

Use of Interactive Infographics in News Sites

Nur Cemelelioğlu Altın

Yildiz Technical University, Department of Communication Design, 34220, Istanbul, Turkey

***Corresponding author**

Nur Cemelelioğlu Altın

Article History

Received: 20.11.2017

Accepted: 26.11.2017

Published: 30.11.2017

DOI:

10.36347/sjahss.2017.v05i11.028



Abstract: The most effective way to describe any thought or information is to use visual items. The human mind perceives the transfer of visual information in a much shorter and more permanent way than it does in verbal or written form. Since the beginning of the transmission of information in written form, many different subdomain schemas, graphs and maps have been used and the information to be transmitted has been visually coded. Infographics, which are the presentation of complex information or ideas through visual representations, have developed through many different stages and have been used in many different areas. The main purpose of infographics is to combine knowledge and design to enable visual learning. When designers create infographics, they need to use things in a balanced way, such as colour, typography, and symbols, as they do in other design products. One of the main uses of infographics is also news reporting. When newspapers started broadcasting on the internet, infographics were moved to the digital platform and interactive designs started to come to the forefront. These studies, based on the principle of interactivity, aim to enable readers to easily examine large sets of information and relate different data using the screen surface effectively. The world's leading newspapers aim to create teams in data visualization and infographic issues, making news content more understandable, memorable and remarkable. In the scope of this paper, the interactive infographic works of the world's leading newspapers and news channels published on their websites were examined and discussed in the context of information transfer, interactivity, and graphic design principles.

Keywords: Infographic, Interactive Media Design, Communication Design, News Websites, Digital Media

INTRODUCTION

Throughout history, people have been trying to transmit a message or information. The visual adventure of mankind began with cave paintings and the effort to communicate with visual elements lasted throughout history. The first examples of the formation of visual images bearing navigation or exploration purposes after the cave paintings are found on the Anatolian soil. According to Smith [1], better known to historians of cartography is the oldest of these examples of picture maps, the wall painting from Çatalhöyük at Konya in west-central Turkey. Only one of a large number of wall paintings discovered from this partially excavated Neolithic site, it was found in 1963 and has been given a date of 6200 ± 97 B.C. In the present context, it is unique in several respects: it has been dated relatively precisely; it has a well-documented archaeological context; and it appears to be the only "urban plan" from the prehistoric period in the Old World.

With the invention of the printing press, people had started to reach written information easier. But with the industrial revolution people who are working

needed to buy some of their necessities and the information was one of them. Because information started to become a demandable thing and getting information was being more and more important. In the 20th century, the information produced together with the developments in science and technology has increased considerably and exponentially. Thus, the selection of the information needed is difficult and the information needs to be visualized. The period that we are living in is called information age. The world around us is changing. The Information Age has fundamentally changed the way we think and communicate. We are now a culture that thrives on learning and sharing—much of this is facilitated by the increasing ubiquity of social media. This influx of information needs to be consumed and processed, which requires new methods of communication. Infographics, in many different forms, are at the forefront of this new way of thinking. The visualization of information is enabling us to gain insight and understanding quickly and efficiently, utilizing the incredible processing power of the human visual system [2].

Bruce Ian Meader has said that good and successful graphic design always carries more than imagery even if many people consider it to be a visual appeal [3]. In this context, the importance of well-organized infographics for people stuck between digital data within modern technology is great. We see infographics in the newspapers when more intensive information or data has to be used. It has always been a more effective method to transfer information in the news using visuals.

INFOGRAPHICS

The term of infographics has entered our lives in recent years. Prior to the use of infographics word, the information design with a wider context was used and initial infographic examples were also considered within this context. In the broadest sense, information design is about choosing, organizing and presenting information for viewers [4]. Dating back to 1960's, infographics word is the combination of information and graphic.

Infographic is a visual representation of information or data, e.g. as a chart or diagram and a good infographic is worth a thousand words [5]. More formally, an infographic is defined as a visualization of data or ideas that tries to convey complex information to an audience in a manner that can be quickly consumed and easily understood [6]. Infographics combine data with design to enable visual learning (Fig-1). This communication process helps deliver complex information in a way that is more quickly and easily understood [6].

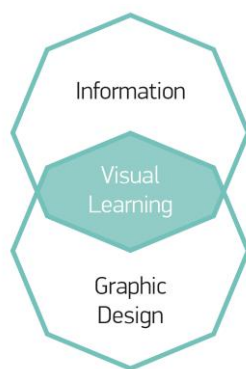


Fig-1: Anatomy of an infographic (redrafted) [6].

The merging of images and words is a powerful way to communicate complex ideas quickly and efficiently. In *Visual Thinking*, Rudolf Arnheim (1969/1997) argues that people tend to separate perception and cognition, which establishes an artificial way to understand visual design. He asserts that visual perception is visual thinking and that audiences engage in a complex, though often quick, process when interpreting visuals. Infographics are effective because

audiences can process visual information much more quickly than traditional prose [7].

To the casual observer, it would appear that infographics are a recent phenomenon that has been growing in conjunction with the growth of the Internet. The reality is that we have been using icons, graphics, and pictures throughout history to tell stories, share information, and build knowledge [6]. The design of information is nothing new. From the earliest cave paintings to modern-day data visualization, humans have always utilized graphic depictions as a representation of information. Their efficacy has been proven as far back as the Victorian Era, as evidenced by the infographic, created by Florence Nightingale to show the causes of mortality of the British Army during the Crimean War [2].

They were popularized for editorial use in the late 1930s and early 1940s, with *Fortune* magazine being one of the most well-recognized early purveyors... Since then, they have found more broad applications in everything from academic and scientific research to modern marketing [2]. At one time, infographics were mostly quarantined to the pages of *USA Today* and similar newspapers. Since then, they have become a commonly used visual in professional communications. Beyond their rise in popular magazines such as *Time* and *Newsweek*, they have also become ubiquitous on social media outlets such as *Twitter*, *Pinterest*, and *Facebook* [7].

Infographics often communicate complex quantitative and/or qualitative information quickly for their audience. They typically combine data displays, lists, graphics, and other visual elements to make a point; they intend to inform, and frequently persuade, their intended audience about a focused topic. Another important element of infographics is that they function as stand-alone communication: An audience should comprehend the information from simply looking at it without seeking additional sources to understand it [7]. However, there must be an image directed by an infographic data, not an illustration of the data [8].

We suggest that the term infographics is useful for referring to any visual representation of data that is:

- Manually drawn (and therefore a custom treatment of the information);
- Specific to the data at hand (and therefore nontrivial to recreate with different data);
- Aesthetically rich (strong visual content meant to draw the eye and hold interest); and
- Relatively data-poor (because each piece of information must be manually encoded).

Put another way, infographics are illustrations where the data representation is manually laid out or

sketched, probably with drawing software such as Adobe Illustrator. Because of their manually-drawn process of creation, infographics have the option of being aesthetically rich. Another consequence of their manual origins is they tend to be limited in the amount of data they can convey, simply due to the practical limitations of manipulating many data points. Similarly, it is difficult to change or update the data in an infographic, as any changes must be implemented manually [9].

Formats of Infographics

Infographics can be addressed in three basic formats; static, mobile and interactive. Static infographics are the most widely used form of information design. People use infographics on the web mostly in the static format, in printed materials and as images. Static infographics, which have a wide range of use from scientific publications to editorial content and activity reports, can display a rich set of information in a single image.

By means of motion infographics some effects can be acquired which are not possible with static or interactive forms. Also, animation and music might be added to graphics. The essential difference between motion and static graphics is time. While static content pieces are snapshots—and valuable in their own right—motion pieces have life and movement. Motion graphics traditionally have served a narrative function, with limited and mostly passive user interaction (aside from pressing play/pause, rewinding, fast-forwarding, etc) [2].

Interactive infographics allows the user to be involved in the process as well as presenting information in multiple layers. Interactivity may not be screen-oriented only. Because interactivity is not just the main concern of "electronic media". Interactivity has been shaped in many ways, in many formats and technological environments throughout history [10]. Interaction could be defined as the exchange of information between two or more active participants. The writer and video game designer Chris Crawford describes interaction as "an iterative process of listening, thinking, and speaking between two or more actors" [11].

However, though user-machine interaction is an important aspect of interactivity, it alone is not adequate to capture the concept of interactivity since the emergence of more advanced technology such as the Internet [12]. Today, user-interface interaction with new media practices goes far beyond just visualization, and users have become actively involved and producing consumers for almost all processes.

This format is particularly useful if you have

vast amounts of data and want to create interactive content that draws the user in to encourage further exploration [2]. Interactive methods, especially in narrative descriptions, are preferred over long static infographics placed on a vertical plane because the information is presented in such a way that users can view them at the desired level, where the information is multi-layered. For example, a single interactive map of elections in a country can be used to access information about a desired city or region. Interactive infographics led newspaper readers to actively develop their informational and visual culture through visual narratives which not necessarily reveal all patterns at glance but mandate some level of interaction and judgment [13].

These features of infographics enable them for us to see more and more in news reporting. Along with data-driven journalism, data visualization and infographies are emerging as arguably the news trend of the decade with reporters, editors, and producers. According to Dino Citraro, cofounder of information visualization firm Periscope, "Visualizing information and data is being approached in a new way. Data can be easily sorted so you can put interfaces in that you couldn't previously. You can make systems that let people play around with data and have their own epiphanies" [14].

EXAMINATION OF SELECTED SAMPLES

Three different works have been chosen as examples of the use of interactive infographics in news sites and the use of visual texts has been covered in the context of information transfer and interactivity.

First of all, one of the infographic works of The Guardian, which is one of the most important newspapers in the UK, which is frequently on its internet page, has been examined. The Guardian web pages, which offer viewer-specific content and news designs in the 'new media' field, are among the world's leading news platforms with 34.7 million unique visitors per month, according to May 2017 statistics. It hosts many different structures within the web page. The visitors may get interactive comments from the experts on finance, health and so on beside the news and may look for jobs from the interactive and up-to-date job adverts, play online games and watch documentary and purchase organic agriculture products [15]. Also, this web site contains various parts such as data blog and interactive guides.

The infographic exemplifies how American National Security Agency monitors people in three hops (friends, friends of friends, friends of friends of friends) through Facebook data (image 2). The fact that people on Facebook have an average of 190 friends has been taken into consideration, with each figure being

multiplied by various methods and space capacities or city and country population for each hop.

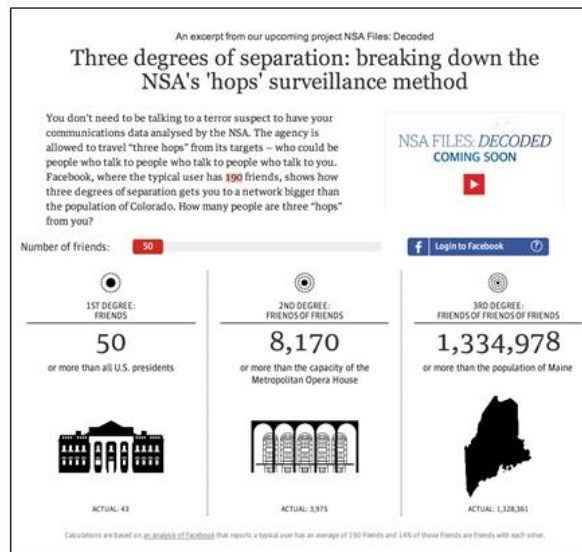


Fig-2: An interactive infographic example from The Guardian Newspaper [16]

At first glance, it seems that the text and graphics are intertwined. In the design, firstly the viewer was given the relevant general information via the text and directed to the interactive space created in the data. The first thing to notice in this area is a bar chart that allows you to change the number of friends. It is noteworthy that when the number of friends is changed by sliding the button there, the numbers, texts, and icons used in the lower part are changed simultaneously. Within this variable structure, comfortably readable texts were created using the Georgia character, which is a transitional serif font. While the colour diversity in the general structure is not going to be used, the red colour which has a high wavelength is used at the button. A white background has been used, which is suitable for the general structure of the site. An institutional structure has been established for the design of this news, and this is

protected in the infographic.

Simple and clear symbols were created for each figure used in the design. In the symbol and icon designs, black colour is preferred and contrast with the background is created. When creating logotypes and symbols, designers often distil complex meaning into simplified but significant form; the resulting marks often thrive on the interplay between figure and ground, solid and void [16]. Besides, the moving areas where symbols and figures are used are categorized in a grid system.

Another example is a design chosen from the website of Al Jazeera, a news channel based in Qatar (Fig-3). Design visualizes AIDS virus data in the Middle East and North Africa.

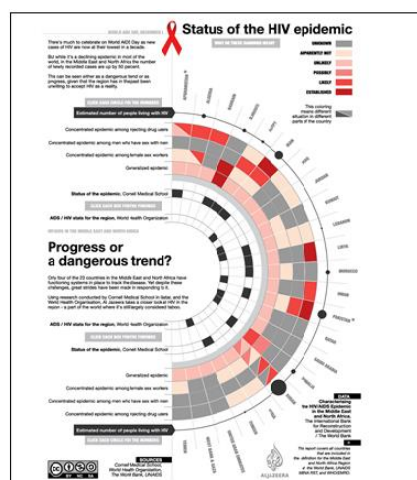


Fig-3: A design published on the news site of Al Jazeera's channel [17].

In the design, a circular structure was used and various groups, countries, and possibilities were given by forming sections which went towards the centre of the circle. In addition to the grid system used, the variables are separated from each other with the colours in the warm pastel tones. According to Lupton and Phillips [18] Graphic design was once seen as a fundamentally black-and-white enterprise. This is no longer the case. Colour has become integral to the design process. In this design, both a visual hierarchy was created with the use of colours that went from light to dark tones, and the intensity of the illness was visualized. In addition, to view the detailed data, the circles at various sizes, changing according to the number of people at the outermost of the circle and sections in the interior parts have been used interactively. All these applications related to colour and size have created a design with a high sense of rhythm. Rhythm is a strong, regular, repeated pattern: the beating of drums, the patter of rain, the falling of footsteps. Speech, music, and dance all employ rhythm to express form over time. Graphic designers use rhythm in the construction of static images as well as in books, magazines, and motion graphics that have duration and sequence [18].

On the other hand, too much text has been used, especially on the left, because the design has a structure that extends from top to bottom in the page. This creates a hard to read the text for the reader and makes it difficult to understand the text.

Furthermore, most of the designers accept this work as a data visualization rather than as an infographic and there is a contradiction in terms with regard to these definitions. Although the statistical data presentation has been going on for hundreds of years, the terminology in this area is still developing. Infographics have similar features, especially with data visualization, so these two concepts are often confused with each other. Data visualizations are initially designed by a human, but are then drawn algorithmically with graphing, charting, or diagramming software. The advantage of this approach is that it is relatively simple to update or regenerate the visualization with more or new data. While they may show great volumes of data, information visualizations are often less aesthetically rich than infographics [19]. In this perspective, above design is a unique in terms of updating the design data and it is accurate to qualify it as an infographic. However, when compared with other interactive examples that have been examined, it can be considered as a data visualization rather than infographics.

In the final example, an example was taken from La Tercera, a newspaper based in Chile, which frequently used interactive storytelling and infographics in news presentations (Fig-3). In these infographics, the demographic information, such as education, health, religion, the number of the disabled people, the number of the employed people have been presented by exemplifying on a hundred people with regard to the people living in Chile.



Fig-4: An example from the La Tercera newspaper website published in Chile [18].

Human icons are used as motifs in the frame of the circle form in infographics on the main screen, while the statistics selected by the reader are used to visualize the data in the emerging statistics. The different statistical data are displayed as chosen by the users, so simpler design is created. Although infographics do not contain much data, users only view the data they want to see, so they do not expose to an excessive visual or textual information.

In addition, different icon designs were used for all the titles in the design. It is clearly understood that icon designs are made with an international understanding. Orange, blue and grey colours are seen predominantly in the work, and transparent versions of these colours are used for non-emphasized areas. It is also seen that excessive use of colours is avoided, close colours are preferred for different groups and contrast colours (blue-orange) are only used in areas where the

contrasts are desired to be emphasized.

The design is placed in a frame and an independent area is used in the layout of the general page, and a more dynamic appearance is created by using a circular structure.

CONCLUSION

Interactive infographics differ in important ways from stories in text and film as, instead of presenting a tightly controlled and linear progression of events, they invite verification, alternative explanation in a non-linear narrative. Currently, visualization tools have matured and they are enabling the publication of dynamic graphics with variably constrained levels of interactivity and user engagement [13]. In such examples, it is clear that the designs are prepared in a structure that allows the users to only view the information they want to reach.

The news sites, where such infographics are examined, have a clear and understandable design approach. Infographics are designed to fit the general layout of the web pages they are on, and one of their common features is that they do not slow down the pages for they open quickly. They can also be displayed easily on mobile devices that have an important place in our lives today. When they are evaluated in terms of design principles, it is observed that the use of colour and typography in all are very consistent.

The most significant point in the use of interactive infographics in news sites is to provide a participatory news-gathering experience for users. Readers who become active users can easily filter the information they want. The use of interesting images instead of long texts makes it easier to perceive and understand the news more quickly and increase the memorability. Because of this, infographics are becoming increasingly popular and reach a wider range of readers.

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