

A Research Design for the Analysis of the Contemporary Social Movements

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ABSTRACT

In the ordinary debate about the political culture decline, social networks have recently changed the social scenario, showing its relevance in down-up social movements. Therefore, social networks are taken here as a potential place for the existence of active citizens - ones that are able and keen about political action in a common world or community. Such recent political revitalization demonstrates the relevance of understanding net activism as a precondition for an active citizenship in the digital culture, where new forms of communication and social interaction seem to influence the democratic relationships in ICT mediated public spheres. The main objective of this article is to present a research design for the identification of elements that promote social empowerment in digital culture. It proposes research procedures for the study of political net activist groups in social networks. Methods, instruments and resources were created and articulated for the collection and treatment of big data and for further qualitative analysis of content, by successive steps of data mining. In addition to contributing to the internet studies field, by proposing a qualitative investigation of social networks, this research design also brings innovation to the Education field as the results of the application of this research design (the identification of important elements for citizens' empowerment) will be used to ground the development of guidelines to teachers and to teachers' education on critical appropriation of social networks in active citizens' education.

Categories and Subject Descriptors

J.4 [Social and Behavioral Sciences]: research design for net activism, education and citizen empowerment.

General Terms

Design, Human Factors.

Keywords

quali-quantitative methodology; social network analysis; citizen's education; digital culture; net activism.

1. INTRODUCTION

Contemporary societies have witnessed a destabilization of older forms of control and power [1]. Information and Communication

Technologies (ICT), especially the political activism catalyzed in social networks, have shown the potential to subvert established power structures and point to alternatives for social transformation.

The latest popular mobilizations that occurred worldwide made vigorous use of social networks in protests and showed a political vitality that calls for a deeper study of this phenomenon (for instance: the Arab Spring - held in many Arab countries, 2010; Occupy Wall Street - USA, 2011; Indignados 15M, 2011 - Spain; June Days - Brazil, 2013; Umbrella Revolution - Hong Kong, 2014).

The political action developed both in social networks and city streets constitute a distinct (and hybrid) public space for democracy. In the debate about the decline of civic and political culture, there are divergent points of view [2]. On one hand, it is argued that the internet trivializes culture and politics, making people not able to carry out meaningful citizen participation [3]. On the other hand, there are optimistic speeches that argue that the internet itself can promote a more inclusive and participatory citizenship (especially among excluded minorities) [4, 5, 6]. Flowing in between, there are varied practices that show the limits of any exact understanding [2].

The political action developed both in social networks and city streets constitute a distinct (and hybrid) public space for democracy, even when recently the general discourse regretted the fading or even the end of politics.

Notwithstanding, to engage young people in politics and civic life again, new means of communication must take place to transcend the limits of traditional politics and also enhance the political dimension of everyday life interests [2]. Arguably, there are new alternatives of political and civic culture under development, which involve more informal methods of participation and collective action that have been disregarded in the attempts to conceptualize political action in actuality [7]. The key question that arises is if this political vitality in social networks could also indicate important elements needed for the empowerment of citizens and their critical education.

Critical education is an educational movement that aims at helping students to develop consciousness of freedom, to recognize authoritarian tendencies, and connect knowledge to power and the ability to take constructive action [8]. The challenge to critical education is described by Hannah Arendt [9], according to whom schools could not promote a critical understanding of the world if they insist in defining a project to the future, which should remain in charge of the new generation. Critical education recognizes the future as a process, a becoming, which depends on these new subjects as authors of their own stories.

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Therefore, a broad conception of education is required, beyond that which is limited to formal education. Illich [10] is a key reference for reflections on *unschooling*. He argues that traditional schools turned out to stimulate social inequality, especially in poor countries, since it marginalizes those who do not follow it: a class of poor helpless beside an educated elite. More recently, Nóvoa [11] defended a public educational space where many institutions and places take responsibility in education. From this perspective, to overthrow the school walls and recognize the various educative spaces, communication practices in social networks are a legitimate and fertile alternative. Also, these innovative and emancipatory actions take place in defiance of the teachers' own education in the perspective defended here, and still, as adopted in general education system, too instrumental and content-oriented. Nóvoa therefore advocates a revolution in teachers' training to overcome their fragility, which is based on: a) a more open and diverse organization of spaces and times in school; b) a curriculum centered on student learning and not on teaching knowledge and skills; and c) a strongly collaborative pedagogy that uses the networks as communication.

Castells [12] identifies the connection of what he called the autonomy culture of internet with the social movements that emerge in the network, "they partake of a specific culture, the culture of autonomy, the basic cultural matrix of contemporary societies" (p. 167). Thus, the network is a fertile place of research for those who seek an educational model that aims to contribute with emancipation, autonomy and collaboration in the contemporary world. Our intention with such research design is to have the means to analyze data published on Twitter during moments of intense social mobilization, in order to find answers, or at least clues, on how to create more democratic and participatory school practices in digital culture. In other words, how the scenario described above could inspire new critical education models.

2. RESEARCH DESIGN

This work is part of a major project, conducted in Brazil, which investigates how social networks can be used for the education of active citizens. That broad study settles researches in three different contexts: in theory (grounded in Critical Thinking); in case studies of net activism; and in pedagogical practices using social networks (at elementary and high schools, and also at universities).

The research design presented here is restricted to the observation of net activism in social networks, which integrates the case study context along with interviews held with key actors of those net activist groups (not presented here). It was originally created for the study of the Free Pass Movement's political action. The Free Pass Movement (Movimento Passe Livre - MPL in Portuguese) is an activist group that advocates for free public transportation across Brazil and presents itself as an autonomous, nonpartisan, independent and horizontal social movement. Five main factors led to the selection of MPL's political action the object of this research:

- The maturity of the group, that has over ten years of existence;
- Its derivation into horizontally organized groups, active throughout the country by a federative model;
- Their final object of claim: the right to the city, or to the public space;

- Its strong presence in the public space as the virtual networks;
- Its crucial role for the start of the June Days - public demonstrations that dragged millions of people to Brazilian streets in June of 2013.

At the moment, we are currently applying this research design to mine 70,000 posts published on Twitter during the first month of the protests (June to July 2013), with the term "Passe Livre".

The major challenge of this research is the qualitative data analysis, since it deals with large volumes and varieties of data that are produced in a high speed in social networks. The unfeasibility of a manual, laborious and time-consuming process of analysis has been overcome through a partnership with Labic/UFES and the adaptation to the context and objectives of this research, of the Perspectival Method of Network Analysis (PMNA) developed by them [13]. Although their method makes use of automated and quantitative data treatment, the manageable data resulted of these processes allows a qualitative analysis.

The Perspectival Method of Network Analysis is grounded on the fundamentals of Complex Network Theory and aims to demonstrate the different points of view that rise within a topic of politic mobilization on social networks. PMNA was crucial for the comprehension of the many clusters of ideological positioning existing during the demonstrations that took place in Brazil, in June 2013. The analysis of retweeted messages with the hashtag #vempruarua¹ allowed the identification of seven major points of view: activism, hacking, media, politic mocking, human rights, clicktivism and fandoms. The method brings to light the idea that networks on Twitter are not an entire body, but are side-by-side parts [13].

With PMNA, it is possible to handle posts exchanged in social networks in successive stages of extraction, mining, processing and visualization of large volumes of data. With the data resulted from this method, we were able to add new steps of observation, according to categories derived from previous phases of our own research. As a result, we developed a model of investigation that allows the discursive analysis from posts generated on net activist groups.

Three new steps to analyze the data provided by PMNA were added, in order to obtain more in-depth qualitative results: (a) first, the creation of procedures to identify the moments within the dataset with potential to reveal the process that should be observed according to the research purposes. These specific contexts are named *Spaces of Possibility*. In our case study, they represent moments of dialog and social interaction; (b) secondly, the analysis of the *Spaces of Possibility* identified in the previous stage, in order to find examples of predetermined categories, brought from the review of literature. These categories are the social process we aim at observing and are referred to as *Relevant Processes* in this research design. The two procedures described above substantially reduce the amount of data to be analyzed, and they also make it possible to retrieve the relevant political dialog in the dataset in a viable quantity for qualitative analysis; (c) in the final step, we gathered the dialog thread of the selected potential posts and started the content analysis.

The procedures briefly introduced above are detailed as follows: data collection (Section 2.1); data treatment, comprising the mining procedures, processing and visualization (Section 2.2); and data analysis (Section 2.3).

¹ The hashtag #vempruarua, in Portuguese could be translated to "come to the streets".

2.1.Data Collection

The posts are collected by a search and monitor engine that filters the Twitter stream by keywords and hashtags, and stores the data in a CSV format text file. Similar tools are in market today, such as Topsy (<http://topsy.com>) and Flocker (<http://flocker.outliers.es>). Most of these engines are built on top of the Twitter API (<https://dev.twitter.com/overview/api>). For example, to capture tweets based on the hashtag "#brasil", the software captures all tweets containing the terms "#brasil" at the same time it is being posted (not allowing past time data collection) and stores these data into a dataset that contains: a) UserID, the identification of the user that sent the tweet; b) Time, the date and time that the tweet was posted; c) Tweet Text, the tweet's content; d) Geolocation, the geographic location of the user (only if the user agreed to share it); e) Image, if it is tweeted an image its location is stored as an URL.

After this phase of extraction, a script developed as part of PMNA is run and the dataset is processed to create 20 different text files, in which each of them contains different statistics about the tweets. The script, written in python language, is open and free for usage and modification according to one's own purpose².

These files are organized according to the post date, hashtags used, user activity, locations and other criteria. In our research, two of them have substantial importance: "top words" (the relation of the one thousand words more frequently used in posts containing the selected hashtag or keyword); and the "top hashtags" file (set of one thousand hashtags most commonly associated with the hashtags and words used in the dataset).

Three other files from the dataset were also created, containing a sample of one third of the full amount of tweets, collected from the beginning, the middle and the end of the posts collection. Thus, our research deals with data organized in five text files: the three sample selection, plus the "top words" and "top hashtag" files.

2.2.Data Treatment

Due to the large quantity of data and the necessity of a qualitative filter to reduce it to a suitable amount, the data treatment is separated in three steps: (a) Data Mining through *Spaces of Possibility*; (b) Data Mining through *Relevant Processes*; (c) and Compilation of Dialogs.

2.2.1.Data Mining through Spaces of Possibility

The first methodological procedure (added to PMNA) is to identify the categories in the dataset which can possibly contain relevant processes for observation. These categories were called *Spaces of Possibility*, since they hold the potential of occurrence of the processes that are relevant to the study. For our research purposes, our theoretical grounding suggests that these would be moments of dialog, social integration, conflict and debate among controversial issues, as well as confluence of online and offline action.

First Step: Identification of categories

OBJECTIVE: To define terms and words for a first filtering of the dataset. To determinate what words and terms indicate the existence of a *space of possibility*.

DATA PROCESSING: a) manual reading of the five documents (three samples of tweets, topwords and tophashtags) to select words and terms that are often used in posts that can potentially show the social processes the present research aims at

² It can be found at <https://github.com/ufeslabic/parse-tweets>.

investigating; b) discussion and alignment among researchers about the election of categories and their consensus about meaning.

PRODUCT: A library of terms and words linked to the *spaces of possibility*. For instance, to identify dialogs, we select terms that demonstrate exchange and sharing of ideas, personal exposure, absence of hierarchy or leadership, multiple authorship, opposition of ideas, conflict, use of the first person (singular), which can present willingness to negotiate different points of view.

Table 1 - Example of the Library of Terms and Words linked to spaces of possibility in the MPL case study

Dialog	Social Integration	Online/Offline confluence
Conversation; Open to talk; Did you know that...; Meeting; Report; Against/ For; Let's talk; Comment; Debate/ Idea.	Represents me; Group; Fighting; Supporting; Fear; Collective/ Friends; Volunteers; Help; Support; We are/ We all.	Live now; Protest; Occupy; Happening now; On the street/In front of; Itinerary/Walk; Meeting point; Now; It's today;

Second Step: Mining for Spaces of Possibility

OBJECTIVE: To select and separate posts that trigger processes, spaces where there is a probability of finding political action and, with it, elements that promoted it. From the library of terms and words that identify *spaces of possibility*, a script is run to filter the entire dataset through the categories of *spaces of possibility* defined in the previous phase.

DATA PROCESSING: a) adaptation, testing and application of PMNA data mining script; b) filtering the whole dataset by categories (defined in the library of terms and words).

PRODUCT: Graphical interface with featured posts nestled by the selected categories.

Picture 1 Graphical interface - posts nestled by spaces of possibility (posts literally translated from Portuguese)

SOCIAL INTEGRATION	ONLINE/OFFLINE CONFLUENCE
<p>Vandalism does not represent the movement</p> <p>Passé Livre: does any one support it?</p> <p>@carol_andrade96: Habeas Corpus Free Pass Movement Jun 17th demonstration. We are already more than 4000 willing to help you for free</p> <p>Get in touch though the Free Pass Movement Habeas Corpus webpage. We are more than 4000 willing to help</p> <p>It's about time. Pinheirinho, Teachers, Free Pass Movement: we are all victims of your truculence.</p>	<p>Whos's going to the demonstration with me?</p> <p>Demonstrations against TV Globo now in Sao Paulo</p> <p>Live now: Protest against Globo, not organized by the Free Pass Movement, show that the situation in way more complex....</p> <p>I'm going to the protests next week with my school friends. I've never been to one before, but that's ok...</p> <p>Avoid Av. da Praia, in Santos. Demonstrations taking place there</p>

In the picture above, we see posts that demonstrate social integration and Online/Offline confluence. In social integration, for instance, we bring posts regarding the union of a community of over 4,000 lawyers volunteering to obtain *habeas corpus* (great writ) for the detained protester. The other posts demonstrate a sense of belonging to a social group. In Online/Offline Confluence, we have examples of posts that refer to events taking place on the streets.

2.2.2. Data Mining: Relevant Processes

First Step: Identification of categories

OBJECTIVE: To select relevant social processes that may harbor the political action to be investigated. Bring from reviews of literature some predetermined analytical categories as *relevant processes* that may guide the identification of posts to be studied.

DATA PROCESSING: a) To develop indicators and metrics to identify these processes in the *spaces of possibility*. Three *relevant processes*, relating to our object of research, were highlighted to demonstrate the proposed data treatment in this phase, as shown in Table 2:

Second Step: Mining through Processes

OBJECTIVE: To identify where/whether the searched processes existed in those *spaces of possibility*. To select, highlight and separate them. The purpose of this step is to identify some potential posts within the *spaces of possibility* and extract the dialog it may have generated for analysis.

DATA PROCESSING: a) Manual analysis of the dataset; b) To mine the posts with a script according to the metric that was defined in the previous step and separate them into the pre-selected categories.

PRODUCT: Graphical interface with featured posts nestled by *Relevant Processes* (similar to the interface presented for *spaces of possibility*).

2.3. COMPILATION OF DIALOGS

OBJECTIVE: From the potential posts identified in the previous phase, the *relevant processes*, find and bring the thread of this post. That means, from the selected post (that is yet a fragment), bring the other posts that were generated from it, as mention, retweet or response to it.

DATA PROCESSING: a) to develop and run a script to collect other posts connected to the one selected. b) To bring the threads of the dialogue that have come to light from potential posts selected in *relevant processes*.

PRODUCT: Document containing the threads of all messages regarding the selected posts, separated by analytical category (*Relevant Processes*).

2.4. DATA ANALYSIS

At this stage, with an adequate amount of data, it is proposed a more qualitative approach with an in-depth, interpretative and inferential analysis. From the selection of the dialogs, the objective is to identify what, in the *Space of Possibility* and the occurrence of *Relevant Processes*, allowed and promoted the existence of an active citizen. This phase deals with an immersion in the data to pick up clues for critical education. In other words, it makes meaning and understanding out of the *relevant processes* in terms of participants' definition of situations, important themes, elements that may have generated or promoted the political action in social networks.

Table 2 - Table of Analytic Categories developed by Andrea Lapa, Isabel Coelho, Simone Schwertl, Andreson Lopes.

Relevant Process: Plurality	
Description	Indicators
Constitutes the public. Welcomes the individual's singularities on equal terms. It has two aspects: a) Equality - we are all equal; and b) Distinction - the uniqueness of each person revealed by discourse and action [14].	Shared space of exchanging ideas (equality) (visible and audible active beings); diversity of perspectives in the debate (distinction); welcome in the group (and authorities support) of various perspectives that are included in the debate.
Relevant Process: Communicative Action	
Description	Indicators
There is no goal to be achieved, but the agreement between participating subjects, that is, all those involved in the dialog are considered qualified to interfere in the process. The language is not used as a mean of transmission of information (strategic action) but as a source of social integration (communicative action) [15].	Motivation for understanding; language used as a source of social integration (search for dialog, exchange - to generate the debate that leads to an agreement); argumentative exchange between the published messages; search for a common sense, not just the exposure of individual understandings.
Relevant Process: Common World	
Description	Indicators
World of shared existence. Participant actors try cooperatively to define their action plans, taking into account each other, the horizon of a shared world in the basis of a common interpretation of situations [15]. Most people enter a social movement with their own goals and motivations, and come to find common denominators in the movement's practice itself.	Sense of inclusion in the group; move from an individual vision to a collective one.

The data analysis is a content analysis of the dialogs. There are several computer packages for qualitative data [16], for example: AQUAD; ATLAS.ti; Nvivo; Textbase Alpha, ETHNOGRAPH, which do not perform the analysis but can assist it by organizing and structuring text for subsequent analysis. For the MPL case study we chose WebQDA, which allows features such as to search for text, codes, nodes and categories; to organize and filter them presenting grouped data according to criterion desired; to run boolean and proximity searches; to present data in sequences and locate the text in surrounding material providing context; to classify subjects and subsets, to enable memos and also treatment of non numerical and unstructured data; and to question data by

crossing categories, codes and subjects. Most of all, due to the collaborative work of analysis through cloud computing that counted on the presence of many Brazilian researchers, the software privileged runs in Portuguese, the same language as in the database.

This analysis phase involves: coding, categorizing (creating meaningful categories into which the units of analysis – tweet posts – can be placed), comparing (categories and making links between them), and concluding (drawing theoretical conclusions from the text). The codes (*Relevant Processes* framework), organize the understanding of the problem in a specific context that structures the categorization, which is exploratory and based on emergent themes and patterns. The description of the phenomena, its association with other categories, and the identification of relations between variables allow the development of interpretation from the social interactions in the dataset.

The final product of this research design is a provisional guide of important elements for the critical education of active citizens in social networks. Such guide provides effective recommendations that should be pertinent, if not fundamental, to: teachers' education, pedagogical application by teachers and educators, action research in teaching practices (the other contexts of the research project - formal and non-formal education), and to orient the other stage of the case study (interviews).

3.CONCLUSION

This work is part of the investigative efforts of researchers in the Education field who seek alternatives for critical education in digital culture. In the debate about the decline of political culture, political action on social networks presents alternatives to the traditional education system. In this perspective, the interactions that take place in social networks are, perhaps, a precondition for citizenship in digital culture, where democratic relations are promoted in public spheres and by new forms of online participation.

The acquaintance of elements that can promote the existence and the empowerment of citizens is a demand for an emancipatory education of the XXI century. Although education plays an important role in this scenario, teachers and educators lack references and abilities to empower active citizens and enhance a critical education in digital culture. The research presented in this article is a contribution in this direction. It deals with the development of a research design for the investigation of net activist groups aiming to identify elements that promote political action in social networks.

Methods and instruments for data collection, data treatment, and data analysis were articulated and created. For the extraction and data treatment, it was presented a model, which was adapted to the context of this research, the Perspectival Method of Network Analysis [13]. In the steps of mining the large amount of data, there was the definition of the categories of analysis in two steps: *Spaces of Possibility* and *Relevant Processes*. At the end, it is possible to extract the discursive exchange for the final stage of content analysis of the dialogs (*Compilation of Dialogs*).

The research objective is to guide teachers and educators in their practices inside and outside of school. The final result of the investigation conducted with this instrument will provide some guidelines for teachers' education, counting on the reference of relevant elements for critical education in digital culture. In a manual analysis of the dataset we could foresee some provision of results. For instance, after identifying plurality (the existence

of diverse ideas) in a space of possibility (social integration), it showed an important mediation of some key actors, not a single one. In the content analysis of the dialogue, their role can show to teachers how to promote these elements in educational practice.

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