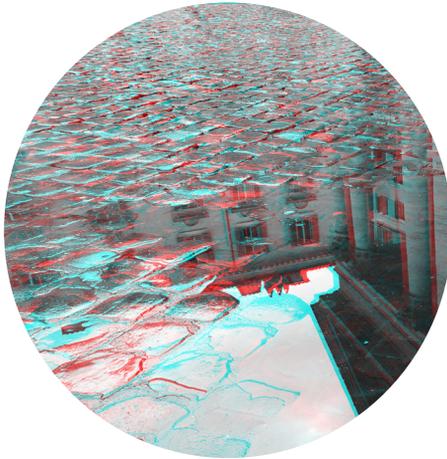


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DESIGN CULTURE (OF) REVOLUTION
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Hélène Day-Fraser,
Emily Carr University of Art + Design, Canada
“Revolution - what goes around comes around? Design as needed provocateur and catalyst. Seeking contributions that address our relations and open up new alternatives. How do we reconfigure the assumptions that trap us? What does it mean to confront our disquiet with the world-as-it-is?”



Alastair Fuad-Luke,
Free University of Bozen-Bolzano, Italy
“Design activism constitutes specific design actions that critically transform raising awareness and vigilance of our societal condition into socio-political actions, individually and collectively.”



Stefano Maffei,
Polytechnic University of Milan, Italy
“Complexity is change. Design has to deal with the transformation of the species, of the environments, and the societies. A new posthuman design perspective is needed. The future is unwritten.”



Betti Marenko,
Central Saint Martins, University of the Arts London,
United Kingdom
“How do we design critical interventions that resist capture, propose alternatives, activate change? By design as a problem-finding, world-making, terra-forming, future-crafting strategy that acts in the present to shape tomorrows”



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Alternative narratives data visualization archive

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Abstract Nowadays non-expert groups use data to collaboratively create alternative narratives that challenge those imposed by power institutions. Data visualization is an adversarial tool for bottom-up counter communication. This paper offers reflections on bottom-up practices around the creation of alternative narratives that use data visualization. It is based on the preliminary results of a research project that aims to create an online archive of digital projects dealing with data visualization for alternative narratives. The collection of projects allows for an overview of the diversity of actors involved, the issues addressed, the aesthetic characteristics of the visualizations, and the characteristics of the data practices and sources. The re-appropriation of digital languages, platforms, and formats emerge together with diverse visualization techniques as new proposals to counteract information hegemony. While most projects follow the open-source ethic, greater openness in working with data for alternative narratives from bottom-up needs to be promoted.

KEYWORDS | DATA VISUALIZATION, ALTERNATIVE NARRATIVES, ARCHIVE, DATA ACTIVISM

1. Introduction

This paper provides a reflection on bottom-up practices of data-driven alternative narrative. It draws on the preliminary results of a research project aimed at creating an archive of online projects dealing with data visualization for alternative narratives. Data-driven alternative narratives shape the facts that take place in a story not told by the dominant power, with the aim of making visible and evident issues for the audience to reflect over and continue questioning it (Briones, 2019). The archive is proposed as a way of approaching three relevant aspects in the context of data design: 1) promote critical thinking by designers and "consumers" (Tufte, 2006) of data visualizations; 2) raise knowledge and awareness about the type of projects and who mobilizes them, the issues they address, and the ways in which they work with the data; 3) promote the use of data for activism in the design and related communities, serving as a source of inspiration and dissemination. The archive provides an overview of the state of data visualizations used for alternative narratives, revealing aesthetic aspects characteristic of this type of data-driven counter-narratives that are different from other types of data-driven narratives. Presented in the context of a master's degree course in communication design, the archive is an educational and reference-consulting tool for students.

1.1 Emerging technologies and bottom-up data practices with visualizations

The digital sphere has profoundly changed the way people access and share information. In the last 15 years, the production of data has been exponentially increasing. Emerging technologies present new opportunities as well as new challenges. The informational power relationship of governments and corporations that provide homogeneous and opaque methods of access, manipulation, and communication of data, and the increasing cost entailed in personal data (i.e. surveillance and profiling) are two of the many reasons why it is critical to decentralize the ability to produce data-driven narratives. Modes of access and tools to manipulate data have brought marginalized actors to collaboratively create alternative narratives to those delivered by dominant power structures. Non-profit organizations and activist groups increasingly base their campaigns on data, using visualization as an agency tool for change.

Within the network society (Castells, 1997) citizens are now abler than ever to access information and know how public institutions exercise their power. Skepticism towards the dominant power has been installed as a verifiable possibility. On the other hand, individuals and networked communities are seeking to counteract online mainstream information channels, creating new sources and tools of information, often generating alternative channels (e.g. Mastodon platform (<https://mastodon.social/about>), OpenPod (<https://openpod.abbiamoundominio.org/>)). These practices resonate with the concept of technopolitics, which refers to "the articulation between the strategic use of communication technologies for action and collective organization" (Toret, 2015, p. 51). Bottom-up technological practices show how the use of technologies and data is promoting social change,

opening spaces for the creation of new narratives. This article understands that data visualization is a tool and a techno-political bottom-up practice when framing alternative narratives.

The repertoires of action in the uses of data are increasingly amplified due to the access to tools for extraction, analysis and communication of data to lay people; and are "constituted from a group of people articulated together through a diverse set of social and technical means" (Sack, 2011) self-organizing and gathering hybrid profiles that produce new visions of the world. The many online tools for data extraction, manipulation, analysis, and visualization allow one to work with data from the beginning to its communication. Working with data is no longer only for data experts but for a mixture of profiles from different disciplines and skills. The diversity of perspectives and situated knowledge of those who are working with data as a techno-political bottom-up practice is precisely one of the richest bases of the process and result of data visualizations for alternative narratives and that dissociates them from traditional data visualizations.

Although the expertise needed to work with data is no longer the domain of experts alone, there is still a great lack of data literacy among individuals in the datafied society. Designers who work with data visualization, among other profiles such as hackers, are data intermediaries (Baack, 2015) who do the work of bringing data closer to people's experiences (Mauri & al, 2019). In this sense, the communication designer who works with data assumes an active and political role in the information society.

The appropriation and détournement of digital tools and platforms is another aspect of data practices around alternative narratives. As referred to in section 3 of this article, it is remarkable how several of the projects collected in the archive show a disruptive approach to reusing visual and interactive resources to present data visualizations in alternative narratives.

1.2 Data activism and adversarial design

Data activism is a type of activism that takes a critical approach to practices around data and technologies (extraction, production, collection, analysis, communication among others) for challenging existing power relations seeking for social change.

"It involves a series of practices at the intersection of the social and the technological dimension of human action, with two aims: either resisting massive data collection or actively pursuing the exploitation of available data for social change." (Milan and Gutiérrez, 2015, p. 122).

Data activism builds on the work of subcultures that precede it, taking main inspiration from hacker ethics and open-source movement that has emphasized the use of data in activism by opening, sharing and modifying them, generating knowledge to seek social change (ibid.). One of the main objectives of data activism is to remove individuals from passivity in the face of data. In this way, data activism will seek to inform how the mechanisms by which

power institutions control individual's data. It will also seek to open up knowledge about technical and ethical practices with data, promoting training instances.

Data activism finds a close relationship with communication design with data through design activism and in particular with adversarial design. Design activism is described as

“design thinking, imagination and practice applied knowingly or unknowingly to create a counter-narrative aimed at generating and balancing positive social, institutional, environmental and/or economic change” (Fuad-Luke, 2009, p 27).

On the other hand, adversarial design is a type of political design whose emphasis lies on the agonizing qualities by provoking conditions of disagreement and confrontation.

“adversarial design does the work of agonism means that designed objects can function to prompt recognition of political issues and relations, express dissensus, and enable contestational claims and arguments” (DiSalvo, 2012, p 12).

Design activism directly seeks to empower people to take action in the ongoing processes of social change, while adversarial design seeks to be a proxy for this action. In other words, it is the understanding of conflict that mobilizes action, not the action itself.

Although both concepts point to the active and critical action of individuals seeking to promote change in relationships with dominant power, a closer relationship is identified between adversarial design and data activism. The latter seeks to challenge hegemonic power by pushing society to be actively critical of data and technology and their implications. The above concepts resonate with the role of data visualization as a decisive adversarial tool (DiSalvo, 2012) for data activism. Translating data into visual representations for alternative narratives is an activist practice that requires a critical approach to data to make a political position evident and coherent.

2. The alternative narratives visualization archive

The Alternative Narratives Visualization Archive is an open, ongoing, and collaborative archive that collects and maintains over time digital online projects which use data visualization as a tool to support alternative narratives to the ones from dominant power. The archive aims to raise knowledge and gather the design expertise on the relevant task of portraying evidence to not visible or alternative social issues that aren't been told by the main power institutions. It seeks to encourage the creation of other narratives to those that dominate and to promote discussion of existing ones. At the same time, the archive aims to bring to the fore discussion and awareness on the political role of designers when designing with data. Three main tasks that the archive performs in terms of knowledge construction around data-driven alternative narratives are: the need to create new ways of telling alternative narratives; the bottom-up approach of data to people's experiences around social issues; and the preservation in time of the cases collected.

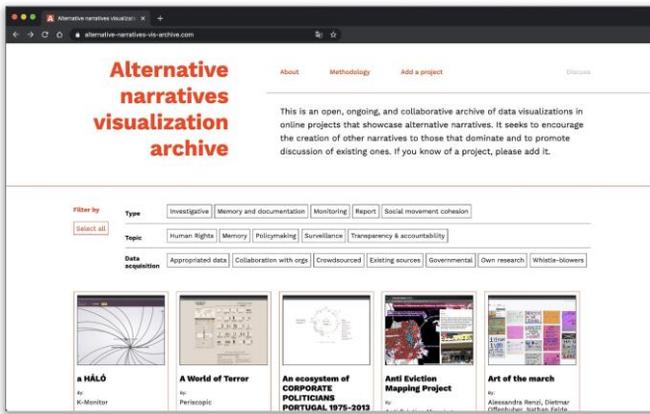


Figure 1. Home page screenshot of the online archive.

Narration is part of human self-creation. To create alternative realities, it is necessary to tell stories that subvert the imposed ones and that above all represent the multiple possible worlds. The projects collected through the archive are examples of how these narratives can be addressed through data bringing new ways of engaging with social issues, and at the same time bringing data closer to people's experience. The archive is intended to be a source of inspiration for those seeking to imagine ways of telling alternative narratives with data. On the other hand, many of the projects collected online are outdated and have been lost over time. The archive seeks to preserve the fragile digital material for future research.

The archive currently boasts a collection of 65 projects, most of which are still online. Each project is categorised according to the way in which the data was acquired, the topic covered, and the type of project based on the purpose of each project. The definition of these categories was based on the project's information generally provided in the "about" or "methodology" section. However, this information is not always present in the projects of the collection, making necessary deeper research on the actors behind and over the situated context of each topic.

The archive is part of an academic research being presented in various didactic experiences in the context of a master's degree course in communication design at the university. During the course experience students are asked to design alternative data-based narratives, designing communication artifacts that invite the public to reflect over social issues. Throughout the research and design process, students consult the archive and use the collection of cases as references for their projects. In this way, the archive turns out to be a tool that inspires the students' project work, while promoting a critical look at the relationship of the themes of the archive projects and the work with data. Therefore, the archive is a didactic tool for the teacher who makes the spectrum of the projects known, and

for the students who consult it looking for references. The filters proposed in the archive conduct the consultation promoting a critical look at the work with data that each project circumscribes.

The archive has also been presented to diverse activists in informal and non-academic contexts, receiving recognition particularly in two respects: 1) exposing the potential that exists in the work between communication designers and activists; 2) and showing a variety of designerly means - which are not always easily imaginable by activists - when envisioning the possibilities of communicating with data. However, it remains to be systematically observed how the archive is an inspirational tool for activists.

Some ways to observe the success or appropriateness of the archive approach might be through interviews with activists who use the data in communications projects. Also, follow up on collaborative work between designers and activists who create alternative data-driven narratives by observing how they consult the archive and practice critical approaches to working with data such as those in the archive.

3. An overview of data-driven alternatives narratives with visualizations

Data-based narratives that use visualizations are the result of a series of practices mediated by various data structures and which need closer observation. To this end, we provide an overview of the projects based on the information that was possible to collect. Following a feminist approach to data visualization (D'Ignazio & Klein, 2016), the project collection is analyzed in four aspects: Who are the people behind the projects? What are the themes they propose? What kind of data sources and data structures do they work with? What are the aesthetic practices that they try to engage audiences with through the data? These questions are more concerned with practices associated with bottom-up production than with data or visualization itself.

3.1 Actors and topics addressed

The collected cases include projects that have to do with social objectives that seek to engage audiences through the communication of alternative visions of the world using data in digital platforms. All projects were developed by independent and mainly bottom-up organizations such as self-organized citizen groups, NGOs, independent civil society organizations, researchers. They are non-profit, not private or business sector-oriented. Each project focuses on a particular topic. Topics were manually classified by defining a macro topic and related sub-topics. The five major topics are: Policymaking, Transparency and accountability, Human rights, Memory and archives, and Surveillance. The following diagram maps according to your topics, subtopics as well as representing the number and type of organization involved in each project. observed how the subtopics overlap and cross

one topic with another. This classification seeks to give more entry points to the reading of the projects and how they represent conflicts.

3.2 Data sources and data practices

Assuming that the visualization of data for alternative narratives should promote a critical reflection on the data, it is relevant to observe what practices are embedded in the “social context where data are produced, consumed and circulated” (Gutiérrez & Milan, 2019). Of course, not all practices are visible in the visualizations, but it is possible to deduce the origin of the data (from official sources, collectively elaborated, among others) or the publication of the methodology and the database used.

The archive emphasizes observing how visualization projects for alternative narratives work with the data. There are several questions that can be asked, from do they contain a methodology section that explains how you worked with the data? Do we know who created that data and how? This classification deals with understanding and showing how the data was acquired in each project. Based on the Mirén Gutiérrez classification published in his research *Data Activism and Social Change* (2018), the following categorization is proposed:

- **Appropriate data:** it's about grabbing existing data from other platforms from which there is no access. Scraping is one of the most used techniques.
- **Own research:** from research results that can be measured in data. For this, they use all the creativity in using and creating forms of measurements and measuring devices such as self-built sensors, homemade photo balloons, etc.
- **Existing sources:** produce new analysis from available, but unrelated and unexplored, datasets.
- **Collaboration with other organizations:** collectives, foundations, organizations among others.
- **Crowdsourced:** generate the means to crowdsource citizen-contributed data.
- **Whistle-blowers:** organizations or individuals are recipients of data via whistle-blowers such as leaks.
- **Governmental data but not public:** data delivered directly by an entity such as the government to a particular organization for restricted purposes.

Many of the projects state principles such as transparency and accountability, disclosure of power relations, or the right to open information. It is striking, however, that the vast majority of cases do not put much of these principles into practice through their own data visualizations by means that they don't release the databases used in the visualizations, among other practices. From this can be inferred:

- The weak relationship of open data culture linked to data visualizations.
- The incoherence in the discourse of institutions that use data visualization to subvert the opacity of information by institutions of power.

- The deliberate will not to share data due to other reasons not explicit in the projects.

All three are fairly generic conclusions but they provide first lines of action to foster a critical data culture. The archive aims to contribute from design to a more critical and knowledgeable data culture, so it points its efforts to the first of these stated observations. How design can you contribute to a more critical data culture?

4. Aesthetic practices of alternative data visualizations

Working with data for alternative narratives brings with its aesthetic practices that reformulate the way data is visualized by moving away from the traditional way. A new paradigm aesthetic that seeks to promote questions not only from the final output of the visualization but also from how they are constructed. They expose not only the conflict but also the ways in which the conflict is perceived by disrupting visual components of digital interfaces to propose a new reading in their use and meaning.

Visualizations follow an aesthetic of digital disruption through the re-appropriation and détournement of graphic elements (e.g. use of the pixel), digital languages (e.g. emojis, links, gifs), and re-use of platforms for other purposes (e.g. use of Twitter to create a bots that reproduce a database). These new expressions and ways of counting on data move away from traditional graphical visualizations, proposing more elements that involve the audience with the narratives.

The projects in the collection present a well-defined point of view in relation to the subject matter, which is not always contrary but inquisitive to the hegemonic narratives. There is no intention of being neutral in the way the data-based narrative is approached. The vast majority of the actors behind these projects lucidly assume that the data are not neutral, and neither is their representation. In other words, working with data from its interpretation, representation and communication intentionally moves away from a pure neutral aesthetic that advocates efficiency and parsimony linked to statistical graph design. Visualizations in alternative narratives do not follow Tufte's proposal that 'the design of statistical graphics is a universal matter [...] like mathematics' (Tufte, 2001, p. 10). Instead of proposing a purely analytical representation, they integrate other aspects to narration and representation such as the emotional and playful dimensions. These variables are materialized in the use of visual variables in addition to interactive variables (animation, activation of filters, etc.).

The aesthetic practices of disruption that are observed also integrate an open approach to the representation of uncertainty, to the unfinished, and to the disclosure of how the visualization components. It approaches the aesthetics of imperfection (Saito, 2011), by declaring the appropriation and articulation of meanings, languages and visual tools. These

characteristics that are observed from the visual aesthetics of digital projects are often confirmed by the methodological statement of the projects.

Several of the visualizations in the collection assume hybrid aesthetic characteristics that combine different components: in part it is possible to find characteristics of analytical visualization, in part it is possible to find characteristics linked to an aesthetic of artistic information design, as well as components that come from other areas such as oral history and data journalism.

The projects presented below exemplify the aesthetic practices of appropriation and détournement, disclosure and the unfinished, and uncertainty and imperfection by means of narratives.

4.1 Appropriation and détournement of the digital as a means of new languages

Alternative narrative that proposes the use of digital platforms or the lexicon of a digital platform, to give it a twist and say something completely unexpected. With this kind of narrative there is a double meaning: the alternative story, and what the medium that is being re-proposed means. The contrast of the two is what enhances the irony and the subversion of this type of narrative.

This type of alternative narrative brings together socio-political and techno-political elements. As mentioned above, the re-appropriation and re-proposal of digital tools are practices that have been carried out in social movements in recent years. They are also directly related to the principles of open-source culture and tactical media.

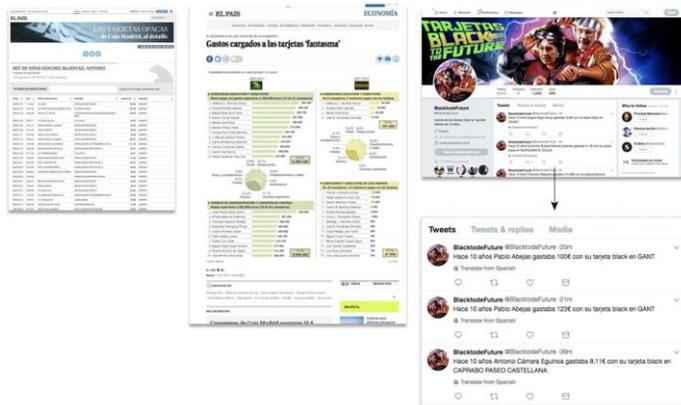


Figure 2. *Tarjetas Black to de Future: A Twitter bot that tells micro stories of the executives of Caja Madrid-Bankia through the expenses made with Black cards 10 years ago. Each tweet*

is a story. Instead of doing charts or aggregating data they use an existing platform (familiarity) for publishing the unduly expenses of the politicians.

Within the context of Spanish 15M, a leak was revealed with information of embezzlement and public money by Spanish politicians. The leak was a large database detailing which politician spent how much, where and when. Montera34 developed a Twitter bot (@BlacktotheFuture) which tweets every time one of the directors spent money using the black cards 10 years ago. People who follow the account could receive a Twitter notification of one of these stories. The project's aim is to reveal the cheekiness use of black-not transparent money by the authorities through a "in a day like today, 10 years ago" narrative which helps people to realize the lifestyle and irresponsibility of their actions. Dosing the contents of the leak in a time frequency frame that the audience could associate to everyday life actions, increases the sensibility of the crime. The choice of Twitter as the medium increased the "everyday life" perception of a crime that happened 10 years ago as something normal. Instead of analyzing aggregate data, Montera34 chose a different approach to data: small data in doses to reveal the silent crime (small data for mini-narrative in a one tweet dimension).

4.2 Disclosure and the unfinished

"El caso Ayotzinapa" is a project by Forensic Architecture, Equipo Argentino de Antropología Forense, and Centro Prodh. They reconstruct spaces of conflict using the residual evidence of the intense destruction produced by explosions, bullet holes in walls, images captured with closed-circuit TV cameras, amateur and professional photographs and videos, audio recordings and the architecture of the city among other things as pieces of evidence. Their work follows a forensic aesthetics and methodology using a "raw" visual language leaving the same modelling tools with which they reconstruct their research. There is an evident intention not to make up or perfect the technical elements used, making the process of creating the visualization transparent.

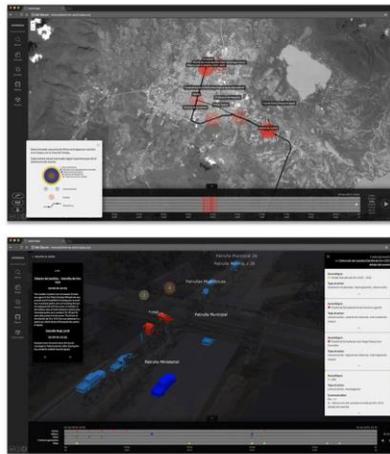


Figure 3. Screenshots from the “Plataforma Ayotzinapa” exploration interface. Data and evidence was positioned in time and space. The interface allows the user to navigate through time filtering by victims, security forces, government workers, alleged organized crime members, among others. There are also filters to highlight actions, objects and scenes. Retrieved from www.plataforma-ayotzinapa.org in June 2019.

As a result, narratives present an alternative to those constructed by the dominant power structures using data. “Plataforma Ayotzinapa” like other Forensic Architecture projects, is first and foremost a tool that takes a side in the conflict itself, meaning that its political stance includes the redistribution of power by giving knowledge back to individuals who previously were relegated to just being spectators. Once the spectator gains knowledge they become the audience, taking a position on the matters exposed. The visual models that reconstruct and reshape the data are the political tools that turn the spectators into the audience.

4.3 Uncertainty and imperfection

“U.S. gun deaths” in 2010-2013 is a project led by Periscope in which depicts a database of victims in the United States dead by gun accidents. In orange their lifelines are represented and in grey the hypothesis about how long they would have lived. Visualization is not intended to be an analytical representation, nor does it hope to demonstrate a pattern in the victims' deaths. It proposes to visualize with uncertainty how many years of life were lost by the victims, reinforcing the emotional aspect of what the data represent.

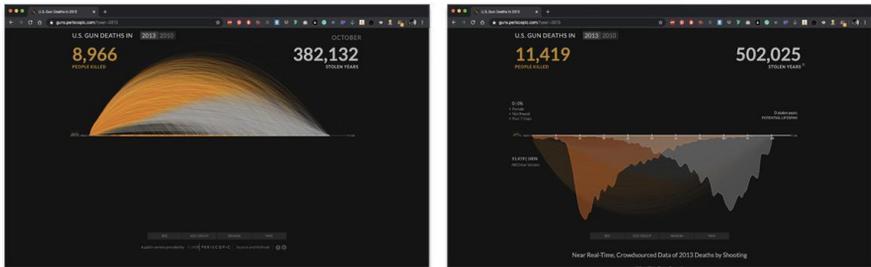


Figure 4. Details from screenshot of the “U.S. gun deaths in 2010-2013” project by Periscope. The visualization shows a hypothetical timeline for the bullet victims. The line is a hypothetical that reinforces the years of life lost. Retrieved from <https://guns.periscope.com/> in June 2019.

5. Conclusions

The paper presents the archive as a way of presenting the state of the art of bottom-up practices of data-driven alternative narratives, raising knowledge and awareness about the type of projects, actors who mobilize them, the issues they address, and the ways in which they work with the data. It seeks to serve as a source of inspiration and dissemination for designers and activists by promoting critical thinking over data when it comes to design data-driven alternative narratives. The archive reveals aesthetic practices, characteristic of this type of data-driven counter-narratives that are different from other types of data-driven narratives.

The paper also highlights how alternative data-based narratives dissociate themselves from traditional analytical data visualizations, proposing new ways of storytelling. Based on cases from the archive collection, it shows how data practices from below are promoting new aesthetic practices that address unconventional aspects in data visualization design. The representation of what is uncertain, of the hypotheses propose new readings to the data bringing them closer to people's experiences, incorporating emotional components to them. Appropriation practices are also an invitation to rethink what is or is not a data visualization that allows audiences to become involved with the phenomena represented. Finally, the design of an uncanny aesthetic emphasizes content and process rather than layers of makeup that hinder understanding in the construction logics of visualizations.

Therefore, it is urgent to start creating a data culture that is conscious of the politics that surround data. It is essential that as data users we start being aware and more critical of the top-down structures that manage, control and collect huge amounts of data and information from the datafied society. Bottom-up structures (individuals, collectives, civil organizations) need to begin to shape knowledge and take control of the implications of data. It is also

important to encourage the alternative use of data, questioning the modus operandi of things, creating spaces of confrontation that promote the active participation of individuals in democracy.

References

- Alcazan, @axebra, SuNotissima, Quodlibetat, Monty, A., TakeTheSquare, Toret,J., Levi, S. (2012). Tecnopólitica, internet y R-evoluciones: Sobre la centralidad de redes digitales en el #15M. Barcelona: Icaria.
- Baack, S. (2015). Datafication and empowerment: How the open data movement re-articulates notions of democracy, participation, and journalism. *Big Data & Society*, 2(2),. <http://doi.org/10.1177/2053951715594634>
- Briones, M. de A. (2019). A taxonomy of data visualization projects for alternative narratives. In L. Rampino & I. Mariani (Eds.), *ADVANCEMENTS IN DESIGN RESEARCH 11 PhD theses on Design as we do in POLIMI* (pp. 163-183). Milano: FrancoAngeli. Available at http://ojs.francoangeli.it/_omp/index.php/oa/catalog/book/376
- Castells, M. (1997). *The power of identity*. Malden, MA: Blackwell.
- D'Ignazio, C; & Klein, L. (2016). *Feminist Data Visualization*. In *Proceedings Workshop on Visualization for the Digital Humanities (VIS4DH)*, IEEE Institute of Electrical and Electronics Engineers, Baltimore, Maryland, 23-28 October.
- DiSalvo, C. (2012). *Adversarial Design*. Cambridge, Massachusetts: The MIT Press.
- Fuad-Luke, A. (2009). *Design Activism Beautiful Strangeness for a Sustainable World*. London: Earthscan.
- Gutiérrez, M. (2018) *Data activism and social change*. PALGRAVE PIVOT. doi:10.1007/978-3-319-78319-2
- Gutiérrez, M., & Milan, S. (2019). Playing with data and its consequences. *First Monday*, Volume 24, Number 1 - 7 January 2019. doi: <http://dx.doi.org/10.5210/fm.v24i1.9554>
- Mauri, M., Colombo, G., Briones, M.d.l.Á., & Ciuccarelli, P. (2019). Teaching the Critical Role of Designers in the Data Society: The DensityDesign Approach. In N. A. G. Z. Börekçi, D. Ö. Koçyıldırım, F. Korkut, & D. Jones (Eds.), *Proceedings of DRS Learn X Design 2019: Insider Knowledge* (pp. 183–195). Ankara, Turkey: METU Department of Industrial Design. <https://doi.org/10.21606/LEARNXDESIGN.2019.12046>
- Milan, S., & Gutiérrez, M. (2015). Citizens' Media Meets Big Data: The Emergence of Data Activism. *Mediaciones*, 14, 120-133.
- Tufte, E. R. (2001). *The visual display of quantitative information* (2nd ed.). Cheshire, CT: Graphics Press.
- Tufte, E. R. (2006). *Beautiful Evidence*. Cheshire: Graphics Press.

Saito, Yuriko (2017). The Role of Imperfection in Everyday Aesthetics. *Contemporary Aesthetics*, 15 (1). Retrieved November 27, 2019, from <https://contempaesthetics.org/newvolume/pages/article.php?articleID=797>.

Sack, W. (2011). Aesthetics of Information Visualization. In M. Lovejoy, V. Vesna & C. Paul (Eds) *Context Providers: Conditions of Meaning in Media Arts* (pp 123-149). Bristol and Chicago: intellect.

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