Visualizing news: obstacles, challenges, and solutions

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ABSTRACT
Depicting news graphically is considered an apt way to deal with challenges of modern journalism: to disclose big data, and present news attractively, visually, and fast to grasp. This study delves into reported obstacles and challenges for the production of news visualizations. It focuses on the question: what are the decisive factors that make news visualizations 'work' for the different people involved: journalists, designers and the public? To answer the research question, a threefold approach was taken: a review of both pertinent professional literature and academic studies on the production process of infographics; in-depth interviews with data journalists on their most extensive productions; and case studies around the production of three Dutch media visualizations. Results show that the quality and the use of visualization for news stories not only depends on the availability and the skills of designers and data journalists, but even more so on the willingness of the editors-in-chief to initiate experiments with new concepts and tools and to opt for new ways of news gathering and dissemination.

Keywords: Data visualization, infographics, multi-skilled journalists, collaboration

INTRODUCTION

The use of infographics and visualizations has recently become booming in journalism. Not only the disclosure of big data have been a reason for journalists to focus more on visualizations (Giardina & Medina, 2013; Utt & Pasternak, 2000), also the increasing fierce competition among media and the growing focus on visual language among consumers has led media organizations to look into the potentials of visualizing information. Newsrooms are experimenting with different kinds of information visualizations and seek for ways to produce them most effectively and efficiently. However, up until now there is little agreement on the best way to integrate visualizations into the news production process (Weber & Rall, 2012).

This study[1] explores the production process of information visualizations and the challenges that may prevent a fluid workflow. The following research question is tackled in this paper: What are the decisive factors that make news visualizations work for the different people involved?

LITERATURE REVIEW

Several studies state that visualizing data demands a range of skills from the individual, such as writing, editing, designing and programming (Giardina & Medina, 2013; Segel & Heer, 2010). Weber and Rall (2012), who conducted interviews with designers, programmers and

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journalists, conclude that in the production of data visualization it is essential that everyone, whether a programmer, designer or statistician, has a journalistic attitude.

The skill of working with and interpreting data is something that both designers and journalists often lack, which in turn makes it difficult to make visualizations (Weber & Rall, 2012). A survey conducted by the *European Journalism Centre* reveals that 70% of the journalists believe data journalism is very important, but at the same time even more respondents feel they lacked adequate knowledge (Bradshaw, 2011).

Several studies indicate that individuals should not master all the skills but that collaboration between different experts, such as journalists, designers, and programmers, is crucial for design success (Beak, Liebowitz, & Lewis, 2000; Mora, 2012; Weber & Rall, 2012).

However, different background and culture, skills and no common language often hinder a fruitful collaboration.

The journalistic culture, logically, often dominates at newsrooms and therefore other disciplines such as designers and programmers are merely felt as a supporting unit within the process. Weber and Rall (2012) therefore suggest that even though journalists, designers and programmers have a different background, each expert should be considered a journalist as they all aim at producing a journalistic product. Programmers and designers of *The New York Times* for instance, already consider themselves journalists, in contrast to the designers of German and Swiss media companies, who are more often considered as support (Weber & Rall, 2012).

Understanding each other only works if the involved disciplines speak a common language or at least understand each other's language (Kleinsman, Valkenburg, & Buijs, 2007; Weber & Rall, 2012). Designers generally think in terms of images, while journalists are trained in written text. This may lead to communication problems. According to Lowrey (2002) designers who speak the language of journalism' are most influential.

Besides the influence of knowledge, skills and collaboration, the organizational structure plays an important role in the production process as well. The daily process in a news organization is often a fast-moving production in which time is crucial. Visualizations, however, is more time-consuming as it often demands quite some background research and data interpretation. This difference can lead to clashes in the daily production process (Weber & Rall, 2012). Moreover, research shows that often the decision to use visualizations is done by journalists and is not made jointly with designers (Utt & Pasternak, 2000). According to Hamblin (2012) the physical distance and the size of news organizations between the news and graphic departments influences the collaboration. Most large newsrooms contain information-visualization departments. Smaller ones mostly don't have the resources to require a high level of specialization (Hamblin, 2012). In the smaller newsrooms it is not uncommon that journalists produce their own information visualizations.

RESEARCH METHODS

Seven interviews were held with information visualization designers at prominent media organizations in the Netherlands to get a broad understanding of how information visualization designers see their role in the newsroom and with which kind of challenges they are coping with. In order to understand *how* different disciplines collaborate with each other, we selected a news organization in which information visualization is central or becoming more dominant in the core business process for our case studiy. This is a leading broadcasting organization in the Netherlands with approximately 120 journalists working at the newsroom. It has a separate graphics department aimed at producing visuals for the broadcasts and the website. In order to put our findings in a broader perspective and detect differences and

similarities with other sectors in the third phase we also followed the production of information visualizations within other sectors.

Within the case study approach we used document analysis, observations and interviews. Written documents such as briefings, procedures, manuals were analyzed to understand the context of the organization and the project. Researchers attended numerous meetings throughout the production process and had informal talks with different people at the newsroom. Finally, one-to-one interviews were held with all the people involved in the production process.

RESULTS

Challenges at an individual level

In the production process of information visualizations, the main challenge on an individual level for both designers and journalists is that they have trouble to convert journalistic content into a visual form. According to designers, journalists want to have abstract concepts visualized, which is very difficult to achieve. A designer said: "Journalists come with impossible questions to visualize abstract concepts like 'randomness' or 'inborn capacities'". From their side journalist are sometimes appalled by the simplistic visual solutions of designers. "They never surprise me with their graphs," one journalist said. "They always come up with something I already had in mind."

Another challenge for producing visualizations is the lack of common graphic strategies at newsrooms. This in combination with the fact that designers never evaluate their work through public research makes them feel quite insecure whether they apply their skills properly. "If I only knew how consumers are reading my data visualizations," said one of them. "I would feel more at ease. We normally only refer to our colleagues as to how they experience the design. Wouldn't it be nice to build a device that would inform us about the way people are navigating a visualization?"

If we compare these findings with our observations outside the media industry, we also notice the problem of transformer skills. One case shows that the researchers or project managers and designers work separately in different workgroups, which makes it difficult to integrate the working process. While researchers found it hard to understand the design principles, the designers had difficulties understanding the content of the research reports, which often contained environmental policy jargon.

Knowledge on the effect of the visualization seems less problematic within other sectors. Usually the target group is known and quite specific (e.g. municipality officials) and therefore it is easier to test the effect or to involve them throughout the production process through brainstorm sessions and evaluations.

Even though the target group is more specific compared to media organizations, there is often no consensus on the objective of the visualization. A manager of a visualization company said: "Their initial aim was to only produce a booklet similarly to what we produced previously without clearly stating what they wanted to communicate with the visual".

Challenges at a group level

Journalists and designers have no common ground they can rely on. There is mutual suspicion about each other's professional commitment, as they seem to operate on different playing fields. There are different expectations of what visualizations should achieve and this becomes an even bigger problem when there's no common language between the professionals. As one journalistic researcher at the broadcast company said: "They are nice people, but their heart is not with making television. At times you cannot even seriously consult them as they have music playing while they are at work. They are just not real

journalists. They don't consider it a sin to miss a deadline." From their point of view the designers believe that some journalist are not interested in the informational value of their graphics. "They only use it in their news items to impress their colleagues," a designer said. It is an often-uttered complaint of designers that journalists are mainly interested in the form of the visualization rather than in its content.

At a group level we noticed that hierarchal differences hinder a fruitful collaboration. Visualizations are generally seen as a mere support for news stories. First comes the story, then the graphic. Designers are seldom involved in the news production process. Designers are merely asked to execute what journalists ask them to do. A designer described the hierarchal difference as follows: "The typical way of a journalist consulting us is that he *stands* behind my desk and looking over my shoulder, while I *sit* behind my computer and try to visualize what he has in mind".

In the other cases we analyzed, we also found the problem of finding consensus. Not so much between designer and project manager or researcher, but more between the executer and the client. Clients are mostly not prepared to talk about the message they want to get across, or the specific content they want to be visualized. For professional visualization companies or visual designers this means that they spent a lot of time coming to terms with their clients as to what actually should be the content of the visualization, what data should be used, and how these should be labeled. It could be said there is a 'knowledge gap' between company and client.

The underlying issue of the language problem is a hierarchal difference between project manager and designer. Text and content still overrules form. Designers are merely executers and not involved in the whole production process.

Challenges at an organizational level

Apart from the needed skills and forms of cooperation, the organizational structure of a news organization has a major impact on the potential of information visualizations. Working pace, production processes, the size of the organization and managerial support for information visualizations are crucial for the way information visualizations are made and used.

The pace of news productions is often at odds with the time needed for an attractive and thoughtful visualization. While standard journalistic news stories are produced in a fast and linear process, information visualizations are not standardized and ask for more time and a process of trial and error in order to come up with optimal solutions. Several designers indicated that a less tight planning allows them to be more creative. At the broadcast organization designers often have less than two hours to make a visualization,

We did see some instances where journalists and designers were able to make time and sit together which in turn resulted in highly valued visualizations, particularly in the field of sports journalism. Recently, a designer at a newspaper decided to form a "research group" for designers to meet up with the editorial staff on a regular basis.

In other sectors we see that time pressure is not a crucial factor. The client or initiator does not expect visualizations within a few days or hours, as is the case at a news organization. However, because the design phase of visualizations mostly happens at the end of the line, designers have to work with time pressure to catch up with often delayed deadlines. Visualizations are seen as mere icing on the cake. At the Dutch visualization company the designer is only involved after the communication message is all thought out. The result is that the designer merely has an executive role, which in turn leads to dissatisfaction among the designers.

CONCLUSION AND DISCUSSION

According to the literature on design processes and workflow of information visualization there are three crucial aspects that influence the production process of information

visualization: *skills*, *mindset* and *management*. Our empirical research shows that front runners in the use of information visualization often work with multi-skilled professionals. However, as soon as the production of information visualizations becomes routinized, the need is felt for a more diverse team of professionals, such as programmers, illustrators, and designers. Our research also shows the importance of transformer skills. Journalists and designers often lack this capability of converting journalistic content into a visual form. This skill, however, seems decisive.

The skill of transforming journalistic content into visual images strongly links the mindset. The fact that journalists and designers do not speak the same language hinders a successful working collaboration. A shift in mindset with journalists thinking more visually and designers taking a more journalistic attitude stimulates collaboration. Nevertheless, this need for a more collaborative mindset is currently hindered by perceived hierarchal differences at the newsroom. In a media context with established journalistic routines, designers hardly have a say in the decision-making process and predominantly take an executive role at the end of the linear process.

The last factor that influences the production of visualizations is the management at an organizational level. With an increasing attention for visualizations we see that editors-in-chief are more eager to integrate visualizations in their media products. Designers are hired and graphic departments are expanded. But, the real challenge is to reshape the concept of news to allow for a more visual presentation of the news, and alter the established working process. This does not only require people from different disciplines, but also a rethinking of workflow management.

Making visualizations is a difficult and complex process. Compared to other sectors the media sector is dealing with three additional challenges. Journalists now more than ever have to work in a very time pressured environment, which leaves them little time to discuss possibilities of adding visualizations to their stories or to collaborate with designers in making a visual. In a working routine where every minute counts, there is hardly any room for an iterative working process or experimentation. Secondly, we see that in other branches the process starts externally with the initiator being a client who asks a designer or a visualization company to make a visual, while in the media sector, the process starts internally with the initiator being the journalist. This difference has consequences for the working process. The phase of brainstorming and discussing the objective of the visualization is often skipped within the media sector. Lastly, the media sector has to deal with the problem that the consumer of visualizations is often not known or very broadly conceived. In other sectors the target group is more specific, which makes it easier to make a visualization aimed at a particular group.

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