the world»). On this element we see images of famous universities of the world, while their architectural features are saved. This element does not carry information but is made solely for aesthetic reasons.

7.5. Numeral (element: «Ten best universities in the world»). The numeral of this element of infographics carries information, unlike the numbers that we have seen in other elements. In other cases, the information weight was either on the pictograms (as in the element “Number of universities among the 200 best”), or on the diagrams (for example, the element “Number of universities from the Top 500 in different regions of the world”).

8. Evaluation of infographics from the point of view of the consumer information.

Plainness - 5 points, design - 5 points, the technical equipment usage level - 5, creativity - 3, completeness of the information - 5.

Let us explain some estimates. We gave 5 points for the level of use of technical equipment, because in the infographic there are five different elements (diagrams, maps, pictograms, illustrations, figures). This is quite a lot, considering that in our work we have described only seven elements. At the same time, we gave it three for creativity. It seemed to us that the authors did not pay enough attention to additional meanings in infographics. All items are anticipatable and do not carry any additional information weight.

6.2. Infographics «Why democrats' gain was more impressive than it appears»

The journalistic material “Why democrats' gain was more impressive than it appears” and its infographic were created after the Democrats won the “midterm elections” in the United States. This is the elections in the middle of the presidential term (Cohn, 2018). The text and infographics answer the question «Why are there not so many democrats in the country (compared to Republicans) but they still won the election?»

Let us analyze an infographic in accordance with the criteria described above.

1. The method of information provision is a comparison. The infographics compares three quantities: the number of those who voted for Republicans, Democrats, and those who did not vote at all.
2. By the number of elements this infographic is polycomponent. Infographic contains two elements.
3. By the presence of interactive elements the infographics is static.
4. The principles of creation: the degree of compression (archiving) is high, there are not many elements, and they express only one idea, the elements of development are absent. Infographics contain only comparison.
5. Self-sufficiency is complimentary, because the infographic is created to a separate large text and only complements it, illustrating one of several ideas of the text.
6. By the nature of visualization the infographics is quantitative.
7. Elements present in infographic:

7.1. Pictographic bar chart. In infographics we see that information is not transmitted by the lines, as in a regular bar chart, but pictograms, traces of a human figure, act as columns. The image emphasizes the importance of the fact that it was people who voted and made their conscious choice. Another interesting fact is that the red pictograms are Republicans, and the blue ones are Democrats. These are the official colors of the parties. Those who have not decided who to vote for are depicted in a neutral beige color.

In infographics we see visually that there are much more Republicans than Democrats. This refers us to the title of the material “Why the election victory of the democrats was more impressive than it seems.” Now we see why: there much fewer Democrats than Republicans.

7.2. Illustration. In this infographic, the blue wave serves as an illustration. The «blue wave» is a name for the Democrats in the United States. The infographics itself also repeats the wave shape.

8. Evaluation of infographics from the point of view of the consumer information.

Plainness - 4 points, design - 3 points, the technical equipment usage level - 5, creativity - 5, completeness of the information - 5.

It seemed to us that the infographics was not structured enough and the information in it was scattered, so we gave four points for clarity. We also rated the design of infographics low, as it seemed to

us that it was too simple and didn't look modern enough. In this infographic, additional meanings carry all the elements. We have previously mentioned pictograms and the "blue wave", that is why we gave 5 points for creativity.

7. Conclusion

7.1. Comparative analysis of infographics

In the course of the study, we identified several similar features in the infographics of the Russian Reporter and the New York Times. Both infographics compare the data and contain several similar elements. In both cases the statistics are provided in the form of different subspecies of diagrams. This means that this method of visualization of information as a chart is suited best for the design of statistical data, as well as for the comparison of certain phenomena. In the case of the Russian Reporter's infographics, the popularity and ratings of universities are compared, and in the New York Times the number of Democrats and Republicans in several US states.

Another similar feature is that both infographics are static, they do not contain interactive elements. We believe that the reason of it is the appointment of a specific infographic. They are created in order to visually provide information to readers, while not requiring additional efforts to obtain information.

In addition, there are several decorative elements in the infographics of Russian Reporter and the New York Times.

Besides the similarities, infographics also have differences. Infographics in the Russian Reporter and infographics in the New York Times have different levels of information compression. In the first case, the information compression ratio is low, the infographic objects are not detailed, and the information is complete. In the second case, the infographic contains only one element and illustrates one of several ideas of the text, thus details the information, compresses it.

Infographics in the "Russian Reporter" is complementary, it is not an addition to the text, it is an independent material. In this regard, its task is to cover a large and total amount of information, without detailing it. While the infographics in the New York Times is an addition to a large text and it "has the right" to single out one idea from it and illustrate it in particular.

As we pointed out earlier, there are several decorative elements in the infographics of Russian Reporter and the New York Times. However, their functions in the materials are quite different. If in the "Russian Reporter" illustrations in the form of various universities of the world in the "Ten best universities in the world" element are purely decorative in nature, they are present there for «beauty» purposes only, then the illustration portraying the blue wave in the material of the New York Times embodies Democrats, and has a deep meaning. Perhaps this is due to the fact that the material in the New York Times more analytical.

A few more differences that we identified during the analysis of infographics from the point of view of the consumer information. We note that the infographics in Russian Reporter were more understandable to us, in our opinion, order and logic were kept, but in the New York Times infographics some elements could be confusing and were designed to look into them for better perception of the information. In particular, when we first considered the infographic, it was not clear to what it uses the names of the states,

where to correlate them in order to obtain information. Everything cleared out only after the detailed consideration.

Infographics design is also different. We thought that the infographics in the New York Times are somewhat old-fashioned and look less stylish than the infographics in the Russian Reporter. However, the infographics in the New York Times are more creative, since there are hidden meanings in its elements (the “blue wave” and pictograms of people we mentioned earlier), which makes the infographics more interesting. Infographics form a positive attitude towards them in general. We cannot say that they were made by incompetent people and we cannot identify any serious flaws.

It seemed to us that both infographics completely reveal the theme for which they were created. It did not seem to us that the information is not complete in any of them.

7.2. Recommendations for preparing of infographics

In conclusion, we would like to make a brief instruction for creating a successful infographic. To this purpose you must try to provide a large amount of useful information, using as many details as possible to detail the infographics, also you should not make the elements too small in size. This will attract the attention of readers, make them want to keep their eyes on the material and consider it more carefully. You need to select only the information that cannot do without visualization. What can be expressed in words should be placed in the subtitle and be as briefly as possible. It is better if the elements of infographics carry hidden meanings that are understandable for those who understand the topic, this will cause such readers to be more interested in material, and also show readers that the journalist is also have knowledge about the topic. Elements of infographics should be simple, it is better if they are decorated with icons and not some complex drawings. However, you need to find the border that will help not to overload the material with information.

Acknowledgments

Prepared by Svetlana Simakova part of the article (50% of the text), was written with the support of RSF, 18-18-00007.

References

- Avidenko, A. V. (2016). Infografika kak al'ternativnyy sposob podachi informatsii [Infographics as an alternative way of presenting information]. In *University readings of Pyatigorsk State University* (pp. 58–62). Pyatigorsk: Pyatigorsk State University.
- Bokareva, Y. S., & Romanovskaya, V. E. (2014). Infografika kak sovremennoye sredstvo obshcheniya [Infographics as a modern means of communication]. *Bulletin of the Kharkov State Academy of Design and Arts. Mystavznajavstvo. Architecture*, 4–5, 13–16.
- Buzan, T. (2018). *Nauchite sebya dumat' [Use Your Head]*. Moscow: Popurri Publ.
- Cohn, N. (2018, November 7). Why democrats' gain was more impressive than it appears. *The New York Times*. Retrieved from <https://www.nytimes.com/2018/11/07/upshot/2018-midterms-blue-wave-democrats.html>
- Ivanov, E. (2012). The best universities of the world. *Russian Reporter Magazine*. Retrieved from <https://cargocollective.com/evgeniyivanov/INFOGRAFIKA-DLY-ZURNALA-RUSSKII-REPORTER-Russian-Reporter-Magazine>

- Nikulova, G. A. (2010). Means of visual communication – infographics and meta-design. *Educational Technologies and Society*, 2, 369–387.
- Nikulova, G. A., & Podobnykh, A. V. (2008). Graficheskiye aktsenty kak odno iz sredstv aktivatsii vnimaniya pol'zovatelya [Graphic accents as one of the means of activating user's attention]. *Remote and Virtual Learning*, 8(14), 23–36.
- Polyakova, E. V. (2012). Vizualizatsiya kak effektivnyy metod predstavleniya informatsii v soznanii cheloveka [Visualization as an effective method of presenting information in the human mind]. *Almanac of Modern Science and Education*, 4(59), 180-181.
- Shevchenko, V. E. (2014). Vizual'nyy kontent kak tendentsiya sovremennoy zhurnalistiki [Visual content as a trend of modern journalism]. *Mediascope*, 4. Retrieved from <http://www.mediascope.ru/1654>.
- Silantyeva, O. (2018). *92 mul'timediynykh formata [92 multimedia formats]*. Ekaterinburg: Publishing Solution.
- Simakova, S. I. (2015a). Tendentsii vizualizatsii zhurnalistikogo kontenta v sovremennykh SMI [Trends in the visualization of journalistic content in modern media]. *Bulletin of the North Ossetian University*, 3, 213–218.
- Simakova, S. I. (2015b). Vliyaniye novykh tekhnologiy na vizual'nyy kontent zhurnalisticheskikh materialov [The impact of new technologies on the visual content of journalistic materials]. *Chelyabinsk State University Bulletin*, 5(360), 163–169.
- Tarasenko, P. N. (2011). Ispol'zovaniye infografiki na saytakh ispanskikh internet-SMI [The usage of infographics on sites of Spanish online media]. *Journalist. Social Communications*, 2, 97–98.
- Trushko, E. G. (2017). Infografika kak sovremennyy sposob predstavleniya informatsii [Infographics as a modern way of presenting information]. *Proceedings of BSTU*, 1, 111–117.
- Woo, E. (2015, March 29). The Evolution of Infographics. Venngage. Retrieved from <https://venngage.com/blog/evolution-of-infographicsom/blog/evolution-of-infographics>