

THE INFLUENCE OF NEW METHODS OF MEDIA MESSAGE ANALYSIS ON BROADER SOCIAL AND CULTURAL UNDERSTANDING OF THE STATUS OF DIGITAL MEDIA

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ABSTRACT

The development of information and communication technologies reveals their transformative effects on all areas and in all aspects of human practices. Transformative processes that accompany the development of artificial intelligence have been especially impactful in the past decade and a half. The social circumstances of the Coronavirus pandemic added a new dimension to such processes, as the world has become more aware of the need to introduce new technologies into the areas of the economy, education, culture, and art. Digital technology has also a strong impact on media development and functioning and enables the emergence of new genres while causing the old ones to transform. Thanks to all this, it affects the formation of media messages, also affecting the processes of perception and interpretation of messages. This paper assumes a critical approach to the notion of media, i.e., media messages while assuming two perspectives considered crucial for the understanding of the working of media in general. On one side, the fact that their steadiness is software-dependent impacts the understanding and interpretation of media messages. Therefore, this paper will observe recent theoretical framings relevant to the understanding of new media, while emphasizing the possibilities of new methodological approaches to media message analysis, and on the understanding of messages in general. These processes are mutually dependent, and possibilities of understanding and interpreting media messages can be said to have a direct influence on the interpretation of new media trends, and vice versa. We are proposing a research protocol to test the so-called method of media visualization that was gradually introduced by Lev Manovich via a series of articles published during 2008, to be rounded and presented integrally in his book Cultural Analytics, published in 2020. Grounding our approach in the fact that the new media are computer-based, and the message dissemination is software-based, we will approach the message analysis in much the same way, by using media visualization software (primarily ImagePlot). This method will, hence, embrace the fundamental characteristics of the new media, such as omnipresence, large data sets, recipient orientation, and visuality, and use all these principles to process our research data. The material which we are using will be the advertisements issued by a Swedish furniture company between 2012 and 2021 and published on social platform YouTube. The results of our research will, of course, point to strategic orientations in advertising practices by this firm. However, and more importantly: following the main goal of our research, they will point to the possibilities of application of new, technologically based methods and their relevance to the understanding of new media.

The results show that the use of big data sets and their digital processing open new perspectives applicable not only to the understanding of new media and media messages but also to the understanding of the broader social and cultural context within which they are created and interpreted.

Keywords: *new media, media message, media visualization, information and communication technologies, IKEA*

1. INTRODUCTION

The research into new media focuses on a broad array of theoretical and methodological shifts (Lister, Dovey Giddings, Grant, Kelly, 2009, p. 15). The topic is extraordinarily popular in recent scientific discussions and resulted in numerous papers that show, roughly speaking, two distinct tendencies of thought. One of these comes from the field of study of computer and communication technology and focuses on changes that are taking place within areas of production, distribution, and the use of media (Lin, T.-B., Li, J.-Y., Deng, F., & Lee, L. 2013. p., 161) Hereby, new media are defined from perspectives such as numerical representation, hypertextuality, virtuality, multimodality, hybridity interactivity, automatization and variability (e.g. Anderson & Balsamo, 2008; Manovich, 2001; Nichols, 2008; Pratt 2000). The second tendency focuses on social and cultural characteristics of the new media, focusing largely on topics such as a) language of the media; b) construction of media messages; c) media and (ideological) values; d) diverse aims and goals that the media aspire to fulfill (e.g. Lin, T.-B., Li, J.-Y., Deng, F., & Lee, L. 2013. p., 161). Discussions on new media mostly consider three elements: a) technologies that enable and expand our ability to communicate; b) communicative practices and activities that contribute to technological development; c) social arrangements and organizations that take shape, based on technologies and communicative practices (Flew and Smith, 2014, p. 5). This reveals that the scientific discourse on new media accentuates the relevance of both foundational determinants, information and communication technology, and social/cultural characteristics. Computer technologies, upon which new media are based, are therefore seen as factors that can condition and shape societies and cultures but are also dependent on how social and cultural processes are formed. Hence, we may be inclined to look back at the 14th and 19th centuries, when technical achievements – that of the press, and that of photography – revolutionized the development of modern art and culture (Manovich 2001, 61). The media revolution, based on computer technology nowadays affects all levels of communication, including acquisition, manipulation, memorization, and distribution, and is at the same time reflected on all media genres and forms: texts, mobile and immobile images, sound construction, and the construction of space. The dominance of computer technologies in the media space can, however, lead to a misconception of traditional media as having become redundant. What has changed is, however, the logic of creating, perceiving, and distributing media messages, and this point is made by Manovich in the following way: *... the visual culture of a computer age is cinematographic in its appearance, digital on the level of its material, and computational (i.e., software-driven) in its logic*“ (Galloway, 2011, p. 383). Therefore, the changes are driven by new technologies that have much to do with the organization, storage, and distribution of media messages also have a significant influence on the ways and possibilities in which scientific research, analysis, and interpretation are carried out. Bearing in mind the fact that the new media are computer-based, and that messages are created and disseminated via the use of software, we are therefore opting also for software-based media message analysis. This method considers the key features of the new media, such as omnipresence, big data, user orientation, visuality, and applies the very same principles when processing and presenting the research results. On this occasion we will use the advertisements of the Swedish furniture producer IKEA, limiting the body of material by the criterion of the period of their publishing, thus focusing on the range of media texts that appeared on the

company's official YouTube channel between 2012 and 2021. The use of material published via social media is also deliberate since these are seen as typical of the contemporary media culture and of the visuality that it adopts. Regardless of goals or aims related to the distribution of information that may be detected in different media messages, their common characteristics are the following: computer conditionality, the dominance of the visual segment, data density, and broader cultural and social reach. This focus relieves us of the need to engage in the analysis of company policies and strategies, related to marketing and public relations. For much the same reasons we will treat the notions of media message, media content, and cultural artifact synonymously. Our general goals are related to the fact that media and technology alter the ways of creating and organizing media messages, as well as how messages circulate across media space, and the modes in which they affect their addressees and invite them to assume the position of co-creators of the proposed media content. Finally, the specific aim of this paper is to show how the media and accompanying technologies can drastically affect the process of interpretation of messages.

2. DATA VISUALIZATION

The visual element, typical of the new media, provides key to the understanding of media messages and is, therefore, the key feature which we will explore in this paper. Visuality has become a way to shape everyday communication, but also a way that contributes to the modelling of social relations. We are constantly exposed to visual information via the space of the screen, and this causes users also to conceptualize the world visually. Therefore, we are both witnesses and participants in the process of constant creation and recreation of visual material, and this affects us cognitively and emotionally and is reflected in culture, art, and social relations, i.e., in all areas of life (Chayka, Averkieva, 2016). We will, however, not be focusing on the aspect of reading, which has received a lot of scientific attention. We intend to emphasise the importance of photographic and video content in the process of communication that takes place via different channels and applications, such as Facebook, Instagram, Pinterest, Flickr, YouTube, etc. These channels are used not only by corporations to disseminate information on their goods and services, but also by users who share their own photographic and video material, directly exercising their influence on popular contemporary trends in culture. At the same time, it is necessary to know that in many of the examples this kind of communication involves multimedia, especially in the case of video recordings or video games which combine sensory and semiotic elements (Mitchell 2015, p. 14). Furthermore, the dominance of the visual plane (not only in visual images but also in verbal metaphors) appears to be especially relevant when it comes to the analysis of political discourse in social media, mass culture, reflections on human psychology, social behaviour, as well as when it comes to the very structure of knowledge (Mitchell 2015). According to Manovich, the new media culture is transitional if observed from the point of view of the significant reduction of the narrative element in relation to the visual one. It is in fact via the visual element that the contemporary achievements in technology can be best observed as tools to create, publish, and distribute network content. Manovich also points out that the software has become the interface which we use to establish contact with the world, but also with ourselves and our memories; it offers a universal language within the universal machine that enables communication to take place (Kir, 2020, p. 15). In his study entitled *Software Takes Command* (2013) Manovich points to the possibilities of new methodologies and their applicability to the field of humanities and social sciences. The very title of his book reveals that he sees the present-day dominance of software in the new media environment as comparable to the relevance of electrical power which was, until recently, practically the sole medium that enabled creation, storage, distribution, and access to cultural artifacts (p. 15).

He thus concludes that the exploration of contemporary society and culture, as in architecture, design, art, sociology, political science, art history, media studies, and in many other fields of humanities needs to acknowledge the vital role of software in the contemporary research (p. 28). Accepting the given incentive, we will therefore attempt to show that even the commercial products in the new media environment can assume traits of cultural artifacts and can be presented via methodology concerning the area termed by Manovich as cultural analytics, to be presented further on in this paper. At this point, it is necessary to emphasize that this method relies not only on visualization but also on a large input of data. The methodological shift that accompanies the transition from research into a single artifact towards the analysis of multiple artifacts can be seen as a reflection of processes that are taking place in the field of visual culture (Manovich, 2017, p. 3). Leaving aside the possibilities to shape graphs and visualize information via the tools such as Google Docs, Excel, Tableau, and likewise, Manovich proposed a significantly different method which he referred to as media visualization and pointed to the difference between the two approaches: *Typical information visualization involves first translating the world into numbers and then visualizing relations between these numbers. In contrast, media visualization involves translating a set of images into a new image which can reveal patterns in the set. In short, pictures are translated into pictures* (Manovich, 2011, p. 5). He furthermore affirms that the practices of presenting research used in the period between the 18th and the 20th century (such as infographics) which enable the transformation of data from non-visual to visual have become unsatisfactory (Manovich 2010, p. 11) for the present-day needs. This is because the traditional approaches to the visualization of data are based on reduction: they use dots, lines, curves, and various geometric forms to replace objects and to describe relations, regardless of actual objects of reference, which may be people, social relations, stock exchange, unemployment statistics, etc. At the same time, only a relatively small number of discreet values can be considered, represented as categorical variables. However, fundamental to the visualization of media is the fact that this method does not transform media objects into new objects, but offers new visual representations derived from original visual data. Visual data is therefore not replaced by equivalent graphic values (ibid, p. 20). This method is designed to reveal previously undetectable patterns which may pertain to the creative opus of an artist, or perhaps a group of artists who nurture a common approach to style, but also patterns and movements within popular culture as well as unique characteristics of contemporary media culture, and likewise. In dealing with numerous artifacts via computer technologies (such as computer vision, or artificial intelligence), and especially when exploring earlier periods in art history, it enables characteristics invisible to the human eye to appear on the surface and may have direct repercussions on the redefining of the known canons. Some of the projects carried out in Manovich's research lab *Software Studies Initiative* are the following: *Software Studies Initiative: Science and Popular Science magazines* (magazine pages), *Time Magazine covers 1923-2009* (magazine covers); *Motion studies* (films, cartoons, TV commercials, motion graphics); *Dziga Vertov's film comparisons* (films); *Kingdom Hearts videogame play* (videogames); *YouTube remix* (user-generated video remix), etc. and more can be found on the following web page: <http://lab.culturalanalytics.info/>.

3. METHODOLOGY

In this paper, we will present the key procedures of the Media Visualization methodology. We will use ImageJ, the open-source software, as well as macros Image Plot. The author of the Image Plot code is Lev Manovich, and more information on the software and its usage in cultural analytics can be found by visiting <http://www.softwarestudies.com>, as well as in Manovich's 2011 paper *Media Visualization: Visual Techniques for Exploring Large Media Collections*.

Media visualization assumes that a collection of photographs standardly includes a given minimum of metadata that defines the course of study, and this enables the photographs to be organized by category. The uniqueness of this research lies in the fact that we are observing video content, i.e., the material used to advertise the Swedish furniture producer IKEA, published on the company's YouTube channel between 2012 and 2021. To subject this material to the procedures enabled by ImageJ software, the video content needed to be transformed into photographic content. Using the DVD VideoS Free Studio software, we divided the video recordings into sequences and extracted a photograph per every five seconds of the duration of the video. This resulted in 364 equally sized photographs retrieved from 22 individual video recordings. In organizing the material, we used the year of production as the basic meta-information, and in using ImageJ other metadata was extractable such as image brightness, saturation, colours, line orientations, number and types of shapes, composition, etc. In observing the material, we also detected other dominant features of the area of advertising, which also led us to apply classical content analysis to detect codes and to differentiate between five basic codes that could also be treated as metadata. These codes were the following: preservation of the planet; home and family; women as social entrepreneurs; style; the youth. The research was guided by two main research questions, and these were the following: a) can the selected video content be presented by the means of media visualization, and b) can this (and similar) media content be categorized as cultural artifacts that play a role in the definition of popular media culture.

4. RESEARCH RESULTS

In this chapter, we will be showing the possibilities of ImageJ software applicable to the analysis of photographic materials. The first three images show the visualization of image sequences enabled by stacks commands. Results of similar research and related analysis, carried out by the Software Studies Initiative lab, can be retrieved by visiting the following link:

- <https://www.flickr.com/photos/culturevis/4038907270/in/set-72157624959121129>;
- <https://www.flickr.com/photos/culturevis/4040690842/in/set-72157622525012841>;
- <https://www.flickr.com/photos/culturevis/4049510496/in/set-72157622608431194>.

Image No. 1 is an example of a conceptually and technically simplest way to present many correlated visual artifacts within a single frame. This technique is comparable to fundamental intellectual operations executed in the field humanities that involve comparison between chains of mutually correlated objects. At the same time, this technique is well adapted for carrying out *exploratory media analysis* (Manovich, 2011, p.9).

Image following on the next page

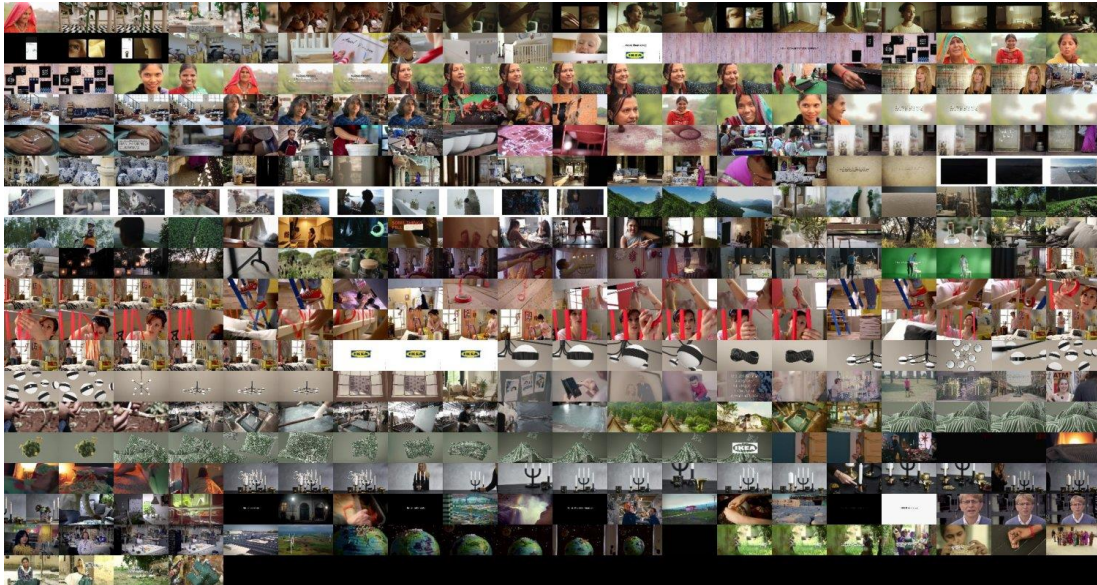


Image 1: Image Montage. Photographs of video content, 2012-2021.

N=364

(Source: IKEA YouTube channel)

In Image No. 2 we used the method to present average values of the photographs. We achieved this by using ImageJ software and by applying the Z-project command.



Image 2: Image Average. Photographs of video content, 2012-2021.

N=364

(Source: IKEA YouTube channel)

Image following on the next page



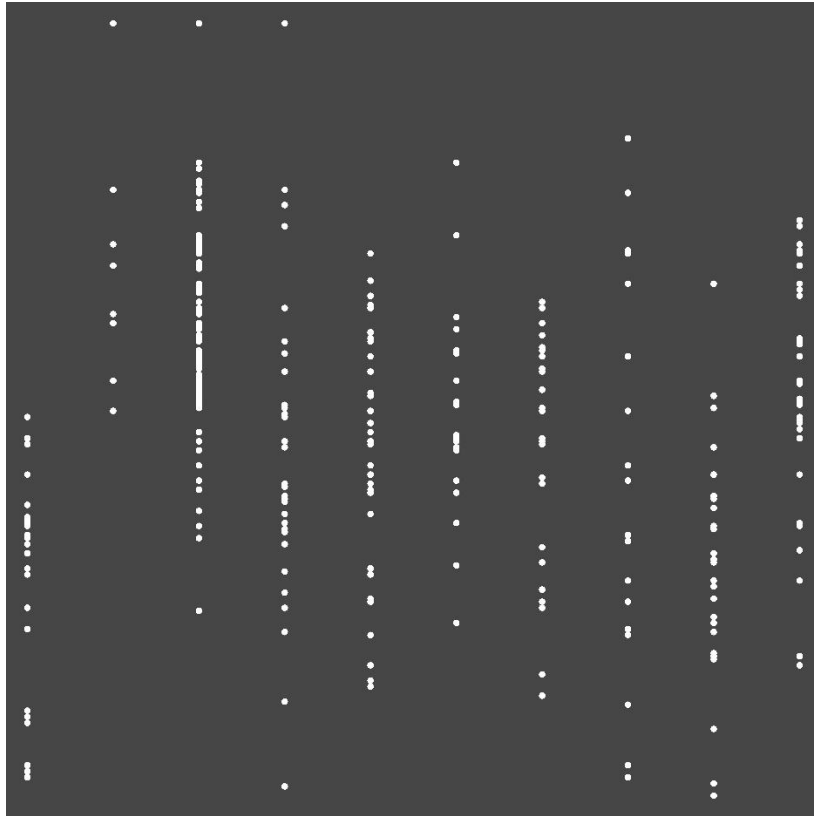
*Image 3: Orthogonal View XZ. Photographs of video content, 2012-2021.
N=364
(Source: IKEA YouTube channel.)*



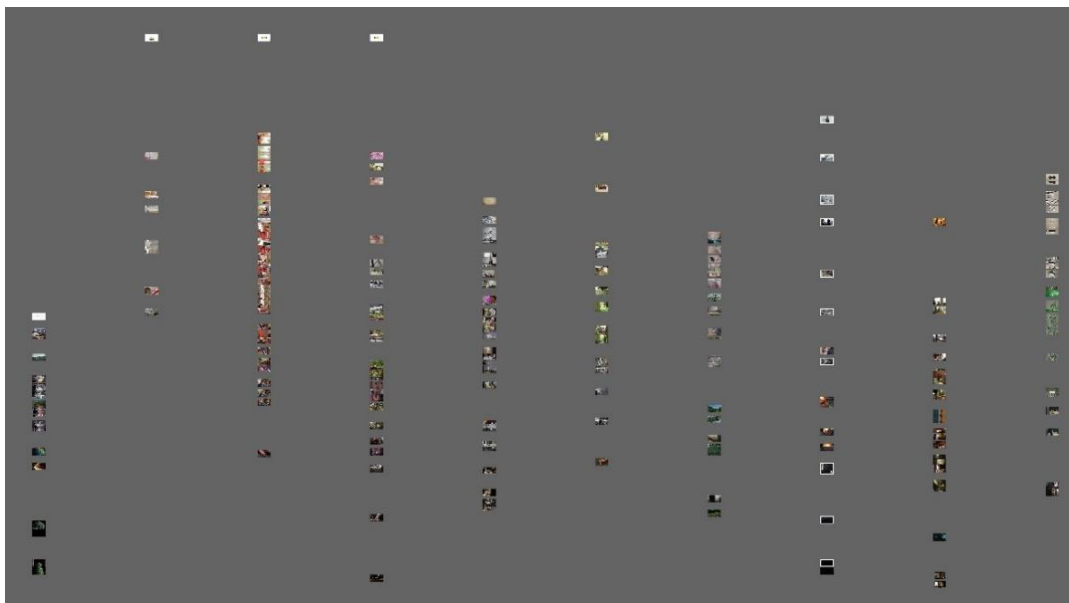
*Image 4: Orthogonal View YZ. Photographs of video content, 2012-2021.
N=364
(Source: IKEA YouTube channel.)*

Images 3 and 4 show the patterning, i.e., the presentation of parts of photographs that provide more detailed insight into elements undetectable in Image 1. Both images involve deep cutting into the material, as in medical and biological research. Images 5, 6, and 7 are visualizations achieved with the use of ImageJ software and Image Plot macro command. Images 5 and 6 compare the year of the video content to the brightness median: Image 5 represents dot visualization, and Image 6 visualizes photographs. Image 7 provides visualization of the median brightness and median saturation of the observed video content, i.e., photographs. Images 7 and 8 provide insight into additional possibilities that can be achieved by using the Image Plot macro command.

Endeavouring to provide – due to limitations of space – the most condensed possible form of information, we are hereby providing a comparative analysis of two visualizations that present two different codes (‘preservation of the planet’ and ‘women as social entrepreneurs’) and the median brightness.



*Image 5: 364 photo-advertisements (2012-2021) plotted as points.
X-axis = date (year). Y-axis = median brightness*



*Image 6: 364 photo-advertisements (2012-2021) plotted as images.
X-axis = date (year). Y-axis = median brightness*

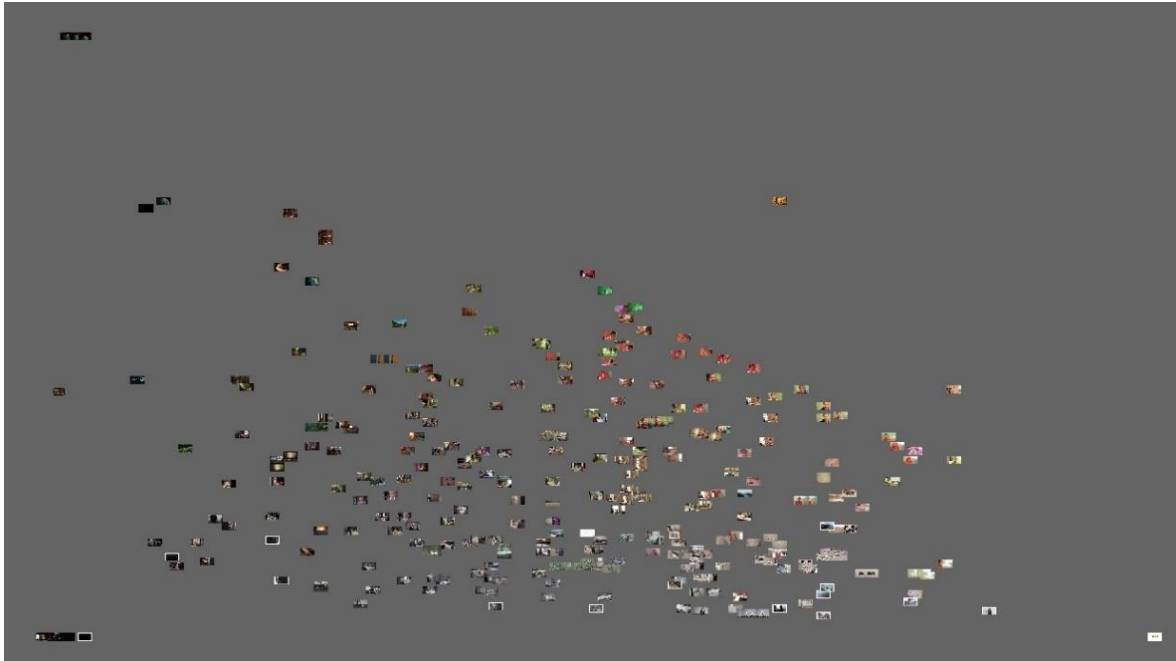
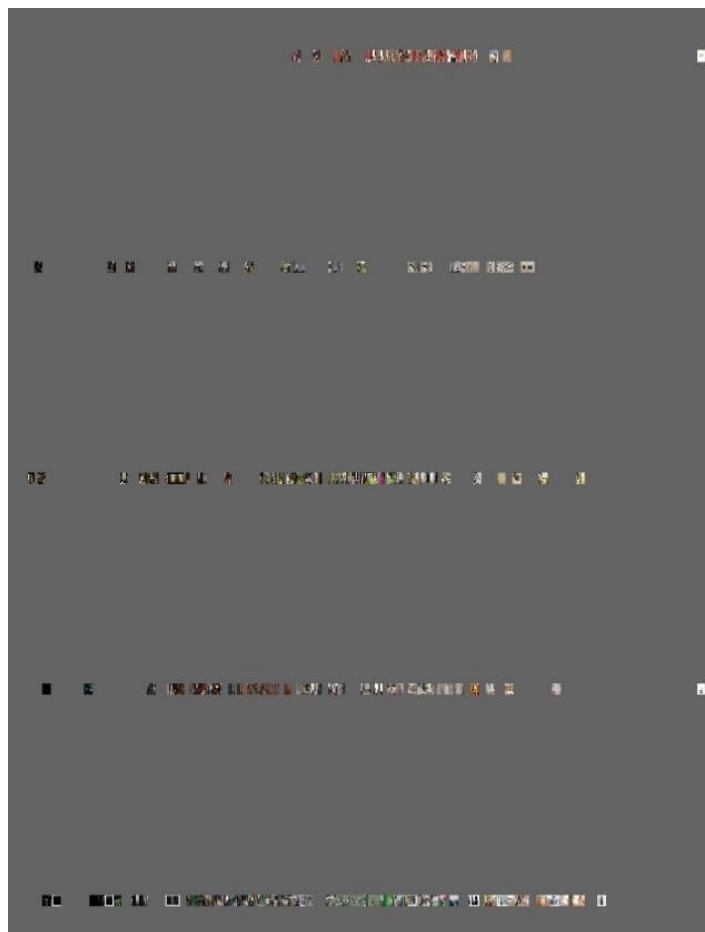


Image 7: 364 photo-advertisements (2012-2021); X-axis = median brightness, Y-axis = median saturation



*Image 8: X-axis = median brightness
Y-axis = 'preservation of the planet'-code
N= 158*



Image 9: X-axis = median brightness
Y-axis = 'women as social entrepreneurs'-code
N= 102

5. DISCUSSION AND CONCLUSION

Bearing in mind the necessary economy that needs to be applied to the design of messages to accentuate certain features of the product while using a certain emphatic element (such as wax, clay, or earth) and colour, as well as the aim to augment the users' desire to own the product, we arrive at the reasons for symbolic shaping of media messages. This requires a high level of visual literacy that facilitates reading and understanding of the applied rhetorical strategies. The ability to assess such content critically presupposes activation of complex psychological, sociological, symbolic, and ideological processes (Kir, 2020, p. 43). Therefore, the semiotic model – as explained by authors such as Saussure, Barthes, Eco, etc. – is among the most applicable ones when it comes to a critical assessment of messages used in the field of advertising. This approach is still inspiring, especially when it the research of the nature of media of the role that they plan in cultural, political, and social activities. On the other hand, Moretti's 2013 analysis that points to the differences between the concepts of *close* and *distant reading* gains additional relevance in the era of the new media and provides a point of orientation in contemporary research. When we are facing a body of perhaps two or five hundred, or even a thousand or a million photographs, we can no longer begin our research with semiotic analysis, seeing that such efforts would be unfeasible both theoretically and methodologically. Hence, alternative routes need to be taken. As opposed to the semiotic approach which necessarily focuses on a single artifact, or a small number of them, the software-based ability to present extensive photographic material simultaneously can lead us to detect significant changes that are taking place in the visual shaping of selected content across rather lengthy periods. This can help in detecting differences and variability among different groups of images. While such procedures may appear to direct us towards quantitative analysis, they also enable the analyst to detect semantic features. For example, image No. 1 enables the detecting of dominant colours, i.e., red, black, and green, as well as the presence of female features across numerous photographs. Both these features correspond with IKEA's marketing and business strategies which branded the company's worldwide image.

The dominance of the colour green points to the company's environmental awareness, and the female presence is following the well-known initiative signed by IKEA, known as *Social Entrepreneurship*. This campaign engages in the empowerment of women and fights poverty across the world. The female social entrepreneurs and the manual work which they engage in enable new job openings for refugees and other vulnerable social groups. Images No. 3 and 4 reveal a more emphatic presence of the colour brown, which is not so obvious in Image 1, yet provides insight into the emphasis being placed precisely on social entrepreneurship. This is confirmed by the locations where the videos have been recorded, products and facial features that appear across the materials. Furthermore, images 5 and 6 reveal the prevailing presence of brighter tones, with a possible exception in some parts of the content published in 2012, 2015, 2019, and 2020. Image No. 7 confirms what has been said of the average brightness, and reveals the average intensity and clarity of the colours that dominate across the material. Images 8 and 9 confirm the trend of favouring brightness over dimness. All these observations could not have been achieved via traditional methods that were, until recently, exclusively used in social sciences and humanities. The media visualization method reveals trends and patterns across numerous artifacts even without the aid of the usual statistical methods such as quantifying, measuring, and summarizing (Manovich, 2020, p. 11). This method can be said to constitute a meta visual direction in the research of the new media, primarily because 1) *these visualizations are images of images*; 2) *these parameters used to arrange them are visual*; 3) *the automatic distribution of the images is visualized spatially in a presentation governed by abscissas and ordinates*; 4) *the content analysis enabled by Media Visualization remains within the realm of images (filiation, tradition, citation, genre, etc.) and not the abstract realm of verbal description* (Dondero, 2019, p. 21). The analysis that we carried out and the results that we harvested via the media visualization method led us to believe that the described approach can fruitfully be applied not only to the commercial messages publicly disseminated via YouTube but also to those that may appear on any other internet channel that provides access to video content. Photographic, video and audio content, and multimedia in general, play an active role in the shaping of popular culture, which is clearly shown via the examples which we analysed. The technology involved in the creation of technologically disseminated content therefore also calls for the application of the technology in the research itself. It is becoming increasingly obvious that technology-based research cannot be bypassed if we are to open new doors to the analysis and to the understanding of global, largely computer-based culture that has become our new reality (Manovich, 2020, p. 16).

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