

Who does the norm affect? Information design from a feminist perspective

*Quem a norma afeta? O design da informação
a partir de uma perspectiva feminista*

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norm, gender, feminism,
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A huge and growing amount of data is omnipresent in our daily lives. To make sense of the information overload, data visualisation and infographics are used as cognitive artefacts. The design of these solutions, in turn, is usually mediated by a set of guidelines that set parameters for what is considered good design. The norm thus suggests a collective commitment to design and involves the expression of the values of the dominant group that designed it. This study explores normative biases and presents counter-positions to the sovereignty of these hegemonic values in information design from a critical feminist perspective. It is noteworthy that during the period analysed, intellectual recognition was mainly given to men. The complexity of male protagonism in the production of knowledge is addressed. The shift away from the primacy of the influences of a dominant group therefore represents a redistribution of power that benefits not only women but also various social groups.

*norma, gênero, feminismo,
design da informação*

Uma grande e crescente quantidade de dados está onipresente em nossas vidas diárias. Para dar sentido à sobrecarga de informações, são utilizadas visualizações de dados e infográficos como artefatos cognitivos. O design dessas soluções, por sua vez, é geralmente mediado por um conjunto de diretrizes que estabelecem parâmetros para o que é considerado um bom design. A norma, assim, sugere um compromisso coletivo com o design e envolve a expressão dos valores do grupo dominante que o criou. Este estudo explora os vieses normativos e apresenta contraposições à soberania desses valores hegemônicos no design da informação a partir de uma perspectiva feminista crítica. É importante destacar que, durante o período analisado, o reconhecimento intelectual foi principalmente dado aos homens. A complexidade do protagonismo masculino na produção do conhecimento é abordada. A mudança da primazia das influências de um grupo dominante, portanto, representa uma redistribuição de poder que beneficia não apenas as mulheres, mas também diversos grupos sociais.

1 Introduction

The development of computer processing, storage and interaction capabilities has paved the way for data to become ubiquitous in our daily lives. Data, in this context, is a set of records of reality, qualitative or quantitative, without any interpretation (Miranda, 1999; Cairo, 2013), which, when they undergo a decoding process and are arranged in a meaningful and understandable way, become information (Miranda, 1999; Teixeira, 2015). Data, which serve as a basis for the generation of knowledge, are ubiquitous according to Cardoso (2012), and we can say that the abundance of available information is currently a reality. Paradoxically, access to a vast and growing amount of data does not necessarily mean that individuals are better informed.

In order to cope with the dynamics of today's communication, we need to develop artefacts that help us deal with the flood of information and ultimately make sense of it. In this context, infographics and data visualisation, possible solutions in the field of information design, act as cognitive artefacts, i.e. they complement our mental abilities. Both aim to show patterns and relationships between information that are difficult to recognise or deduce without the help of a visual representation (Meirelles, 2013).

In terms of cognitive support, visual representations of information can help to grasp content, give it meaning, facilitate research and discovery, aid memory, draw conclusions and even manipulate data (Meirelles, 2013). Frascara (2011) adds that these artefacts have the power to not only create inviting structures that encourage people to engage with information, but also help them to make decisions and take action.

In information design, the creative conceptualisation of these solutions is usually mediated by a set of normative parameters that have emerged throughout history to define what good design is. In a broader context, the norm is a structured concept based on its prescriptive nature, i.e. it suggests a collective commitment on how to act and involves a way of expressing the values of a group (Torres & Rodrigues, 2011). According to Ennes and Marcon (2014), it arises from power relations and can be expressed through customs, traditions, laws or discourses. It therefore affects not only the production of knowledge in various disciplines such as information design, but also social structures and relationships.

This research contributes to the production of scientific knowledge by emphasising the above-mentioned inequalities and by highlighting disruptive perspectives, i.e. those that break with the course of a process. It has also proven to be original and necessary, as there are few discussions – academic and professional – that question the norm of information design or challenge it from a sociological perspective.

In reviewing the traditional literature, we first noted the historical construction of the norm and its distortions. It is noteworthy that intellectual recognition was mainly given to men during the period analysed. Nevertheless, we will address the complexity of male protagonism in the production of knowledge.

2 Norm and creativity in information design

Information visualisation is a constantly changing field that is primarily influenced by technological progress. Lima (2014) points out that its deep roots are to be found in cartography, which was influenced by statistical thinking in the 19th century and later in the 20th century.

The idea of visualising data and information has been around for a long time, but the concept of information design has gained importance with the increasing flood of information and changing communication needs. According to Passos, Mealha and Lima-Marques (2015), the use of the term dates back to the 1960s, but it was not until the late 1990s that the topic took on a more robust character.

To observe what permeates the discourse of theorists on the conceptualisation of information design and the guidelines for good design, Souza et al. (2016) examine 11 sources (authors and institutions) that outline the craft in 13 different ways: Frascara, Mijksenaar, Horn, Tufte, Petterson, as well as from IIDD – the International Institute of Information Design. Based on the literature review, which includes definitions from four different decades, the authors conclude that there is a common tendency to adopt the modern paradigm of transparency as the ideal for communicating content to the user.

Given this theoretical overview of the main references to information design, Souza et al. (2016) point out that reflective thinking that attempts to give semantic value to form is rare. The authors affirm that the character of obscuring the designer's work has always been implicit in the definitions, although they recognise the transformative nature of data into information.

This positioning is anchored in the guidelines of modern functionalism, a theory associated with architecture and design whose principle is that form follows function. According to Andrade (2020), modern functionalism is a model of excellence with a normative character that emerged in the 20th century to guide the production of objects, images and buildings, and whose traces can still be perceived today. For design and typography, modernism, a movement that took hold as an ideology and style between the 1920s and 1960s, was the era in which a set of normative parameters was codified (Bore, 2015). Gruszynski (2001) agrees and affirms that graphic design as a field of practise has its roots in functionalism and that a set of parameters was established during this period to ensure the execution of good design.

For Tufte (1990), the principles of information design are universal, like mathematics, and independent of cultural contexts. The author proposes a set of guidelines, the Principles of Graphic Excellence, which serve as a basis for the creation of information design and aim to free graphics from visual effects and embellishments that are considered unnecessary, as well as from the style characteristics of the authors. (Correia, 2016).

In contrast, Cardoso (2012) questions the validity of this approach, stating that throughout modernism, the idea that ornamentation is in opposition to functionality was completely unfounded. One of the explanations for this, according to Draxler (2012), is that the way in which the German Ulm School conceptualised design in the 1950s separated it from art. Art was seen as subjective, while design was seen as objective

and, to a certain extent, concerned with concrete problems that could be solved mathematically. The Ulm School was a representative of a current of thought that advocated more universal and scientific postulates for solving communication and information problems. According to Braga (2011), this approach defined design as an element of social utility and the designer as an information broker (rather than an artist) whose task was to bring clarity and order to the visual organisation of information.

Even though such postulates originated in Europe, the Ulm School had a great influence on the spread of education and design discourse in Latin America. “Max Bill, Otl Aicher, Tomás Maldonado (from Argentina), Gui Bonsiepe, Claude Schnaidt, and other teachers and students were the propagators of the base of the school in Latin America, under the explicit wish of local authorities” (Fernández, 2006, p. 4).

According to Braga (2011), for much of the modern period there was also a movement or group in the field of design research that debated the social role of this professional activity. Furthermore, Bore (2015) explains that the belief that designers should be socially responsible emerged in the mid-20th century at the same time as the idea that design could play a role in changing society. Designers were the objective keepers of the message, even though they had a responsibility to promote social change. For the author, this contributed to the idea that there was one right kind of design, one universal form.

Later, advances in electronic platforms and tools – especially the internet – meant the discovery of a new world of possibilities for design, especially in terms of the tools available for design. The popularisation of digital media enables a variety of new visualisation techniques, affirms Manovich (2010). According to the author, with computer support we can visualise much larger amounts of data, create dynamic visualisations (i.e. animated and/or interactive), feed data in real time, transform certain types of representation into others (images into sounds, sounds into 3D spaces, etc.), to name just a few possibilities.

In terms of information design, computers are also increasingly facilitating the collection and analysis of large amounts of data, which, according to Meirelles (2010), would not be possible without computing power. Against this background, the need for cognitive artefacts to help us deal with and ultimately make sense of the information overload we currently have access to has driven the creation of a growing number of online views. In parallel, the internet as a public medium provides access to a huge amount of data.

Johanna Drucker (2011) argues that while these digital visualisation tools have become ubiquitous, they are a kind of intellectual ‘Trojan Horse’, i.e. a vehicle through which assumptions about what constitutes certain information penetrate with great force. The author argues that the fact that they are assumptions is obscured thanks to a rhetoric taken directly from the techniques of the empirical sciences, which hide their epistemological biases under the appearance of familiarity. And that Google Maps and so-called neutral diagrams generated from spreadsheets have become so naturalised that they are accepted as indisputable representations of ‘truth’. In addition to the principles of modern functionalism mentioned above, Drunker highlights

that Data Visualization is also influenced by the foundations of realist knowledge models, and argues that these need to be subjected to a radical critique in order to return solutions to humanistic principles of construction and interpretation.

Based on the bibliographical overview presented, one can still recognise an expressive legacy of modern functionalism and its premises in design. However, it is worth noting that alongside a significant technological development that brings forth new creative possibilities in information design, there is also a theoretical approach that questions or resists the values of modernism from different perspectives. Be it in relation to the interface between design and art or in relation to sociological issues.

Even when normative guidelines appear to be merely formal, critical perspectives on the norm attempt to illuminate the ideological, semiotic and symbolic aspects involved in its conception, even if these are rarely discussed. For Alexandra Falagara (2014), a sign or form does not have a universal meaning *per se*, but rather there are multiple understandings of what it means, and if established concepts and visual markers are not challenged and reformulated, they perpetuate certain values and ideas, which in turn can reinforce hierarchies of power, oppression and others. The author presents examples from the field of editorial design where solutions that are considered wrong or undesirable by the norm are defined by sexist and pejorative terms — as in the case of the appearance of words alone in the last line of a paragraph, known in English as “children of a whore” and in Portuguese as “linhas viúvas”. To deepen the discussion of which values and worldviews underlie the norm in information design, in the next chapter we will examine which voices have played a leading role in the production of knowledge in this field and the possible consequences of the prevalence of a hegemonic bias in this construction.

3 Construction of knowledge from the perspective of intersectional feminism

As we have seen in the discussion above, theorising about graphic and information design was mainly done by men at the time the standard was introduced. In this context, it is also important to emphasise that the precursors of modern functionalism – the defining movement of creative guidelines – were based at the Ulm School in Germany.

This data shows that the construction of the norm takes place in a hegemonic perspective, i.e. under the predominant influence on others of a particular social group – in this case male, white and European. According to Moraes (2010), hegemony presupposes the conquest of consensus and cultural leadership, which in turn intersect and condition symbolic production in the media and interfere in the formation of the social imaginary and in the struggles for meaning and power in the contemporary era.

The philosopher Gramsci (2002), who developed the concept of hegemony, argues that it is not limited to issues of economic structure or political organisation. He explains that it is won and consolidated in

struggles that concern the expression of knowledge, practises, forms of representation and models of authority on an ethical-cultural level that seek to legitimise and universalise themselves. It is not a matter of simple coercion, but of social consent to a universe of beliefs, norms and rules of behaviour, as well as the destruction and overcoming of other beliefs and feelings about life and the world.

In this context, Berth (2017) notes that the relations that divide us between the oppressed and the oppressors are based on the belief that there is a universal man, the white European man, who is the basis for others. Thus, from the single hegemonic discourse, several systems of prejudice become evident, including racism, which proclaims the superiority of one race over another, and in terms of gender, sexism, which assumes the superiority of men over women.

According to Lips (1993), sexism encompasses negative judgements and discriminatory actions directed against women because of their gender. Here it is necessary to distinguish between gender and sex. According to Pierucci (2007), sex is the biological substrate on which the socio-cultural practises of gender are built. From this perspective, gender is expressed as something socially constructed, while sex is a biological datum.

In this context, Landim and Jorente (2021) present a panorama of resistance to the presence of women in scientific spaces in an article that explores gender inequalities in the field of information design. The authors begin with a reference to the Christian myth of Adam and Eve, according to which the woman is held responsible for the expulsion of humanity from paradise because she had tasted the fruit of the tree of knowledge and was no longer worthy to have access to knowledge. From then on, they show different forms of invisibility of the female gender in intellectual production, from the Middle Ages, when access to education was restricted by the most powerful institution of the time, the Catholic Church, which considered knowledge dangerous for women, to the period that lasted until the end of the 19th century. Even today, women still encounter obstacles and difficulties when they seek academic and/or professional equality.

As we can see, sexism has an institutional character at its foundations. It is linked to exclusionary practises promoted by bodies, organisations and communities that impose certain barriers on women and prevent them from having the same opportunities as men in the world of work, science, politics, etc. (Ferreira, 2004).

Therefore, this study assumes that the production of scientific knowledge has historically been a domain reserved for men (Harding, 1996), even in the field of information design. This observation does not imply the exclusion of women, but explains that the underrepresentation of their theoretical contributions is still troubling and represents a gap that needs to be addressed. Beauvoir shows how male domination affects the production of scientific, historical, psychological, sociological and cultural knowledge, which, according to Varela (2008), emphasises the importance of reviewing these productions by introducing a feminist perspective in the sciences.

Feminism is a social, philosophical and political movement that advocates gender equality. According to Bandeira (2008), feminist critique opposes

a totalising, masculinist and universalist knowledge. She claims that the critical perspective through the lens of feminism explains, incorporates and presupposes an individual and collective consciousness, followed by a revolt in the face of the understanding of gender inequalities and the subordinate position that women occupy in a given society. It is a struggle to change the situation and power relations. In this study, we use the term “feminist” as an attribute for research, theories or projects that name and challenge sexism as a force of oppression.

Authors who affirm feminist critical thinking, such as Haraway (1988), Hiemstra and Billo (2016), point out that all knowledge is partial and therefore there are multiple valid points of view. According to Brooks (2007), the experiences of the oppressed provide more accurate representations of the social order compared to the impressions of the dominant group, however different they may be. Women, for example, experience the disadvantages imposed on them by society, despite also having to operate within traditional power structures, and therefore have a broader perspective (Coulson, 2017). We believe that these perspectives are not only valid but also necessary in infographics and data visualisation projects, especially those that inform on issues that are important to society.

At this point, it should be emphasised that there is no single, general critical theory of feminist thought. According to Bandeira (2008), there are different theoretical currents that appropriate general theories and try to understand in their own way why and how women occupy a subordinate position or status in society.

In what follows, we conduct an integrative review of the literature that identifies theoretical and methodological approaches inspired by intersectional feminism, or at least an anti-hegemonic perspective, to overcome aspects of the norm that may contribute to the perpetuation of unequal power structures in our society.

4 Counterpoints to the norm

Normative parameters are naturalised or questioned in different ways in different places. In Sweden, for example, the term ‘norm formation’ has emerged as a useful companion to the previously introduced term ‘norm critique’. Both critically point to established social norms that contribute to inequalities, according to Duel (2019), a Swedish designer who explores the intersections between graphic design and social justice. In this case, the creation of the norm represents an approach to questioning the guidelines themselves and proposing creative ways to dismantle and redesign them.

In the same country, the Bastion Agency Studio Lab is coordinated by women and develops collaborative methods for critical practise in graphic design. They suggest that discussions about gender should not only be about content, but also about form. One example of this is the conceptualisation of a new graphic design project for the local publication *Bang*, the content of which they considered progressive and incompatible with the old way of emphasising so-called clean design.

In the field of cartography and data visualisation, a central focus of feminist critique of the norm is to challenge false binaries such as reason and emotion and to propose an understanding of emotion and affect as legitimate routes to knowledge (Huffman, 1997; D'ignazio & Klein, 2016).

According to Huffman (1997), women in the Western intellectual tradition have historically been relegated to a state of domination by emotions and bodily desires, as irrational and inferior beings, i.e. incapable of overcoming their embodiment. Although women have made significant contributions to science, rational thought has historically been privileged over the emotional experiences associated with the feminine. The intersection of reason and emotion also means that some groups are privileged over others. According to Kennedy and Hill (2018), this is because certain dominant groups – usually white, middle-class males – are better able to understand mathematical and statistical information, not because they are inherently more capable, but because they are significantly more represented in the disciplines of the exact sciences at school and university.

Regarding the importance of promoting emotion in the field of information design, Campbell (2018) mentions that appeals to logic, ethics and emotion form the basis of Aristotle's system of rhetoric, but pathos, which depends on the ability to evoke emotion in the audience, is the point of most disagreement in the data visualisation community. Bonsiepe (2011) argues that there is no information without rhetoric and warns that this is one of the least researched areas of design, despite the fact that the designer is inevitably confronted with this phenomenon in their daily project work. According to the author, rhetoric can be understood not only as an approach to studying the manipulation of messages for persuasion purposes, but also to improve the understanding of information in a contemporary context where people are exposed to a high density of information.

Efforts to influence through data visualisation have traditionally been overlooked as objective and neutral representations of data (Campbell, 2018). Neutrality, so revered in modern functionalism to this day, creates controversy in several critical analyses. For example, Carvalho and Emanuel (2015) argue that the ideology of neutrality, which defends a graphic language without ambiguities or information noise, ignores several studies on rhetoric and the philosophy of language that consider it impossible to achieve neutrality.

Smith (1974) confirms this thesis by stating that those who demand neutrality position the researcher as an element separate from society, as if capable of adopting a completely objective point of view. This thinking is supported by Hill (2020) who argues that it is impossible to stand outside of society and therefore those who produce data or its visualisation make decisions that are fundamentally shaped by their social position.

This supposedly neutral observation from a higher place gives the visualisations an unquestionable character and is perhaps one of their most important rhetorical devices. It signals a kind of scientific authority that in some cases by no means favours a critical pattern of expression (Faragara, 2014). In an article analysing infographics on abortion, Hill (2020) highlights that the conventions of visualisation, such as the use of so-called clean lines

and shapes, simplify the data and give the impression that they are the whole story. According to Hill, the infographic leads the viewer to understand for themselves — to see and know — that there is no correlation between abortion and poverty, and to take this data as fact. However, the author explains that other research suggests that there is a link between poverty and abortion rates, with poorer women having more abortions. Denying this and suppressing information about the links, such as why women have abortions, access to contraception or what it means to be a mother living below the poverty line, makes the structural reasons for abortion decisions invisible, says the author. The author notes that views that are considered minimalist allow the designer to create the narrative that the view fits. So the data become the facts, even if there is only a limited amount of information available.

To conclude the study, Hill (2020) emphasises the importance of reconsidering the argument that visualisations can change the world. She notes that even with an issue as complex as abortion, none of the infographics she showed explored its true dimensions. And, more worryingly, she reveals that the conservative discourse inherent in visualisations is used as a resource to justify restrictions on women's access to reproductive health, under the guise of neutrality. The author warns us that visualisations can indeed play a role in changing the world, but that it is utopian to imagine that they will necessarily be positive.

Against this background, allowing conflict and enabling dissent are ways of undermining the ideal of neutrality and the notion of the scientific authority of data and creating space for a more critical engagement with information. Allowing people to question data, present alternative visions and realities in the same views or simply include people with different perspectives in the conceptualisation of statements are already advances in this direction (D'Ignazio, 2017).

D'Ignazio and Klein (2020) have published the book *Data Feminism*, in which they discuss data science as a site of power and traditional practices of data collection and visualisation that reinforce existing inequalities. The premise of *Data Feminism*, the authors say, highlights something that is almost never acknowledged: power is not distributed equally in the world.

With this in mind, they define data feminism as a proposal to believe in and engage in co-liberation: the idea that oppressive systems of power harm us all, undermine the quality and validity of our work, and prevent us from making a real and lasting social impact (D'Ignazio & Klein, 2020). As pathways to this engagement, they call for emotion and contribute to a disruptive practise in data science in visual representations. To this end, they propose seven basic principles from feminist theory. They are: Examine power: challenge power; emphasise emotion and embodiment; rethink binaries and hierarchies; embrace pluralism; consider context; and Make labour visible.

In relation to what the authors refer to as 'acknowledging bodies', mentioned in principle three, D'Ignazio and Klein (2020) address the difficulties that visualisations have in accepting and representing participants. They also point to four ways in which bodies are missing from data

visualisations: (a) bodies are extracted; (b) bodies are absent; (c) bodies are not counted; (d) bodies are made invisible.

These practises that contribute to the invisibility of bodies, which D'Ignazio and Klein (2020) point out, correspond to the motifs of the 'trick of the gods' defined by Haraway (1988) and mentioned earlier. In response to this trend that totalises and sidelines those involved in projects, Costanza-Chock (2018) introduces design justice as a method that encourages us to explore how design relates to domination and resistance at personal, community and institutional levels.

The term was coined at a conference in Detroit in 2015, when 30 people, including designers, artists, technologists and social scientists, explored how design can best support communities facing injustice. The group formulated a definition of design justice that is constantly updated to highlight how design reproduces or challenges white supremacy, heteropatriarchy, capitalism and colonialism. According to the movement's website, the concept differs from social impact design proposals or design for good because, while well-intentioned, they are not guided by the principle of justice. Therefore, they can be harmful and exclude or perpetuate systems and structures that are the very reason we need design interventions.

5 Conclusions

This research shows that thinking about information design is also thinking about power, about who has it or not, and about how these structures can be challenged. Bonsiepe (2011) explains that there is a need to promote design humanism, which he defines as the exercise of design skills aimed at interpreting the needs of different social groups and developing viable, emancipatory proposals in the form of instrumental artefacts. Bonsiepe explains that humanism implies the dismantling of domination and, in the case of design, also takes into account those who are marginalised and discriminated against, i.e. the majority of the planet's population (Bonsiepe, 2011). In this sense, Giorgia Lupi (2023) also describes data humanism as an approach that sees data not just as cold numbers, but as a filter with which we can see the world, one topic at a time, in order to better understand it. According to the author, this approach only works if we incorporate the human qualities found in data into our solutions, such as: context, missing data, imperfection and uncertainty.

Based on our literature review, we identified a number of critical and/or methodological principles that challenge the norm in favour of socially responsible practises in information design and data science. We found that these critical voices emphasise not only the importance of valuing emotions in design solutions, but also the relevance of:

- Recognising that knowledge is partial and that it is therefore necessary to give space to other voices and worldviews;
- Rethinking binaries and hierarchies and other systems that can reproduce oppression;

- To honour plurality methodically and visually;
- Visibility for those involved in data collection and the design of artefacts;
- Enabling dissent by highlighting methodological gaps and limitations and challenging the illusory notion that visualisation represents a superior, neutral and objective view of the world.

The dominance of women in discussions that contradict the norm is remarkable. Although feminist thinking primarily challenges sexism as a force of oppression, we understand it first and foremost as a struggle to change hierarchies of power and consequently to reverse the inequalities that result from their existence. Moving away from the primacy of the influence of a dominant group therefore represents a redistribution of power that benefits not only women, but also different social groups.

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