

Participation and public data: Brazilian open data apps as cultural manifestations.

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ABSTRACT: The increasing flow of data and information on the Networked Society (Castells 2000), together with new behaviors in the audiences – active and connected –, leads us to the emergence of dynamic, interdisciplinary, convergent and worth-exploring media phenomenon. This paper analyzes digital apps, developed by citizens through public databases, in a scene of interrelation between public and private information. We focus on understanding, through studying three Brazilian examples, how those manifestations happen in this connected context, but also in a developing country. Based on the assumptions of Williams (2005), stating that there is not any technology not related to a historical process, and of Morley (2007) and Winocur (2009), which argument about the rituality and symbolism related to technology, we develop a study about technologic appropriations. These are citizen media, in an intersection with computing, but in democracy-related practices. Firstly, we associate, by a historical reconstruction, the increase in the flow of information in society – also concerning the circulation of data about government – with the development of the means of communication, so we can understand the historical precedents of the current stage of openness and circulation of information. Next, we describe and categorize the different variations of this phenomenon, to better address its implications, since it is a multi-faceted manifestation, with different uses of public data. This is a bottom-up object and an example of a cultural appropriation of technology and public data, in a connected environment.

Introduction

This study proposes an analysis of technological appropriation in a convergent perspective. We explore the Brazilian digital apps scene: they're created by citizens² using public databases provided by the government. We seek to comprehend the way in which these examples reflect the citizen media in a convergent era, and how they demonstrate the audience interaction in the search, propagation and recombination of information.

Our intent is to focus on the symbolism of the productions created by people, instead of the technical potential of the devices. We avoid the view identified through the technological determinism (Williams 2005), that ignores the social interactions and credits the technical resources as responsible for social changes. Therefore, more attention is given to the expected and unexpected uses (Morley 2005) of the devices, inserted in wide social structures. The adaptation of the technology in the social environment can only be comprehended if considered the historical processes that involve it (Williams 2005), thus motivating the following historical reconstruction.

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² The nomenclature “citizens” is utilized to designate people formally unrelated to the media market that produce content and collaborate in other ways to the media without professional intent.

We consider as well the orientation defended by Winocur (2009), and supported by Williams (2005), that we must not pay exclusive attention to the possibilities and expected uses of technology by the people. Unrealized predictions about the use of technical resources often don't consider unpredicted uses, associated to the related cultural and social background. "It seems that the ICT, more than changing people's lives, suffer the consequences of changes that people make in their "predicted uses", to turn them with their biographical trajectories and their sociocultural reference systems on the frame of everyday life" (Winocur 2009). We think the public data appropriation through this paradigm.

Based on these ideas, we first examine the Brazilian apps developed by members of the audience through public databases, also considering the related Brazilian context. The observation of such conjuncture allowed the creation of a typology to classify these different apps developed in Brazil. This typology was developed *a posteriori*, from the research of the Brazilian context, the public data apps competitions and their analysis. From this categorization we used three Brazilian cases obtained through the access to public data: Game of Life of Legislative Processes, Rio Health and the Portrayal of Violence against Women in RS. These are used to treat and exemplify the categories as a case study. They're all initiative of people unrelated professionally to the media. We connect these examples with the referred typology, in order to think how are implemented the citizen's manifestations that reconfigure the public data in Brazil, inserted in the logic of a convergent citizen media (Jenkins 2009). How do the acts of these citizens rework the public data, giving it new guise? It is also worth exploring how the appropriation of this information relates to current and previous communicational contexts, linked even to other means of communication and information.

We pay attention, then, to a media manifestation coming from the audience, connected to the convergence culture. Through the approach of these examples of self-organization around the media, a better understanding is provided about the cultural appropriation of technologies and the relation between the subject and the information on the information society.

1. The opening of information and development of the media

The propagation and diffusion of information, governmental or not, is wide in contemporaneity. The development and increase of these information fluxes, that reach even the government communication with the people, goes not only through the creation and enhancement of the media, but also through social history, highly connected to several factors, such as politics, culture and economy. As Habermas (1991) demonstrates, the genesis of the

public sphere itself is much related with the development of information exchange systems. Considering this aspect, we are here dedicated to a historical reconstruction of the openness and diffusion of information, connecting it to the pertinent technological issues. It is not our intention to reproduce the idea that, after its emergence, the public sphere of Habermas became interconnected with the internet. Habermas himself doesn't support this interpretation (Jeffries 2010).

It is our intention, instead, to think how the publicization and circulation of information in society evolve and relates to its context, thus comprehending the stage in which we are today, always attempting not to fall into technological determinism. Several of the practices verified today are better interpreted if brought to the light of what was previously thought, related to other technical structures. Morley (2005, p. 236) summarizes it very well.

The problem here, as noted earlier, is that the more we speak of the future, the more we have need of historical perspective. We have, of course, (always) been here before, given long history of visions of how 'new' technologies were going to transform the world.

It is not our intention here to exhaust this historical reconstruction, a virtually impossible task, but to contrast historical precedents relevant to the understanding of the current situation.

1.1 Development of the press

It is notable that the development and creation of Gutenberg's press is a mark on the history of communication. It is important to observe, however, that the true revolution didn't come with its creation, but through the context in which it was created, and due to the several, different appropriations accomplished. Briggs & Burke (2009) note that the time for the arrival and effective appropriation of the technique in countries of Asia and Europe varied a lot. Russia and other orthodox Christian nations, for example, only implemented the invention on the XVIII century. In Middle East, sultans feared that the acts of heresy were related with the diffusion of the new media. Since ages the circulation of information got governments of different orientations apprehensive.

Also, since other times, the state power already paid attention to the uses of the information technologies, so they could diffuse the official acts (that were of interest). The State

always had central role in the discussion of those technologies, and in the public/private character of the diffusion of information.

Throughout time, the press took place in Europe, and its propagation increased significantly, although this isn't a linear or accurate trajectory (Briggs & Burke 2009). Here, as Habermas (1991) will state, this primitive press has a central role not only in the communication scope, but in politics and economy as well. The European society of the XVII and XVIII century was living the mercantilism, but going through a transitional period towards modern economy.

One of the fundamental aspects (and effects, in a certain way) to this change of character and to the assimilation of a public sphere, as supported by Habermas (1991), is the press. Along with the circulation of goods, emerges a strong circulation of information, through printed newsletters with useful information to merchants. With the increasing sale of this information, they start to present a commercial character. Similarly, increasing the circulation made more sense, and the same information commercialized acquired increasingly public character (Habermas 1991).

As in other means, authorities start to see the press with good eyes, considering its advantages to the dissemination of information of interest, making it useful to them (Habermas 1991). During the XVII and XVIII centuries, several decrees of different European monarchies regulated and molded the press uses accordingly to what was thought the most "official" use.

The application of the press as a tool that connected state power and the people ends up being precisely a really important factor to transform society into more public. The information flow between authority officials and the population (or subjects, in the European kingdoms era) are basic constituents of the notion of public, in Habermas (1991) molds. Notwithstanding the reluctance of the government to regulate the reflections on the press media, the notion spread throughout Europe mainly during the XVIII century.

Advances in communication to this effect will occur during the Age of Enlightenment, between the XVIII and XIX centuries. As a reaction against the absolutism and (among other factors) its control on the information that was allowed to circulate, the Enlightenment defended the reason, through the metaphor of "light" in opposition to faith, superstition and prejudice (Briggs & Burke 2009). The consequence of this posture will be verified in the posterior nature of the information circulation relative to the public power. Indeed, Bobbio (1987) sees in this movement a huge moment of concern with the publicity of the government's acts. "The importance attached to the publicity of power is one aspect of the Enlightenment's po-

lemic against the absolute state, or more specifically, against the various images of the paternalistic or authoritarian sovereign, of the monarch by divine right, or of the God on earth conceived by Hobbes” (Bobbio 1987, p. 86). Transparency appears as a fundamental measure to prevent unrestricted acts from rulers, since absolute governments don’t even see those affected by their commands as a public.

There is a strong development of the press along with the French Revolution. By the second half of 1789, 250 newspapers were created in the country, and intellectuals demanded for freedom of expression. What remains from this period of intense social transformation is the rise of a better-developed public sphere (although still very porous) and a direct interest in the transparency of government agencies, in order to avoid abuses related to tyranny. The concern with governmental publicity and the liberty of expression, along with the growth and circulation of newspapers and the creation of the first encyclopedias show more intense circulation of information and constitute an important historical antecedent to the relation between democracy, communication and information.

1.2 Electrical telegraph

Context and use of the electric telegraph to communication all around the world are fundamental to a continental interconnection scene. Its electric version appears only between the second half of the XVIII century and the first half of the XIX century, with an intense development and several appropriations along the XIX century (Lombardi 1987). The telegraph is responsible for allowing connections between distant corners of the same country and between countries in different continents. In the United States, a young country that integrated new territories and sought to solidify as a nation, telegraphy was promoted by the necessity of connecting big distances in an industrializing country. The communication took crucial role in this process (Lombardi 1987).

Inserted in a context of growth in global commerce and long distance transports, the electric telegraph in that period was a tool to global communication, more than a cause of the interest in expanding the information exchange between nation, companies and people. In a certain way, distances in the world already started to decrease. A noteworthy manifestation of this was the emergence and rise of the news agencies (Briggs & Burke 2009). But the imaginary of a communication technology that would bring together all societies, providing advances of several orders, is not new. It develops strongly along with the telegraph.

There is also a long history of visions of how it has been imagined that technical advances in communications – from the telegraph to the telephone to the Internet – will somehow lead to ‘better understanding’. The telegraph – or the ‘Victorian Internet’, as it has been redescribed by Tom Standage – was heralded as ushering in an era of world peace, for this very reason (Morley 2007, p. 237).

Indeed, it resembles a strong desire often reflected in the symbolism around communication technologies, as if, in a certain way, “this time” this ideal would be reached. The telegraph and the internet are clear examples of this necessity of unity through the communication.

1.3 Broadcasting

In the beginning of the XX century, radio started to broadcast information in a wider way in societies where it existed. Boddy (2004) remembers that several of the current discussions about media linking public and private information started by that time, specially through radio. The telegraph already transmitted information intercontinentally, but the radio reached the domestic environment. Furthermore, it brought the emotional element of the voice. “The tendency toward the hyperbolic and apocalyptic and the new investment in new media technologies of extravagant hopes for the transformation of personal and public life has characterized a century of media innovation” (Boddy 2004, p. 166), remembering the developments since the telegraph’s apex and the beginning of the radio.

One main difference between the broadcast media and print media is the last one’s character of public concession, since it uses scarce natural resources for the transmission – the radio waves – instead of the paper print (Briggs & Burke 2009). In this matter, therefore, the governmental influence was present since the beginning, even though in different ways in different countries. The uses of radio transmission by the state in fascist and Nazi regime are remarkable. Although in different circumstances, the U.S. government also used the radio to contact the population. The vehicle, through the circulation of information, diffused education and values as well (Briggs & Burkes 2009).

The television, similarly to the radio, is seen in its emergence amid a contrast between two different models of operation and financing. One of them public, financed by the State, non-profitable, and the other private, managed by corporations. “It is then possible to abstract the basic early development of television institutions as a contrast or competition between ‘public service’ and ‘commercial’ institutions” (Williams 2005, p. 28).

In the Brazilian context, the television development is strongly linked to the military regime, present in the country between 1964 and 1985. Authoritarian and censor, the government feared the bad use of cinema and mass media, working to develop itself these areas along with private companies, consequently creating powerful relations. “Maybe the best example of collaboration between military regime and the expansion of private groups [in Brazil]³ is the television” (Ortiz 2001, p. 117). Among the measures implemented are the creation of regulatory organizations and entities, along with the construction of the necessary technical infrastructure. It was this investment that made possible the network transmissions by private stations, in a process that triggered national market integration. Having strong economic presence in the marketing media, through the purchase of advertisements, the Brazilian State had one more instance through which it could influence the whole communication system. All the advertising market had its evolution related to the government. This creates dubious relationship between communication companies and the public power: censorship certainly would cause harm, but there were many economic advantages in maintaining a positive relationship with the state (Ortiz 2001). It is in these circumstances that Brazilian television system is developed: censorship and companies’ convenience. Despite being a public concession, one of the most diffused media to the Brazilian people grows along with serious conflicts about information diffusion and democracy.

1.4 Network society

Since the second half of the XX century, the circulation of information in all sectors of society increases, and some authors verify an increase in the importance of the information. Moragas Spa (2011) proposes a very useful retrospect, evaluating that the post-industrial society, as described by Daniel Bell, differs from earlier stages (pre-industrial and industrial) by the predominance of works of the tertiary sector, or, in other words, services. More than that, the post-industrial scene involves the fundamental value of the called quaternary sector, that is, activities related to data processing. This demonstrates the strategic character of information and communication resources to the social and economic organization (Moragas Spa 2011). Data and information have always been important, but, considering its ubiquity in this scene, its value and application become even more central.

³ Note from the author.

Related to the idea of post-industrial society, there is the idea of network society. Castells (2000) describes thoroughly this new scope, also connected to the strategic importance of the information. A succession of new advances is designed around the named “Information Technologies” at an increasingly high rate. What characterizes the current state is “the application of such knowledge and information to knowledge generation and information processing/communication devices, in a cumulative feedback loop between innovation and the uses of innovation” (CASTELLS, 2000, p. 31). In an historical line, these technologies have the same importance than coal and the steam engine had during the industrial revolution. In this case, communication technology and information are, therefore, inserted in a context of high interchangeability and constant innovation. This doesn’t mean that these innovations are exogenous to the social environment in which they are inserted, but that they create a fabric in which the activities are done. Castells proposes, then, a dual character of the moment in which we live in: both a system with its own logic and increasing velocity and capacity, related to the information ubiquity, and a structure interacting in a decisive way with cultural and institutional contexts and social actions.

Another important issue in Castells’ (2000) reasoning is the distributed character associated to this scene. There isn’t a division between creators and users, that is, both roles can belong to one subject.

Diffusion of technology endlessly amplifies the power of technology, as it becomes appropriated and redefined by its users. New information Technologies are not simply tools to be applied, but processes to be developed. Users and doers may become the same. Thus users can take control of technology, as in the case of the Internet (Castells 2000, p. 31).

We could define this “equality” among users and creators as potential, once the existence of this character does not mean it will necessarily be present in every circumstance. The point is what is done with this possibility of use and creation, and what consequences this will bring. The structures of the network society involve a base allowing a bigger homogeneity among creators and users of these tools and services. This will affect specially the media field.

The notion of inequality, however, is very present in this network context. The adoption of communication technologies happens irregularly, what may occur due to technical reasons, but can also have reasons in personal cultural issues. “To be sure, there are large areas of the world, and considerable segments of the population, switched off from the new technological system” (Castells 2000, p. 32).

We walked, then, from a massive media, directed to a wide audience, to another one, more divided accordingly to the idea of several coexistent audiences. The audience was never homogeneous or a passive object, although it was treated that way in other contexts. As stated by Castells (2000, p. 365), the media went from “mass communication to segmentation, customization and individualization”, within an historical process. Following this reasoning, media not only got individualized, but started to coexist with manifestations created by the audience itself, which probably feels stimulated by the digital technological possibilities, after a succession of media marked by the division between sender and receiver. This will be manifested voluntarily, with different media languages and purposes.

Thus, understanding the trajectory of information diffusion throughout the media development, we intend to focus on the citizen media sphere. The emergence of media related events coming from the public is inserted in a long flow of communication. As exposed by Castells (2000), the present technologic stage has as characteristic an alignment of the roles of producer and user of tools and information services. To this is joined a context in which there is a strong desire by members of the audience to produce, spread and discuss news and entertainment material, arriving to the complex scene of convergence (Jenkins 2009): corporate players and individuals coexisting, sharing interconnected media spaces. It is on this conjuncture that are inserted the examples here analyzed. We focus on the spontaneous and autonomous initiatives taken by the audience, working the public life and reframing public and open information. As Shirky (2011, p. 88) states, this phenomenon functions in dynamics different from traditional media:

Broadcast media, like television, clearly filled some human needs, but those needs that they couldn't fill well became harder to see and, ultimately, harder to imagine. Now those desires are starting to reappear because the social media has made them both expressible and visible, and also because personal motivations and social ones amplify each other in a feedback loop.

Even if these examples of media are inserted in a different context and happened motivated by distinct logics from the ones that existed during times of only mass media, these behaviors are still inserted in a historical process. This means that there are parallels in this consumption, verified in other moments of the relation between subject and media. “UGC cannot be detached from the long history of participatory practices within the media. Mainstream media but especially alternative and community media have a long history of organizing participatory processes at the level of content and organization” (Carpentier 2011, p. 199). We discuss as well Shirky's (2011) and Jenkins' (2009) points of view that the manifestations

occurred in the entertainment scope can march towards actions in the politic and democratic extent.

2. The public data apps in Brazil

In the participation and citizen media sphere, there are digital applications, either mobile or for traditional computers, that apply visualizations and/or recombination over public databases, made available by the government in an open way. These apps' purpose is, in its majority, to offer to the great audience a more "friendly" way to access public information whose the knowledge might be important.

Although this kind of rework of open information has begun (and is relatively frequent) in the United States and Europe, it also happens in Brazil (even if sparser than in these other sceneries). A phenomenon happening in Brazil in consonance to a context in which public and private information always merge, particularly in the governmental scope.

The transparency itself in public organizations is rather new in the country. Although similar laws already existed, but in a vaguer way, the Brazilian transparency act, which determines that all governmental information must be open, in all but exceptional cases, only came into force by March 2012 (Bublitz 2012). Some of the public departments are still structurally adapting to successfully accomplish people's demands. Therefore, the available amount of open information is still below what it should be, with public entities from different areas refusing to disclose important data (Lira 2013).

At the same time, Brazil, as well as other developing nations, has, since colonial times, a strong history of government corruption. As stated by Ortiz (2001), the dictatorial period of the second half of the XX century was a time of severe censorship and use of violent, authoritarian methods by the governmental force. Besides, suspicious relationships between government and private capital also came from this period, configuring since then a scenario of negligence towards public funds. As shown by current international researches, Brazil still has to cope with corruption as one of its main problems. In 2012, the country occupied the 69th place (out of 176) in the ranking of the Transparency International NGO (the closer to the first place, the less corrupt the country is). "Brazil scored 43 in a scale from 0 to 100 – the lower the number, more corrupt the country is considered – and is part of the group of countries with a score lower than 50" (Folha de São Paulo 2012). A scene of constant corruption brings discredit to offers of public services, considering that there are still many challenges for basic public services such as health, security, education, and employment. The

country's position in the ranking of Human Development Index, for example, has improved, but still has a lot to evolve – it occupies the 85th position, still with several problems on education (Oliveira 2013).

The transparency law, as the recently implemented clean slate law, represents an effort to decrease corruption and bring light up on the government actions and expends in Brazil, and, consequently, aid the country's development by increasing the public service's quality. In this scene, the Brazilian apps developed from the government open data can be seen as resources to enhance Brazil's transparency, as well as the first public manifestation, generally, of connecting with public data. Actions like this inform about public character notions at the same time that the own experience of working them consists in education.

In Brazil, the apps developed from open data are frequently created through competitions, usually organized by governmental entities, focused on the development and publication of this genre of apps. These events may be an open data competition in a wider shape, in which developers enroll their apps, which will be analyzed by a jury and awarded; or they can be organized as “hackathons” (imported term from the U.S. context), events lasting one or two days in which the goal is to create, from some pre-defined databases (frequently, but not necessarily governmental), innovative projects and apps.

Some projects around the development of citizen apps through public information have occurred in Brazil – many of this related to the recent transparency act. The RioApps⁴ is an example of open data competition promoted by a public administration: The Rio de Janeiro city hall. It happened during 2012 and awarded 12 apps created from public databases in the city of Rio de Janeiro. In São Paulo, also in 2012, happened the Open Data Challenge⁵, within the 1st Hacker Marathon of São Paulo's city council. Promoted by São Paulo's parliament, the dispute evaluated nine apps created over the data of the council. Another event that occurred in the same format during the last year was the Decoders RS⁶. There are also actions distributed in more general events, as was the case with the 4th International Congress of Free Software and Electronic Government (4th Conseg), that originated one of the projects highlighted in this paper. Parallel to these events, there are some volunteer acting groups in this area that also develop open data apps. These collectives fit into the perspective of hacker transparency, that is, linking a “hacker thinking” of modifying digital resources to an idea of governmental

⁴ <http://rioapps.com.br/>

⁵ <http://desafiodadosabertos.org/>

⁶ <http://www.procergs.rs.gov.br/index.php?action=noticia&cod=14988>

transparency. OpenData-Br⁷ and the Sphere⁸ are two of these groups. Gathering these examples of such a distributed phenomenon is not an easy task. The website dados.gov.br is a Brazilian federal portal focused on the distribution of open data. It clusters some government databases, as well as a list of public data apps, acting as some sort of community catalog for programmers interested in transparency and open data.

At the beginning of this study, we observed the scene of public data appropriation in Brazil. There are several examples, and this is a decentralized phenomenon, in which new projects and initiatives may emerge at any given moment, increasing the possibilities of analysis. Based on the observation of 18 cases in the Brazilian context, created in different locations and with different purposes, it was possible to establish a typology of the Brazilian apps developed by non-professionals⁹ with public databases (see attached table and chart 1).

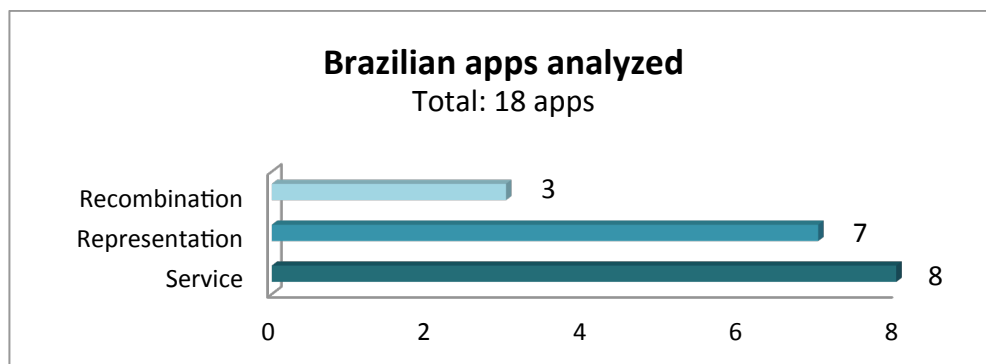


Chart 1 - Categories of brazilian apps analyzed
The authors (2013)

The observed apps participated in the following competitions: RioApps (12 winner apps), the Open Data Challenge of the City Council of São Paulo (nine enrolled apps, except for three that were unavailable), Decoders RS (one winner, due to the fact that the other two were off the air) and 4th Consegi (one app developed in a hacker marathon).

The three systematization categories, created by us *a posteriori*, are related to the use that the programs make out of the public data they appropriate. In other words, what happens with the reformat of this information by the people. Although all have, in theory, the same purpose, the ways in which this task is performed vary. Three apps were selected among the 18 analyzed to exemplify and serve as basis to each of the three categories, exemplifying the

⁷ <https://groups.google.com/forum/?fromgroups#!forum/opendata-br>

⁸ <http://blog.esfera.mobi/>

⁹ Although people responsible by these apps are professionals in programming and computer areas alike, they usually don't present professional involvement with communication and media fields. Thus, we understand this phenomenon as citizen media.

characteristics of the different types, as well as the differences among them. They are clear cases of the different natures of the observed apps.

2.1 Service

The core of open data manifestations is frequently associated to democracy, to a more open and transparent government. However, the objective of these apps may involve diffusing public useful daily information. The access to this information is still related to the transparency and knowledge about the government's acts, but the use of this data is also connected to the execution of daily tasks. There is also a more immediate and practical interest in the use of this information. We link this pattern to the **Service** category, for recombining public data but serving mainly as daily services. They are programs that provide information about a certain type of public service, or utilize open data to complement the use of this services.

The RioSaúde app¹⁰, developed for iOS, exemplifies well this category. It provides a guide of health establishments in Rio de Janeiro city and was one of the winners of RioApps. Its

Figure 1 – Search results in the app RioSaúde

main function is to search for health establishments, either through keywords of specialty (such as burns, x-ray, for example) or by the name of the establishment. There are, still, two filters: establishment's type (clinic, hospital, general, etc.) and localization (filtering by district or proximity). The results are displayed on a map.

When accessing an establishment entry, basic data is shown (figure 2). There is the record of how many health professionals work there and how many and which equipments are available to the treatment through the public health care system, and a list of the health services availa-

¹⁰ Translation: RioHealth - <http://rioapps.com.br/#/galeria-apps/app/?/247>



Figure 2 – Establishment profile in the app RioSaúde

ble (as, for example, urgency services, transplant, etc.). There is an option to see the location of the place in map.

The app allows users to rate all the health establishments. Thus, users can rate and publish comments about treatment and structure. Furthermore, RioSaúde gathers a list called Top 20, which groups the 20 top-rated establishments in the app.

In other words, the app presents itself as a complete guide to find a health establishment in Rio de Janeiro, accordingly to the user's necessity, besides providing a diagnosis of the establishment in a collaborative and geolocalized way. These types of service relate to a contextual issue, since public health care and hospitals are part of the public agenda and media (specially its problems). Public data stays strongly connected to the everyday life and a practical character, despite bringing information that can as well feed discussions about the government and its role.

Other apps that fit into this category are Bicycle Rio and Rain Alert Rio. The first one gathers a variety of information intended for cyclists, such as the location of public bicycle rental stations, and the location of bicycle paths, while the second informs places of Rio de Janeiro where it is raining, and issues alerts about rain in specific areas.

2.2 Representation

The primary objective of these applications is to observe, reflect upon and analyze the public databases related to the democratic political domain. This information is primarily important for the public to have a basis for making demands of government leaders, as well as for determining the performance of their administrations over time. Relevant public information is reworked so that it is more easily interpreted by the public. We call this category **Representation**. An observation of these applications demonstrates that they propose precisely another representation of data that is already available. If users access that database online, they see the same information, though in a much more pleasing way through an application that organizes the information in a user-friendly way, with the specific objective of facilitating the analysis and diagnosis of these data. The web application *Retrato da Violência Contra a Mulher no RS*¹¹ fits into this perspective. The project presents information on violence in a clear, easy to view way.

¹¹ Translation: Portrait of Violence Against Women in RS (Rio Grande do Sul, Brazil); <http://retratodaviolencia.org/>

The application, which was the winner of the Decoders RS competition, uses data from the secretary of public safety to map and compare violence against women in different regions of the state. One column lists the regions, ordered by proportion of occurrences. Upon choosing an area, information appears, such as average age of the victims and the attacker, a graph comparing the number of cases over the years, number of occurrences per 100 thousand inhabitants, percentage of attacks that took place in the home, in transit or in an undefined

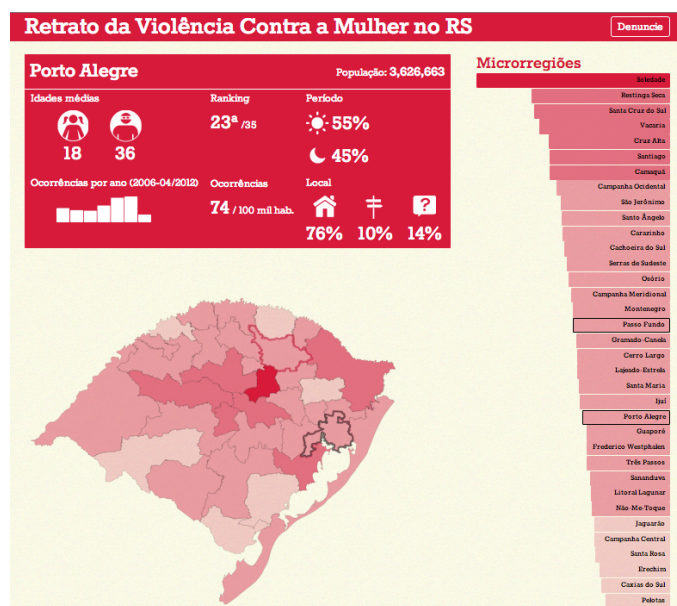


Figure 3 –Portrait of Violence Against Women in RS Application

location and the percentage of attacks that occurred during the day and at night in that location. There is also information and contacts for Women’s Assistance Police Stations of Rio Grande do Sul.

Thus, users of this tool have access to an objective view of this kind of violence. However, if one enters the state security records, one would have access to the same information presented in the application. This is because projects in this category aim to visually

rework information in a database, without providing more context, or actions or combinations with other data. The experience of accessing original databases and observing them reorganized is different. In most cases, the visualization of the data in the original format is virtually impossible, either due to the quality of the information, especially when one deals with data from different years, or due to their nature. Representation applications involve an expanded experience, which allows one to draw conclusions that are not verifiable with information in extensive spreadsheets. One can say that a successful graph representation can reinforce and evidence important patterns in the original data. Therefore, these tools are entirely about providing a representation of the database.

Many applications can be placed in this category. Another example is the *Geolocalização dos Projetos de Lei*¹², which groups together in a map the regions which had bills enacted by the São Paulo City Council over the years. The *Radar Parlamentar*¹³, which creates an animation presenting the party votes in the Senate, the House of Representatives and the

¹² Translation: Geolocation of Bills.

¹³ Translation: Parliamentary Radar.

São Paulo City Council over time, also works with information in the scope of representation. Differently from Service apps, however, the former are not related to practical daily tasks.

2.3 Recombination

The third type observed in the landscape of Brazilian open data applications deal with an offshoot of the previous category. Similarly to the representation programs, the examples included in this set also aim primarily to reflect upon the current social context. In addition to presenting data in a friendly way, they aim to complement the experience with other issues. These cases involve, for example, the intersection of different complementary databases (in an initiative that cross-references information for a broader analysis/diagnosis), guidelines for actions related to the topic of the project, or even a contextualization of those numbers or the importance of that information. We call this type **Recombination**, since it does not just present the information, but recom-

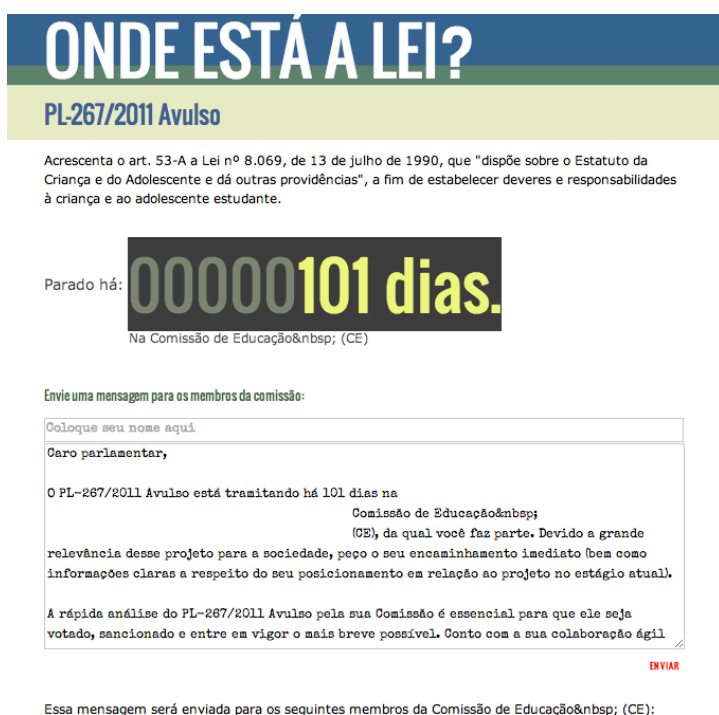


Figure 3 – Screenshot of "Where is the bill" of the application The Game of Life of Legislative Processes

representatives or in the Senate. With the number of the proposal and the year, it is possible to search for House Bills, Senate Bills, Legislative Bills, Companion Bills or Proposed Constitutional Amendments¹⁵. The intention is to make the progress of bills and proposals clear, in which committee or house they are stalled

¹⁴ Translation: The Game of Life of Legislative Processes; <http://jogodavidapl.appspot.com/>.

¹⁵ In Portuguese: Projetos de Lei da Câmara (PLC), Projetos de Lei do Senado (PLS), Projetos de Decreto Legislativo (PDC), Projetos de Lei Complementar (PLP) ou Propostas de Emenda à Constituição (PEC).

and for how many days. With the search, the tool shows sequentially through which committees and authorities the bill has passed and in which it is currently located.

There are three options. “Where is the law?” presents a summary of the proposal and a counter that reports how many days the bill has been stalled. There is also a feature for sending an email to the congressmen of the committee within which the bill is located at the moment. The message, which is editable, asks the congressman to expedite the bill analysis and vote due to its relevance.

The second option is “Last moves”, where the path made by the bill within the legislative power is shown. The graph layout resembles that of a board game – from which comes the reference to the well-known Game of Life. Finally, the option “More details in the LeXML” is a link to the record of the bill in the portal of the same name, which gathers information on legislation, jurisprudence and legislative bills from public administrative bodies.

The complement of these databases provided by the application involves the action of composing a message demanding speed from the congressmen. Consequently, not only does it present the bill’s path didactically, but encourages taking a stance, creating a potential sense of demand upon the work of the politicians. The fact that the message is pre-prepared and already aimed at the responsible committee also facilitates the process. The application dialogues with the Brazilian political scene, in which the legislative process is lengthy and often unclear. The application *Siga os vereadores de São Paulo*¹⁶ also follows a line similar to recombination, since, by presenting the decisions of each councilman of São Paulo in a chronological order, it offers the option of agreeing or disagreeing with each decision (the number of user evaluations is made public on the application), in addition to commenting on each one. Thus, it also encourages users to take a stand. The project *Onde Acontece*¹⁷ recombines security information and demographic data from the last census, which contributes more information on the amount of violence in specific locations.

Building this typology enables the understanding of different possibilities within the scope of the media created based on public data. This is a multifaceted phenomenon, which occurs at the intersection between the public and the government, in a context supporting transparency. It is important to perceive how this type of citizen initiative is related not only to people who live in society, but possibly to the very concept of citizenship.

Conclusion

¹⁶ Translation: Follow the Councilmen of São Paulo; <http://www.vereadores.org/>.

¹⁷ Translation: Where it Happens; <http://ondeacontece.com.br/>.

Reworking open data through software in voluntary and independent examples is not about disconnected or closed-off actions. It is a sequence within a process that has roots in broader issues, which originate in the very history of the country as well as in older practices regarding media and their use in society. These examples are directly connected with the context of Brazil and with the exercise of citizenship, though maybe in its early stages. Observing these apps means looking inside Brazil, though only partially.

The movement of volunteers towards the creation of these digital resources in Brazil, aimed at the broad circulation of public information, suggests that there is a desire to generate awareness of government actions in general. Creating an interest in average citizens, such that they are aware that it also concerns them. The way to do this, within this juncture of the information society, is through information itself – a strategic element for organizing businesses of any kind in this day and age (Castells 2000). One can observe that a large part of the applications, those identified with the representation category, does not work with anything beyond the circulation of government data. The simple propagation of information is already a tool against abuses by the government, as the illuminists had already contemplated (Bobbio 1987), when they demonstrated an anticipated concern with transparency.

The classification of the applications demonstrates the existence of three types of applications. One which works with public data in order to create tools for helping with daily and practical services; another which reorganizes information related to the political and democratic domain, consisting of a graph representation from an available database; the third one goes beyond representation, by recombining different databases, providing guidelines or context. An investigation of the apps included in the competitions RioApps, Open Data Challenge of the São Paulo City Council, Decoders RS and the 4th Consegi demonstrates that applications are increasingly from the service and recombination categories. The strong presence of service applications evidences how the use of public information can still be eminently private in nature. In this category, the use of data is aimed at common, practical functions, such as guides. This does not mean that they do not involve the knowledge of government actions, but they condition it to a specific application, identified frequently with a practical, private nature. The recombination applications, less common, are an example of a greater reworking of information, enabling a greater contextualization of the data for the public. Its lesser presence indicates that this phenomenon still acts more as a representation of data, without connecting them in a greater way to a broader domain. The reprogramming of open Brazilian data by volunteers demonstrates a clear intention of fighting corruption and promot-

ing greater attention in the public to actions carried out (or not) by agents of the state. Concern with the development of a country affected by corruption is symptomatic.

The nature of people's behavior is based on the description by Castells (2000) about the environments in which the lines between information producers and users are blurred. Those responsible here are the members of the public. What differentiates them is a technical knowledge of programming and a sense that circulating that information is important and beneficial. One can also notice how convergent the studied object is: the data, the raw material, of the programs comes from the government; the incentive, in the case of competitions, also comes from public authorities; but the reworking in itself comes from members of the public, and acting upon data happens with the intention of circulating them for society.

Considering the development of other communication tools over time, we see how the adaptation of media has always been connected to government performance. Similarly, one can always locate the historical antecedents of the current issues related to technology use in society. From the development and establishment of the press, the presence of strong government censorship has been notorious, such that it was while the independent press strengthened that the idea of a transparent state was assimilated. Currently, in a time of ubiquity of information, it is still the media that will demonstrate and spread the importance of government transparency. However, this happens now in a distributed way, with actions that do not necessarily come from the established media. Open data applications are great examples of making decisions that the public can assume, with the intention of finding solutions. At the same time, what the development of the telegraph indicates is that the symbolism of unity and democratization through communication is not unique to the internet. The expectation of a closer, more transparent and more democratic world, so common today in descriptions of the internet, also emerged with the telegraph. This tells us of the importance of thinking not only about the potential applications of media, but their use in line with the cultural issues relative to the context of media.

In the case of Brazil, it means remembering that the law of transparency is still something extremely new, with which public authorities and the public are still learning to deal. At the same time, the development of broadcasting, especially television, is connected to a strong mix between the public and private domains, with businessmen exploiting television along the lines of an authoritarian military government. Media consumption in Brazil is linked to this dubious relation between public and private values. Thus, these experiences of appropriating open data in Brazil are still in their infancy. Brazilians are learning to deal with transparency

and digital citizenship. They demonstrate more a concern with transparency on the part of the public than the realization of this intention.

The reappropriation of public data in Brazil is part of an effort by society to better understand what the public domain is, something in which, as Habermas (1991) demonstrates, the media has always had an important role. Currently, this incentive is provoked by members of the public, within a connected context. Observing the manifestations from the public up close, that is, far from large media corporations, allows us to see important tendencies about the positioning of this audience in the face of emerging issues.

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Complete table of apps

The authors (2013)

App name	Brief description	Category	Link
Siga os vereadores de São Paulo	Shows decisions of São Paulo city councillors in chronological order, with the possibility to publicly agree/disagree on his decisions, follow their votes and comment.	Recombination	http://www.vereadores.org/
Pacificados Web e Mobile	Service of classified ads focused on pacified slums of Rio de Janeiro	Recombination	http://www.pacificados.com.br/
Jogo da Vida dos Processos Legislativos	Displays the trajectory of laws on the federal Legislative chambers, with the option of sending messages to the involved congressmen	Recombination	http://jogodavidapi.appspot.com/
Radar Parlamentar	Visually shows the voting patterns of different parties through the years on the Legislative chambers	Representation	http://radarparlamentar.pollignu.com.br/
camara/visual	Graphically shows the votings of each representative on the São Paulo City Council	Representation	http://camaravisual.macroscopio.org.br/
Spitfire	Organizes data about Legislative parties and city councillors	Representation	http://datagov.net.br/
CMSPWiki	Organizes data about each city councillor (including expenses and previous votations) of São Paulo on a wiki layout	Representation	http://www.transparenciawiki.com.br/
Geolocalização dos Projetos de Lei	Displays laws issued by the city council of São Paulo agrouped by location, on a map	Representation	http://geoleis.herokuapp.com/
Obras Rio	Displays public constructions happening on Rio de Janeiro and their data	Representation	http://www.obrasrio.com.br/
Retrato da Violência Contra a Mulher no RS	Maps violence againsts women on different regions of Rio Grande do Sul	Representation	http://retratodaviolencia.org/
Alerta Chuva Rio	Shows alerts when there's rain on the forecast for specific regions of Rio de Janeiro	Service	https://play.google.com/store/app/com.alertachuvario
Zurb	A local guide for going out on Rio de Janeiro. Gathers information on different places and options. Uses a great amount of information from the users	Service	http://www.zurb.com/index.htm
Rio de Bicicleta	Gathers information for cyclists, such as location of bicycle paths, public bicycle stations, bicycle repair shops etc.	Service	https://play.google.com/store/app/rao.rio.de.bike
EasyTaxi	App for calling taxi cabs through geolocation	Service	http://www.easytaxi.com.br/
Não Precisa Anotar	Guide for a variety of services of Rio de Janeiro, such as transportation and tourism	Service	https://play.google.com/store/app/m.gotigger.project
Desaperto Mobile	Guide for finding public restrooms on Rio de Janeiro	Service	https://itunes.apple.com/br/app/691364?mt=8
BRS Rio - Vias Expressas de Ônibus	Guide with information of Rio de Janeiro's public transportation, particularly the BRS lines	Service	https://itunes.apple.com/br/app/expressas-onibus/id519565637?mt=8
RioSaúde	Maps and ranks health institutions on Rio de Janeiro	Service	https://itunes.apple.com/nk/app/saude/id522394163?mt=8