

Technopolitics in the Age of Big Data: The Rise of Proactive Data Activism in Latin America

Miren Gutierrezⁱ & Stefania Milanⁱⁱ

For inclusion in *Networks, Movements & Technopolitics in Latin America: Critical Analysis and Current Challenges*, edited by F. Sierra Caballero and Tommaso Gravante

Datafication, or the ‘ability to render into data many aspects of the world that have never been quantified before’ (Cukier & Mayer-Schoenberger, 2013, p. 29), harbors both threats and opportunities for civic engagement. While it contributes to ease governmental and corporate surveillance as well as repression of grassroots movements, datafication offers novel prospects for advocates and citizens alike. This chapter explores the multiple ways in which progressive individuals and organizations employ ‘big data’ and data infrastructure such as databases and algorithms for social change. These emerging sociotechnical practices of engagement with data can be seen as manifestations of data activism, or the encounter of data and data-based narratives and tactics with collective action. Data activism embraces elements of collective action, communication, journalism and citizens’ media, while being anchored to data and software, their availability or lack thereof—and this connection deeply shapes the tactics, structures and processes of data activist initiatives. It represents a *form of technopolitics from the ground-up*, which sees people’s active engagement with technologies as a pathway to empowerment, equal participation and action. It offers citizens the opportunity to exercise their democratic agency in the age of datafication (Milan & van der Velden, 2016), and has the potential to challenge the traditional way of understanding and doing politics today (Milan, forthcoming). We identify two forms of data activism: proactive data activism, whereby citizens take advantage of the possibilities offered by big data infrastructure for advocacy and social change, and reactive data activism, namely grassroots efforts aimed at resisting massive data collection and protecting users from malicious snooping (Milan & Gutierrez, 2015).

The Latin America continent nurtures some of the most cutting-edge, transnational examples of data activism. The increasingly fast access to data infrastructure, the relatively straightforward access to funds for data journalism and

ⁱ University of Deusto

ⁱⁱ University of Amsterdam and University of Oslo

its prestige have fostered the emergence of organizations that depict themselves as ‘data journalism’ endeavors, even if they do not just offer journalistic products but also training and advocacy. InfoAmazonia (infoamazonia.org), for example, is a network of organizations, citizens and journalists from the eight countries of the endangered Amazon region. It leverages journalism and data infrastructure to generate alternative news and analysis, maps, investigative stories, advocacy content and reports on the status of the biggest tropical forest in the world. Since its launch in 2012, InfoAmazonia has been training journalists, campaigners and communities to use satellite imagery and collect data related to carbon monoxide, forest fires, water quality and level, deforestation, wildfires and other forest activity, as well as publishing information and interactive maps. As part of the initiative, the organization also advocates for open data, deploys sensors and creates its own mobile applications, generating crowdsourced data and cartography. Its ultimate goal is to impede deforestation and wildfires *by promoting data transparency* on the Amazon.

This chapter combines political sociology with media studies (and alternative media and journalism in particular) in view of examining proactive data activist initiatives in Latin America, taking InfoAmazonia and its deployments as case studies. It contributes to our understanding of technopolitics as a way to reinterpret reality, empower people, facilitate action, and challenge the established social norms embedded in our understanding of technology and society. Further, it helps us rethinking how data can restructure social reality, and in particular civil society action. Data were collected through desk research and qualitative interviewing.

The chapter is structured as follows. First, we explore the notion of data activism, situating it in the Latin American context by means of concrete cases. Second, we examine closely the case study and reflect on the specificities of the Latin American data activism scene, including the preference to be seen as ‘journalists’ as opposed to ‘activists.’ Third, investigate the different approaches to data generation within data activism and the replicability of the model beyond Latin America.

The alternative public spheres of data activism in Latin America

Data activism represents a form of technopolitics in its own right, whose emergence is triggered by the unprecedented availability of data and access to data infrastructure, but whose life cycle and strategies draw from existing movements and sub-cultures, including but not limited to open source software developers (Coleman, 2013),

investigative journalism (Sampedro, 2014), citizens' media (Rodriguez, 2009) and hacking (Levy, 1968). In Latin America, data activism branches out in particular sub-forms and specializations around the type of data and of the kind of activity practitioners engage on. Using InfoAmazonia as a pivotal case, we review relevant data-based initiatives, classifying data activism in subcategories and prototypical cases according to their goals, means and methods. We observe how these contribute to change our understandings of technology, knowledge, social change and power.

Proactive data activism projects trigger two main emancipatory processes: they contribute to generate alternative digital public spheres for equal participationⁱⁱⁱ, and alter the relationship between citizens and automatized data collection. InfoAmazonia's 'Annual cycles of the indigenous peoples of the Rio Tiquié' project^{iv} exemplifies how alternative public spheres are created through direct engagement with data infrastructure. Based on crowdsourced data, it consists in a circular calendar that records the life of indigenous communities in meticulous detail. The visualization includes several layers of information that, for instance, superimposes time measured in the Gregorian calendar and time measured in the communities of the northwest Amazon's calendar, which constitutes an alternative way of measuring time and space. For the Tukano people, a group of indigenous people in the Northwestern Amazon, the year is not divided in four seasons, and rainy periods are called *poero* (winter) (ibid.). According to astronomer Cardoso, who studied the project, 'it is not a translation, but the creation of a third space of dialogue, where it is clear that we are constructing a conversation area, an area of shared growth' (2015). This space of dialogue corresponds to the idea of communicative action capable of connecting two normative systems that are able to relate to each other in an alternative public sphere. It offers a different version of what is happening in the Amazon to the general public, as well as to anthropologists, journalists and nongovernmental organizations (NGOs) working on indigenous rights and issues. In doing so, it generates an alternative digital public sphere 'bypassing mass media gatekeepers to communicate directly with the broader public' (Hackett & Carroll, 2006, p. 47). The calendar contributes to bring to life *subaltern counterpublics* by and for marginalized groups who form their

ⁱⁱⁱ Here we refer to the definition of public sphere as it emerged in the writings of Habermas (1973) but especially Fraser (1990).

^{iv} See <https://ciclostiquie.socioambiental.org/en/index.html>. Rio Tiquié is a tributary of the Vaupés River in the upper Negro basin of the Amazonas.

own public sphere as a challenge to hegemonic views (Fraser, 1990). It represents an attempt to circumvent the predominant narratives, since it does not only constitute an alternative channel for content, but also for *alternative ideas and value systems*.

Furthermore, data activism approximates citizens' media as Rodriguez defined it (2001): both contribute shape a 'politics of the quotidian' that alters the routine association between citizens and automatized data collection, setting in motion a transformative and empowering process (Milan & Gutierrez, 2015). An example of this process can be found in Rede InfoAmazonia, a project measuring the quality of water for human consumption in the West of Pará. The initiative connects via mobile technologies a network of eighteen pilot sensors (currently being configured) 'capable of monitoring physical and chemical parameters that help indicate whether the water is contaminated' (Rede InfoAmazonia, 2016). The idea is to produce hourly updates notifications about the quality of water in communities of Belterra, Mojuí dos Campos and Santarém. Instead of waiting for authorities to generate useful information on water quality, this project produces its own water measurements and alert systems, so communities can act on this vital information that they cannot get anywhere else. Local communities are at the core of this effort, intervening from the collection of the data to the final use of the information generated by the data. As a result, these communities' 'routine association' with automatized data collection is fundamentally altered. Paraphrasing della Porta and Diani (2006), InfoAmazonia is disruptive in that it obstructs the normal course of events. Gathering data and publishing maps—a process of coding and recoding of information, and its synchronization—were once the exclusive privilege of the state. What Meier argues for Ushahidi platform, could be applied to InfoAmazonia as well: it serves to democratize *dataveillance* by crowdsourcing and providing 'a participatory digital canvas' (2011), or an alternative public sphere.

InfoAmazonia, between journalism and advocacy

The environment is possibly one of the best examples of how global trends affect local communities. It embraces a number of elements that make it especially critical for activism: environmental degradation and loss act in combination with other global factors, such as climate change or poverty, to impact on vulnerable populations and their human rights (Shepherd et al., 2013). Furthermore, there is an apparent abundance of data on environmental issues. Deforestation in the Amazon is exactly at

the crossroads of these phenomena: apart from being impacted by climate change, it contributes greatly to it and directly affects many indigenous communities in the region. The Amazon rainforest—the most pristine ecosystem on Earth—stretches across eight countries and harbors millions of plant and animal species, but it is the backdrop of a human security crisis caused by both climate change and the mismanagement of natural resources (Kakabadse, 2015). As habitat destruction trends interact with climate change, the concern is that the Amazon will be caught up in a set of ‘feedback loops’ that could dramatically speed up the pace of forest loss and degradation, and bring it to a point of no return (ibid.). Despite the important role the rainforest plays in the global environment and the explosion of big data, only scattered information is accessible about threats to its existence, especially information that caters for local communities, while new megaprojects are underway, such as highways, hydroelectric dams, and oil fields and pipes.

Brazilian environmental journalist Gustavo Faleiros, using his Knight International Journalism Fellowship, explored the concept of ‘geojournalism’ by launching InfoAmazonia at the United Nations’ Conference on Sustainable Development in Rio de Janeiro in 2012 (Faleiros, 2012)^v. ‘We became geojournalists, mixing geographical information with journalism, an expression which is now being considered systematically by organizations such as the International Journalists Network’ said Faleiros, interviewed for this study. According to Faleiros, geojournalism—which should be considered an independent branch of data journalism, because it relies on a specific usage of data—is a story-telling practice that merges layers of geo-tagged narratives on maps with data as substantiation and communication tool for journalistic stories. We argue that, when geojournalism crosses the threshold of advocacy practices, like InfoAmazonia’s deployments often do, it becomes geoactivism—that is, a form of proactive data activism and a technopolitic endeavor. Paraphrasing Faleiros’ notion of geojournalism, we define geoactivism as the practice of creating campaigns and advocating using geolocalized data and interactive maps (Faleiros, 2013).

Proactive data activism’s analytic, political, collaborative and rank-and-file nature draws from other practices, such as investigative and advocacy journalism, and

^v InfoAmazonia is supported by the Earth Journalism Network (a Internews’ project), the Brazilian environmental news agency O Eco, Climate and Development Knowledge Network, Avina and Skoll Foundation.

citizens' media. InfoAmazonia is a self-proclaimed journalistic project that, nonetheless, mobilizes all the elements of a data activist project: it is analytic because it relies on data infrastructure and analysis; it is political because it explicitly takes sides with respect to the biodiversity and human development in the Amazon region; it is collaborative because it summons the capacities of volunteering journalists and campaigners from different countries; and it is participative because it puts everyone—volunteers, users and reporting witnesses—to work and collaborate on equal footing.

InfoAmazonia does not campaign directly in favor of protecting ecosystems or tribes in a conventional way. Instead it focuses on data transparency, with the goal of conserving forests via open data. InfoAmazonia generates and publishes its own articles denouncing the lack of access to data on forest ecosystems. 'That data should be available through the Brazilian Environmental Agency. For example, when the government changed the rules on how to publish deforestation alerts to report them less frequently, I wrote an article saying alerts should be published on a monthly basis, not every four months', Faleiros explained in an interview.

InfoAmazonia started with a workshop for journalists who wanted to learn how to geo-tag stories using spreadsheets such as Google Fusion Tables, and how to use data applications, such as Google Earth and MapBox, for storytelling with data, satellite photos, maps and graphics (ibid.). MapBox built the original platform, which was improved by two studios in Sao Paulo, Memelab and Cardume (whose developers had been trained by MapBox/Development Seed) (Faleiros, 2013). The news aggregator of InfoAmazonia now works on an open source WordPress theme developed specifically for using the MapBox API, allowing journalists, campaigners and the public to post and geolocate stories directly on InfoAmazonia maps (ibid.). InfoAmazonia has added functionality to its site with a distribution widget, which allows journalists and NGOs to customize their own maps and data layers. The website currently boasts 'more than 30 layers of georeferenced data ready to be used on interactive maps' (InfoAmazonia, 2015). Users can research aggregated stories, which can be filtered by date, publisher and specific maps. All maps have location search tools as well, and there is a layer switcher that allows users choose between viewing protected areas and viewing indigenous land. Journalists and contributors are expected to produce more maps, keeping pace with the news, allowing, through a content management system, an integration with the data layers hosted by MapBox

(Faleiros, 2013). InfoAmazonia records, for example, attacks against indigenous peoples, how the Yanomami people are being contaminated by mercury from mining and the trail that drought, fires and deforestation leave in the region. The goal is to track environmental threats to the Amazon region, such as deforestation and wildfires, and displaying them on maps. These maps can be understood as a knowledge and production tools that can represent power relations, social and political processes, events, places, and mutable interactions and networks (Gutierrez, forthcoming 2017). For Faleiros, maps are in fact a 'new language' that can be understood by lay users as well: 'Maps are everywhere: in our cars, in our telephones, on our screens.' InfoAmazonia makes a difference by creating maps that represent alternative power relations, social and political processes, events, places, interactions and networks in the Amazon region.

In addition to aggregating stories and creating maps by using interactive photo galleries and video mashups as a storytelling tool, InfoAmazonia generates its own stories. Besides, the initiative aims at providing resources, training and skills so journalists and campaigners can make data analysis and visualizations a part of their action repertoires so they can tackle the complexity found in human development and environmental degradation in the Amazon region. 'Our model is doing stories and maps and other content, and approaching governments as a non-governmental organization, asking them open their data on forests. We are very vocal about this,' said Faleiros.

Proactive data activists fulfill at least four roles. They are producers of journalistic outputs. They are 'skills transferers', who provide the skills to facilitate data activism. They are 'catalysts' who provide the resources for others to act upon reality by engaging with data and data infrastructure. Finally, they perform the role of the actual data activists, who are 'geoactivists' in most cases (Gutierrez, forthcoming 2017). Judging from its action repertoires, InfoAmazonia could be catalogued as a hybrid example combining a producer of journalism, skills transferer organization, and a geoactivist organization. Hybridization is a trait found in many data activist organizations as well (ibid.). Data activists often produce journalistic outputs, advocate and work with data-producing citizens, while generating research, analysis, visualizations and maps, without qualms about trespassing in others' territories, mixing all sorts of methods, content and media.

The hybrid nature of data activism in Latin America allows for multiple souls and denominations to exist. Yet, self-definition options appear more restricted. As the example of InfoAmazonia suggests, no matter how hybrid, organizations prefer to either be publicized as or cater for journalistic enterprises, as opposed to being classified as ‘activists’. Latin American data journalism is in fact experiencing an ‘unstoppable ascent’ (Blejman, 2013), supported by growing number of donors and enablers prepared to fund it, including, among others, the International Center for Journalists, the International Consortium of Investigative Journalists, Knight Foundation and Knight-Mozilla OpenNews program (Blejman, 2014). Some of these media-oriented organizations are also stepping in the world of data activism. In Mexico, Morlan, a private company working with journalistic organizations, such as *El Universal*, in joint data projects, declares it is dedicated to data analysis for social good (2016). Training-focused *Escuela de Datos* (School of Data) has a strong presence in Latin America, including Argentina, Bolivia, Costa Rica, Ecuador, El Salvador, Guatemala, Mexico, Peru and Paraguay. Most of its projects and training tools are addressed specifically at journalists, but its website caters for activists and educators too (Escuela de Datos, 2016). Within the Spanish-speaking world, the situation in Spain, on the contrary, is quite the reverse. Amid media predicament, few mainstream organizations practice data journalism systematically, and in the absence of data journalism, civil society organizations are producing journalistic data outputs. An example is ‘España en llamas’ (espanaenllamas.es), an project launched by Civio(civio.es/en). While InfoAmazonia produces information on forests from the lectern of journalism, Civio publishes data-based information around issues such as corruption and transparency, and offers it to journalists and campaigners. España en llamas—specifically focused on forest fires—produces information as an organization of the civil society. In Spain, ‘while conventional mainstream media are too busy facing crises, the new digital media are too busy exploring business models than can sustain their activities, which are not based on investigative or data journalism,’ said Ignasi Carreras, an expert on third sector organisations and Director of the Social Innovation Institute of ESADE business school interviewed for this study.

In other words, the entry point for proactive data activism in Latin America seems to be journalism, which enjoys a higher degree of prestige as compared to activism. In fact, news media organizations in Latin America are among the most cherished institutions. According to *Latinobarómetro* 1995-2015, the media are

among the most trustworthy organizations, with radio ranking second in credibility, television, third, and print media, sixth. In comparison, political parties are placed in twelfth position (2015). Meanwhile, in Spain, 53 percent of users do not think that the media are independent from unwarranted political influence, and another 51 percent are also concerned about their economic dependence on advertisers, owners and creditors.

Data generation in data activism and its replicability

The way data activists generate, acquire or access data is in many cases distinctive and allows for the classification of data activist initiatives according to a number of parameters. Data activists obtain data from whistle-blowers, resort to opened public data, facilitate and gather crowdsourced data, appropriate data, and finally ‘datafy’ primary research or generate their own data via sensors and other data-capturing devices (Gutierrez, forthcoming 2017). From the perspective of the origin of the data, the InfoAmazonia platform is *sui generis*, as it employs three of these methods to produce its geolocalised stories, advocacy and training. Firstly, it uses mainly satellite feeds and publicly available data to monitor the region (Faleiros, 2013). Secondly, it also enables the generation of alternative data for some specific projects—see for example Rede InfoAmazonia’s network of sensors to generate data on water quality (Rede InfoAmazonia, 2016). The hardware is installed in water tanks and surface water springs, and detects changes in water characteristics from inadequate disposal of household waste, industrial and heavy metals to help distinguish the drinking water from contaminated water. The goal is to provide real-time analysis results, sending notifications to users via SMS. Thirdly, InfoAmazonia also crowdsources data. The above mentioned ‘Annual cycles of the indigenous peoples of the Rio Tiquié’ project is based on several years of diaries updated on a daily basis by indigenous peoples with data on the day-to-day life of the community and the activities of its residents, such as news about hunting and fishing, agricultural activities, the most common illnesses, festivities and community rituals, as well as other information about their circumstances. InfoAmazonia crowdsources data and information from two kinds of sources: it gathers and visualizes data provided by local communities, and it aggregates stories and reports from journalisms and activists working on issues related to the Amazon region.

This third instance—i.e. projects utilizing crowdsourced data—is particularly interesting because of the empowering process that it triggers when people become reporting witnesses by taking a stand and acting upon a situation. This bottom-up data production process inverts the ‘profoundly asymmetrical, political economic dimensions of the production and circulations of data,’ and draws from the ‘tremendous untapped potential in the general intellect and technical practice... of the data generator’ (Pybus, Cote, & Blanke, 2015, pp. 1–8). In other words, the ability to access to one’s own data, ‘not only augments the agency of the individual, but of the collective user’ (ibid.). This benefit, which can be read as the McLuhanian agency augmentation of the individual and collective user, does not happen only with the generation of data, but also with any acquisition and employment of useful data. Armed with data infrastructure and data-based knowledge—‘extensions of man’ (McLuhan, 1994, p. 103)—individual and collective users get involved in technopolitics, in order to generate ‘parallel discursive arenas where members of subordinated social groups invent and circulate counterdiscourses to formulate oppositional interpretations of their identities, interests and needs’ (Fraser, 1990, p. 67).

Since InfoAmazonia’s debut in 2012, the number of sibling sites has grown using the same model, data acquisition techniques and tools, but focusing on different geographic areas and themes (Shubert, 2014). It has also generated the GeoJournalism Handbook, a set of online tutorials for journalists and practitioners about how to integrate data infrastructure into their repertoires of action. The latest of the sibling projects is Ekuatorial (ekuatorial.com), which provides news, maps and visualizations on the oceans, forests and disasters of Indonesia. Built in collaboration between the Society of Indonesian Environmental Journalists and the Earth Journalism Network with technical assistance from ((o))EcoLab (lab.oeco.org.br), ‘Ekuatorial takes the lessons learned from InfoAmazonia and adapts them to the Indonesian context’ (ibid.). As with InfoAmazonia, one of the most valued features of the project is its ability to provide alternative narratives, and to ‘amplify on-the-ground reporting... since published stories are location specific and often come from remote areas that may be outside mainstream attention’ (ibid.). Other examples include Oxpeckers Center for Investigative Environmental Journalism, a group of South African journalists who are tracking rhino poaching in national parks, whose information is available nowhere else. Land Quest (landquest.internewskenya.org), launched

by Internews Kenya and built by an international team of investigative reporters, is aimed at strengthening the capacity of Kenyan journalists to report on development, aid, extractive industries and private financing in two resource-rich regions in Kenya. The success of InfoAmazonia's model outside Latin America shows how adequate geojournalism can be as the frontage of environmental and development advocacy in certain contexts, and how data-based technopolitics are being employed to advance the cause of conservationism and human rights.

The technopolitics of data activism: Conclusions

InfoAmazonia does different things: it generates alternative maps (sometimes after independently producing the data by means of sensors); it aggregates geolocated stories and creates independent stories, making them available and searchable; and it trains others to do the same. InfoAmazonia also advocates for open data. What can we learn from this case study, about data activism in Latin America and beyond?

Technopolitics can be understood as technology-enhanced politics, that is, the ability 'to envision and enact political goals through the support of technical artefact' (Gagliardone, 2014, p. 3). Technology, and more concretely information and communications technologies (ICTs), and media have always gone hand in hand with political power (Innis, 1986). In effect, technology is a highly politicized matter; a variety of political positions have been fashioned around it, from those held by the technoconservatives and technoproggressives to those held by the transhumanists and several 'odd coalitions' between left-wing and right-wing technoconservatives, on one side, and technolibertarians and technodemocrats, on the other (Hughes, 2006, pp. 285, 303).

What seems to be clear is that artefacts have inherent politics (Winner, 1980, p. 121), and that data infrastructure—including databases, algorithms, and storage and systems needed to obtain, curate, analyze and visualize them—are no exception. Big data are gathered and produced in a concrete social and political context, acquired with a particular method from a specific source or sources, cleaned, managed, stored and analyzed with a given approach, and framed by a set of underlying politics and ideology. And that is why the expression 'raw data' is an oxymoron (Gitelman, 2013). Until recently data infrastructure and the visual representation of strategic information in the same way as publishing maps have been the exclusive privilege of the state and big corporations, and therefore reflect their biases, gaps and ideologies. The power

relations of society are designed into technologies, and technologies selected for, developed by and designed under the logic of corporations and the military hearten hierarchy, centralization and the concentration of power (Winner, 1986). Winner alerts us about ‘mythinformation’ and the deceptive emancipating power of some technologies (ibid.).

However, technologies can free and empower people as well. ICTs can augment freedoms and civil rights; they can empower people, strengthening the ability of people to participate—in a Habermasian sense. They can strengthen deliberation, negotiation and ultimately governance (Abdul Rahim, Waldburger, & Siegenthaler Muinde, 2005). The example of InfoAmazonia shows how alternative maps and narratives on negative impact in the Amazon region and attacks against indigenous peoples are being generated by ordinary users submitting stories, reports and data, creating debates and relevant information that are not available anywhere else, and spawning alternative public spheres for political positioning and action. Adopting a critical engagement with data, these data activists ‘function as producers of counter-expertise and alternative epistemologies, making sense of data as a way of knowing the world and turning it into a point of intervention’ (Milan & van der Velden, 2016, p. 5). They challenge and alter the mainstream politics of knowledge and map-making, and reverse the delegation of the work of culture to computational processes—usually controlled by big corporations and governments (Striphas, 2015), by undertaking the responsibility and exercising the freedom of generating data and their analysis, and acting upon it.

Kurban et al. (2016) look at dimensions of technopolitics, including context, purpose, scale and direction, actors and synchronization systematizing informal and formal ways of technology-enhanced political practices. Employing these authors’ conceptualizations, InfoAmazonia emerges in the context of an absence of disaggregated and comprehensive information on the Amazon region, with several purposes—including communicative (i.e., it connects people), legal/political (i.e., it enhances participation), organizational (i.e., it facilitates crowdsourcing at several levels), and institutional (i.e., it promotes transparency and openness) goals. InfoAmazonia also establishes a dialogue across political dimensions, from the local, i.e. indigenous communities, to the global, i.e. global crises such as climate change and environmental loss. It also boosts the political power of both the individual and the network political actors. Finally, it also provides a multilayered space, literally,

when relational, cultural, historical, chronological and identity layers get synchronized in InfoAmazonia's maps (Kurban et al., 2016).

In conclusion, proactive data activism is a form of technopolitics that seeks social and political goals through the support of data infrastructure and ICTs (Gagliardone, 2014, p. 3). The example of InfoAmazonia—a Brazil-based organization—highlights some of the Latin American-specific traits of proactive data activism. A growing access to data infrastructure, the availability of funding, and the high standing of journalism in Latin America have produced a thriving expansion of data journalistic enterprises that makes journalism a perfect entry point for data activism. InfoAmazonia presents itself as a journalistic organization, but it does much more. Combining crowdsourced and public data, geojournalism and advocacy, it generates alternative knowledge and maps of the imperiled Amazon region, creating new public spheres and establishing a dialogue between the local and the global, western and indigenous culture, and local communities and journalists and activists. In doing so, InfoAmazonia shows a high degree of hybridization, mixing action repertoires, data generation methods and goals, with special emphasis on crowdsourced, 'alternative' data and narratives. Its success is contagious and influential, to the point that other like-minded organizations are being set up in some African countries, namely South Africa and Kenya, where funding, prestige and access allow it.

InfoAmazonia also signals the emergence of a new epistemic culture as a way of making counterdiscourses that challenge the mainstream interpretations of reality (Milan & van der Velden, 2016). This new epistemic culture propelled by data activism—a form of technopolitics—changes 'the way we relate to knowledge and its validation, how we understand and filter the world around us as well as our experiences' (p. 4). Ultimately, InfoAmazonia and the emergence of like-minded organizations herald the arrival of unprecedented ways of regarding and exploiting data infrastructure for social change. Only the future will tell whether this is in fact a new, promising and sustainable venue for Latin American activism connecting advocacy with data and technology.

References

Abdul Rahim, R., Waldburger, D., & Siegenthaler Muinde, G. (Eds.). (2005). *Access, Empowerment & Governance Creating a World of Equal Opportunities with*

- ICT*. Kuala Lumpur: Global Knowledge Partnership (GKP). Retrieved from http://gkpfoundation.org/media/images/reports/133-Access_Empowerment_Governance_5.pdf
- Blejman, M. (2013). *The Unstoppable Ascent of Data Journalism in Latin America*. Retrieved from <http://www.icfj.org/blogs/unstoppable-ascent-data-journalism-latin-america>
- Blejman, M. (2014, July 21). Five data journalism projects win funding from Latin American startup accelerator HacksLabs. Retrieved December 12, 2016, from <http://www.icfj.org/blogs/five-data-journalism-projects-win-funding-latin-american-startup-accelerator-hackslabs>
- Cardoso, V. (2015). *Ciclos Anuais dos Povos Indígenas no Rio Tiquié*. Retrieved from <https://www.youtube.com/watch?v=Z11qly8DW48>
- Coleman, G. E. (2013). *Coding Freedom: The ethics and aesthetics of hacking*. Princeton and Oxford: Princeton University Press.
- Cukier, K., & Mayer-Schoenberger, V. (2013). The Rise of Big Data: How it's Changing the Way We Think about the World. *Foreign Affairs*, 92(3), 28–40.
- della Porta, D., & Diani, M. (2006). *Social Movements. An Introduction* (2nd ed.). Oxford: Blackwell.
- Escuela de Datos. (2016). La comunidad. Retrieved December 12, 2016, from es.schoolofdata.org/acerca-de/la-comunidad/
- Faleiros, G. (2012, June 18). InfoAmazonia: A Visual and Graphic Exploration of the World's Largest Rainforest. Retrieved from <http://www.icfj.org/blogs/infoamazonia-visual-and-graphic-exploration-world%E2%80%99s-largest-rainforest>
- Faleiros, G. (2013, February 4). How InfoAmazonia is taking data storytelling to the next level. Retrieved from <https://ijnet.org/en/blog/how-infoamazonia-taking-data-storytelling-next-level>
- Fraser, N. (1990). Rethinking the Public Sphere: A Contribution to the Critique of Actually Existing Democracy. In *Social Text* (pp. 56–80). Duke University Press.
- Gagliardone, I. (2014). “A Country in Order”: Technopolitics, Nation Building, and the Development of ICT in Ethiopia. *Information Technologies & International Development*, 10(1), 3–19.

- Gitelman, L. (Ed.). (2013). *Raw Data Is an Oxymoron*. Cambridge, Massachusetts; London, England: The MIT Press.
- Gutierrez, M. (2017). *Bits and Atoms: Proactive data activism and social change from a critical theory perspective*. University of Deusto, San Sebastian.
- Habermas, J. (1973). *Theory and Practice*. Cambridge: Beacon Press.
- Hackett, B., & Carroll, B. (2006). *Remaking Media - The Struggle To Democratize Public Communication (Communication and Society)*. New York, London: Routledge.
- Hughes, J. J. (2006). Human Enhancement And The Emergent Technopolitics Of The 21st Century. In W. S. Bainbridge & M. C. Roco (Eds.), *Managing Nano-Bio-Info-Cogno Innovations: Converging Technologies in Society* (pp. 285–307). Retrieved from http://genetic-enhancement-pm.weebly.com/uploads/1/4/9/2/149297/enhancement_technopolitics.pdf
- InfoAmazonia. (2015). The Annual Cycles. Retrieved December 7, 2016, from <https://ciclostiquie.socioambiental.org/en/index.html#cycles>
- Innis, H. A. (1986). *Empire & communications*. Press Porcepic.
- Kurban, C., Peña-Lopez, I., & Haberer, M. (2016). What is technopolitics? A conceptual scheme for understanding politics in the digital age. In *Proceedings of the 12th International Conference on Internet, Law & Politics. Universitat Oberta de Catalunya, Barcelona, 7-8 July, 2016* (pp. 499–519). Barcelona: UOC-Huygens Editorial. Retrieved from http://ictlogy.net/presentations/20160707_can_kurban_ismael_pena-lopez_maria_haberer_-_what_is_technopolitics_conceptual_scheme.pdf
- Latinobarómetro. (2015). *La Confianza en América Latina 1995 – 2015*. Santiago de Chile: Banco de datos en línea. Retrieved from http://www.latinobarometro.org/LATDocs/F00005085-INFORME_LB_LA_CONFIANZA_1995_2015.pdf
- Levy, S. (1968). *Hackers: Heroes of the Computer Revolution*. New York: Dell Publishing.
- McLuhan, M. (1994). *Understanding Media: The extensions of man*. London and New York: The MIT Press.
- Meier, P. (2011, February 10). Theorizing Ushahidi: An Academic Treatise. Retrieved from <https://irevolutions.org/2011/10/02/theorizing-ushahidi/>

- Milan, S. (forthcoming). Data activism as the new frontier of media activism. In G. Yang & V. Pickard (Eds.), *Media Activism*. London and New York: Routledge.
- Milan, S., & Gutierrez, M. (2015). Citizens' media meets Big Data: The emergence of data activism. *Mediaciones*, 14. Retrieved from <http://biblioteca.uniminuto.edu/ojs/index.php/med/article/view/1086/1027>
- Milan, S., & van der Velden, L. (2016). The alternative epistemologies of data activism. *Digital Culture & Society*, (Special Issue on The Politics of Big Data), 11.
- Morlan. (2016). Quiénes somos. Retrieved December 12, 2016, from <http://www.morlan.mx/>
- Pybus, J., Cote, M., & Blanke, T. (2015). Hacking the social life of Big Data. *Big Data & Society*, 1(10), 10.
- Rede InfoAmazonia. (2016). Environmental sensors. Retrieved December 10, 2016, from <http://rede.infoamazonia.org/>
- Rodriguez, C. (2001). *Fissures in the Mediascape - An international Study of Citizen's Media*. Cresskill, New Jersey: Hampton Press Inc.
- Rodriguez, C. (2009). De medios alternativos a medios ciudadanos: Trayectoria teorica de un termino. *SAGE Publications*, 21. Retrieved from <https://aprendeonline.udea.edu.co/revistas/index.php/folios/article/view/6416/5898>
- Sampedro, V. (2014). *El cuarto poder en red*. Barcelona: Icaria.
- Shepherd, (Andrew), Mitchell, T., Lewis, K., Lenhardt, A., Jones, L., Scott, L., & Muir-Wood, R. (2013). *The geography of poverty, disasters and climate extremes in 2030*. London: Overseas Development Institute. Retrieved from http://www.droughtmanagement.info/literature/ODI_the_geography_of_poverty_disasters_climate_extremes_2013.pdf
- Shubert, W. (2014, January 29). FEATURE: Launch of geojournalism site for Indonesia – “Ekuatorial.” Retrieved from http://cdkn.org/2014/01/launch-of-new-geojournalism-platform-ekuatorial-for-indonesia/?loclang=en_gb
- Striphas, T. (2015). Algorithmic culture. *European Journal of Cultural Studies*, 18(4-5), 395–412.
- Winner, L. (1980). Do Artifacts Have Politics? *Daedalus*, 109(1), 121–136.

Winner, L. (1986). *The Whale and the Reactor: A Search for Limits in an Age of High Technology*. Chicago: The University of Chicago Press. Retrieved from <https://www.ratical.org/ratville/AoS/WhaleAndReactor.pdf>