

COORDINADORES

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SPANISH INDIGNADOS AND THE EVOLUTION OF 15M: TOWARDS NETWORKED PARA-INSTITUTIONS

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ABSTRACT: The Arab Spring, the Spanish *Indignados*, the Occupy Movement (#jan25, #egypt, #arabspring, #15M, #29S, #occupywallst, #ows, #15O). In the last months the world has witnessed the emergence of networked citizen politics: besides institutions, but many times mimicking their nature; unlike traditional citizen movements, but very much alike in their essence. Networked citizen politics, characterized by decentralization, swarm-like action and an intensive use of Information and Communication Technologies, have been having a starring role in world-wide protests and movements, most of the times overtaking and circumventing the actions of governments, parliaments, political parties, labour unions, non-governmental organizations, mass media and all kinds of formal democratic institutions.

Taking the case of Spanish *Indignados*, the aim of this paper is to analyse the nature of networked citizen politics as an extra-representational kind of political participation after the usage of Twitter that has been made around the so called 15M movement. Firstly, users will be characterized, including a description on how movements propagate one onto another. Secondly, the paper will see what are the bonds between networked citizen movements and formal democratic institutions, how do they relate one with each other, especially the movements with political parties and mass media. It will also emphasize how networked citizen politics may use similar tools as the so mentioned Politics 2.0, but with very different purposes and, thus, results, and what is the result of the two clashing approaches.

Our analysis will show that different movements –i.e. 15M and 25S– act as a continuum for networked citizen politics that use the Internet as the support for new institutionalisms, and despite the lack of traditional organizations, people, practices and ideas are shared and used as foundations for further action. Notwithstanding, there almost is no inter-institutional dialogue with exceptions related with individuals belonging to minor and left-wing parties.

KEYWORDS: 15M, spanishrevolution, indignados, twitter, social network analysis, institutional politics.

1. INTRODUCTION

The Spring of 2011 will appear in the books of History as a period of worldwide unrest, revolts, uprisings and even revolutions, most of them lasting or replicating until

Fall or just left unended. In Spain, the Spanish *Indignados* took the *plazas* (squares) and camped on them the night of May 15th and for several weeks. The movement quickly spread all over the country, being Information and Communication Technologies (ICTs) crucial instruments for coordination, communication and (political) deliberation. Amongst all these technologies, Twitter played an important role both within the movement and, this is our guess, outside the movement, to get in touch with other citizen organizations, media, and formal democratic institutions: members of the parliament and political parties at large.

One of the main questions that have arisen have been whether these movements are as emergent as they seem, or have instead been designed, promoted, fostered and led by political parties or civil society organizations.

There is quite a lot of evidence that offline political activism is much related with online political activism, and that being online is also a good gateway for political participation. In this sense, Rainie et al. (2011) or the Institute for Politics, Democracy & the Internet (2004) have measured the strong relationship between being an online influential or an online politically committed person and their own offline political activity.

What we do not know is whether people that are politically active in their communities do the same thing once online, or if it is just the contrary. In this train of thought, Katz et al. (2001) found that «Internet users were more likely than non-users to engage in traditional political activity in the 1996 general election». This is a statement that could be difficult to validate if we were to look only at traditional parties, because as Norris & Curtice (2006) notice «the online population is most predisposed to engage in cause-oriented forms of activism, characteristic of petitioning, demonstrating, and contacting the media over single-issue politics and civic-oriented activities, such as belonging to voluntary associations and community organizations». And that is the very essence of the *Indignados* or 15M movement in Spain. Self-expression and other post-materialist values could be taking up with other survival-centered values, leading us to an intergenerational value change (Inglehart, 2008).

That said, if there is a change of values going hand in hand with a change in participation strategies, can it be stated that the *Indignados* movement, along others of the kind, are shifting or pushing political participation in the field of extra-representational participation (Cantijoch, 2005)? If that is so, how are democratic institutions such as governments, parliaments or political parties dialoguing with these extra-representational political ways of participation? What about media?

What is already a fact is that «technology [is enabling] more effective forms of collective action» (Noveck, 2005) and that it would be highly advisable to «explore ways to structure the law to defer political and legal decision-making downward to decentralized group-based decision-making».

Our hypothesis in this paper is that we have found, once again, evidence of new ways of extra-representational participation, a way of political participation that is a growing. Notwithstanding, there seem to be increasingly stronger liaisons between these movements and political parties –especially minor and left-wing ones– and media, the later intermediating between social movements and more disconnected institutions (governments, parliaments and major and right-wing parties). On the other hand, this dialogue is possible partly because of the process of pseudo-institutionalization of social movements: if we trace the evolution of such movements, despite their decentralization and lack of visible leadership, they show an emergent characteristic of flocking together and a behaviour that can be identified with formal institutions' from an outsider's point of view

2. FRAMEWORK

2.1. Internet and politics

Our first statement about Internet and politics or political participation and engagement is that they have a positive relationship. Borge & Cardenal (2012) found that «use of the Internet has a direct effect on participation independently of motivation». In other words, in addition to the set reasons that cause political participation, the Internet itself is increasing this willingness to participate online. In this sense, the Internet reinforces online participation.

This is a confirmation of other authors that dismissed former suspicion about the Internet alienating and isolating people from their community in general, and from politics in particular. On the contrary, «being involved in effortless political activities online does not replace traditional forms of participation, if anything, they reinforce off-line engagement» (Christensen, 2011).

Of course being online political participation requires a set of skills and capabilities (Peña-López, 2011) that does not only enable citizens to participate online, but that actually increase the probability of them doing it (Borge & Cardenal, 2012).

It is worth noticing, though, that even if the Internet has a positive impact on online participation and that this online participation correlates with offline participation, this does not necessarily mean that offline participation has to be understood as usual. In fact, it has already been found that a higher use of the Internet is not related with being more interested in a political campaign and not even be more prone to following official cyberpolitics (Sampedro et al., 2012). Online campaigns, thus, would be addressed not to the whole of the online population, but to the ones that have an influence, both online and offline.

Indeed, major media have not been replaced by online or independent media, and still have enormous influence in political matters, both online and offline (Sampedro et al., 2012). This is but yet another confirmation of the knowledge gap hypothesis

(Tichenor et al., 1970) as it has also been found by Anduiza et al. (2009), who show how the Internet is a knowledge gap amplifier when analyzing general elections in Spain. Nevertheless, the authors also find that a certain degree of serendipity is actually working: besides the negative impact of the Internet on equity of access to information and participation, it is also true that the Internet exposes people to politics in more ways and intensity than compared to offline channels. A consequence of that is that despite the cognitive gap increasing due to the impact of the Internet, the motivational gap actually decreases. In other words, the knowledge gap closes between politically interested citizens and those not interested.

Related to that, Cantijoch (2009) also analyzed the effects of the Internet on reinforcement and mobilization. She found, in addition to Anduiza et al.'s (2009) findings that «institutionalised individuals are similarly increasing their likelihood of engaging in [online] activities in a mobilisation process», which confirms the mobilization hypothesis. The most interesting aspect to us, though, is how she also found a complementary impact to mobilization and how Internet would reinforce «pre-existing proclivity to engage in extra-representational modes of participation».

2.2. Spanish users and politics on the Internet

In addition to what has already been said, there are two main characteristics of Spanish online politics that still. Of course, there are exceptions to the general rule that we are presenting in the following lines –this research is partly about this issue– and the evolution of the Internet, Internet usage and online politics still is changing at a quick pace. But both characteristics are quite generally spread and will contribute in understanding the results of this research.

On the one hand, and put in a very simple way, citizens are using intensively the Internet and most especially the so-called web 2.0 and social media platforms and applications, while institutions are not (Peña-López, 2011). This is not exclusive from the political arena (it can be found in the many other institutions) but being politics such a conversational issue, it makes the question even more relevant. This non-usage of the web 2.0 or social media should not be understood as non-usage «at all», but as a mere technical usage without the underlying change of philosophy or ethos. For instance, when it comes to political blogging, it can be found that it is used in very unidirectional ways, campaign based and mainly for spreading the content from the party (Criado & Martínez Fuentes, 2009).

This subversion of the enormous potential of the Internet and the aim to control the message has created a sort of division between formal and informal online politics. If we add the rejection to formal politics, the increasing shift towards extra-representational participation and the motivational push of the Internet, it is not surprising that there is «a relatively small but statistically significant effect of political information exposure in the internet in the increase of the vote towards minor parties and the abstention»

(Padró-Solanet, 2010). In other words: a growing minority of Spaniards is moving away from formal politics partly pushed out by an intensive use of the Internet.

The second characteristic of online politics in Spain is that in general, socio-demographic characteristics explain most of the Internet use and online political activities among Spaniards (Robles Morales, 2008). But, regarding political ideology or positioning, Spanish Internet users are, significantly, more prone to be left wing than the average of the population (Robles Morales, 2008). This aspect has no explanation in classical theories –such as social class– and can only be indirectly explained by factors that we have already mentioned.

2.3. Twitter

If online politics are a reality in Spain –with the caveats noted above– Twitter is, arguably, already playing a major role in general elections in Spain (Izquierdo Labella, 2012). There are, though, some appreciations to be made on how Twitter is being used in politics in general and in Spanish politics in particular.

On the one hand, Twitter is becoming an easy, cheap and over all quick space where to broadcast opinion, unrest and concentrations in real time. In other words, there may not be «Twitter revolutions» but revolutions are definitely tweeted (Lotan, et al. (2011).

Besides coverage and broadcasting, Twitter is being useful to classify and concentrate users and their attention around specific topics. These topics are usually fed by mainstream media which passes it «to the masses indirectly via a diffuse intermediate layer of opinion leaders» (Wu, 2011).

The debate whether these flocks of people around topics are of the same feather is surely the most interesting part of it all. Wu (2011) warns about the risks of high levels of homophily being very high, as the classification of topics and the concentration around them is made by the users themselves, as it is them who explicitly opt-in who to follow (Wu, 2011). On the other hand, Kelly (2005) leaves an open door to some degree of ideological or political serendipity, as the openness of virtual spaces enables all kind of dialogues and «a range of policy preferences and ideological groundings –and they talk to each other».

In the case of Spain, Guadián Orta et al. (2012) have shown that the relationship between the citizen and the message actually works in both ways. On the one hand, an emergent social network is dynamically created around a specific topic, based on who is talking about it, who is following it, who replies or who forwards the message. On the other hand, the very message is shaped by the social network and its influence on it. At the end, message and network make up an *ad hoc* set that evolves together in time.

2.4. 15M

In a similar way, the *indignados* movement began with a call to camp on Puerta del Sol, a centric square in Madrid, on 15 May 2011 (Alcazan et al., 2012), just a week be-

fore the municipal elections. «15M demonstrators were younger, more educated [and] more likely to be women and unemployed» (Anduiza, Cristancho & Sabucedo; 2012). There also was a strong mobilization effect that brought onto the streets people that did not use to participate in demonstrations. The movement called for «real democracy, now» and in many cases asked for not voting major parties. One of the main characteristics of the movement was «their decentralized structure, based on coalitions of smaller organizations» (González-Bailón et al., 2011), with its back against political parties and, most of the times, against labour unions too.

Anduiza, Martín & Mateos (2012) characterized the participants in the 15M camps as having higher levels of political competence, deeply politicized ideals, and low levels of trust in institutions (especially political parties). In their analysis, they differentiated between non-sympathizers to the movement, sympathizers that did not participate and participants. And although still a preliminary analysis, their conclusions were that participants ended up voting more in the general elections of 20 November 2011, and that their vote went to minor parties, with a certain bias to the left wing.

Unlike other demonstrations, physical and virtual spaces, what happened in the plazas and what happened on the internet interacted and fed each other space with information, coordination and a sense of collective identity. Just like unrests in the Arab Spring, the hybridization of the virtual-urban space was crucial for the movement (Martínez Rol-dán, 2011; Castells, 2012). And Twitter played a major role in this hybridization.

3. EXTRA-REPRESENTATION OR A PROCESS OF INSTITUTIONALIZATION?

3.1. Research questions

It is relevant to know how the movements evolved along time, especially focusing on a double issue or question: did they dissolve or maintained after time, and would they become institution-like social structures or, on the contrary, would they maintain their extra-representational forms, based on networks or platforms.

There are, thus, two group of research questions that we face in this research: on the one hand, their characteristics –both individually and collectively– and how did these evolve along time; on the other hand, how did they relate, as a group, with other groups, especially institutions. In other words, we want to analyze their inner and their outer structure.

Regarding the former, we want to characterize the users: who they are, their gender, their socio-economic status and professional and political profile; what typologies can be drawn after them; what was their relationship with the territory, and be able to tell whether this is a urban phenomenon as most other industrial movements.

Concerning their evolution, we will analyze the movement at three moments in time: during 15 May 2011 (15 May) and the following days; during its first anniversary and the global movement of 12 May 2012 (12M15M); and during the events of 25 September 2012 (25S) where some influential actors from the movement lay siege in front of the Spanish Parliament until the general strike of 29 September (29S). We want to be able to tell how other citizen joined the *indignados* in their camps. We are interested in seeing the thread that goes through these three moments in time, how the different groups remained or changed, who where the long-term participants and, most important, why.

Regarding the second issue related with the relationships with other institutions (parties, media, labour unions), we want to know whether there was any contact between this kind of extra-representative politics and political institutions, and how did it evolve. Moreover, our intention is also to tell the capability of these movements to mobilize the citizenry compared to that of institutional politics. Summing up the previous questions, we would like to describe the relationships between the 15M and 29S and institutional politics, whether they share in common topics, liaisons, spaces. For instance, what was the role of media in telling the story and sharing viewpoints.

3.2. Hypotheses

Our hypotheses are as follows:

- H1: Extra-representative movements like the 15M, 12M15M, 25S or 29S are initiated by gathering a critical mass on social networking sites and evolve, on the outside, into a para-institution, while they keep an emergent and decentralized network-like structure on the inside.
- H2: Unlike institutions, that have a usually exclusive membership, citizen networks create para-institutions that share members among them.
- H3: The dialogue between political institutions and network para-institutions is weak, but existing, and concentrates on the left-side of the political arena.
- H4: When dialogue is non-existing, mass media act as the channel through which political institutions (normally on the right) and network para-institutions speak with each other.
- H5: Dialogue and lack of tension smoothes online participation. Lack of dialogue and tension sparks participation and boosts it beyond representational participation.

4. METHODOLOGY

To approach the phenomenon of the 15M, we analyse the messages that were sent on the Twitter social networking site. The election of the tool is not in the sense that the tool caused, framed or even explained the movement –a critique that Sádaba (2012)

raises— but in the sense that «the revolutions were tweeted» used by Lotan et al. (2011), as we will actually prove.

4.1. Data

Data were extracted from Twitter’s API¹ which provides information of the time and space coordinates of each tweet, information on the sender (name and alias, bio), followers and friends. Table 1 shows the interval of time, selected hashtags, number of tweets and number of users for the three data sets.

| Data set | Date of capture (from / until) | monitored words | Tweets | Users |
|----------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------|
| 15M | 13-may-2011 / 31-may-2011 | #15M, 15-M, #democraciarealya, #tomalacalle, #Nolesvotes, #spanishrevolution, #acampadasol, #acampadabcn, #indignados, #notenemosmiedo, #nonosvamos, #yeswecamp | 1,444,051 | 181,146 |
| 12M-15M | 01-may-2012 / 31-may-2012 | #12M15M, #12M-15M, #12M, #15M, 15-M, 12-M, #spanishrevolution, #acampadasol, #acampadabcn, #indignados, #PrimaveraGlobal, #TomaLaCalle, #AnonOps, #hagamoscomoenislandia, #YoVoy12M, #desalojoSol, #volvemosalas5, #12mglobal, 14mMad, #Feliz15m, #Es15M | 539,642 | 110,808 |
| 25S | 16-aug-2012 / 31-oct-2012 | 25S, #25S, asalto al congreso, @ocupaelcongreso, #ocupaelcongreso, ocupa el congreso, #tomaelcongreso, toma el congreso, 29-S, 29S, #29S, #voces25S, #vamos29S | 1,394,114 | 289,001 |

Table 1: Data sets: hashtags

4.2. Demographical characterization

The policy of Twitter establishes that only a username and an email address are required. Some users complete their profile with their name, location, a brief biography and their website. We use these metadata to infer the attributes listed in Table 2.

¹ <https://dev.twitter.com/docs/streaming-apis/streams/public>

| Attribute | Inferred from | Complementary data |
|-------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gender | Name | Spanish Institute of Statistics (INE), male/female names ² |
| Geography: Location | Location | Complemented by autonomous community and province after INE's table of municipalities and provinces ³ |
| Geography: Urban vs. local | Location | Madrid, Barcelona, Valencia, Sevilla, Bilbao, San Sebastián, A Coruña, Granada, Málaga, Salamanca, Valladolid are considered as urban. Rest as local. |
| Occupation level | Description | Classified as Manager-Executive, Professional, Support staff, Manual worker, Student |
| Tribe | Users | Classified by the authors after the user list as: <ul style="list-style-type: none"> • Activists (acampada, dry, pah, 25s) • Media • Politicians (pp, psoc, iunida, upyd, equo, ciu, etc, icv, compromis, pirata) • Labour Unions (ccoo, ugt). |
| Join | Timestamp | 15M: Origin: May 13-14 Early: May 15-16 Boom: May 17-25 Late: May 26-31 25S: Origin: August 16-18 Early: August 19-September 24 Boom: September 25-30 Late: October 1-31 |

Table 2: Inferred attributes ²³

4.3. Evolution of the movements

To understand the evolution of the 15M movement through its information diffusion patterns, we study separately the different stages of the events, labeled as *Origin*, *Early*, *Boom* and *Late*. We denote as $V^r = \{v_1^r, \dots, v_n^r\}$ all users that retweeted a user or were retweeted by a user at least once in the corresponding dataset of tweets. Then, we define a graph $G^r = G^r(V^r, E^r)$ comprising a set V^r of nodes and a set E^r of edges. There is an edge e_{ij}^r that connects user v_i^r with v_j^r if user v_i^r retweeted user v_j^r . Finally, we assign weight w_{ij}^r to every edge e_{ij}^r which is the number of times user v_i^r mentioned user v_j^r in the corresponding stage.

2 http://www.ine.es/daco/daco42/nombypapel/nombres_por_edad_media.xls

3 <http://www.ine.es/jaxi/menu.do?type=pcaxis&tpath=/t20/e245/codmun&file=inebase>

4.4. Relationship between the 15M and 29S and institutional politics

In order to analyse the relationship between the 15M movement, the political institutions and media, we generate graphs for the three periods: 15M, 12M15M and 25s. These graphs follows the same method that we defined in the above subsection but establishing edges between users based on mentions instead of retweets.

To quantify the influence of the tribes in each graph, through their connectivity, we use the k-core decomposition (Seidman, 1983) based on the in-degree of the nodes. Then, we group the k-index values of the users that form each tribe for computing the average and maximum value and the standard deviation.

Additionally, to understand the relationship between the tribes we remove the nodes which are not part of the pre-defined tribes and their edges. Then, we collapse the nodes which belong to the same tribe in super-nodes, one per tribe. Therefore, the edges of these new nodes express the mentions between users that form the adjacent tribes of an edge. We also remove the edges with a weight lower than 10 to ignore anecdotic interactions. Finally, we use the Louvain method (Blondel et al., 2008) for community detection in these new graphs and characterize the interactions between tribes at a macro-level.

4.4.1. *K-index decomposition*

K-core decomposition is a technique for the evaluation of potential influencers in different social networks (Kitsak et al., 2010). The k-core of a graph is the maximal sub-graph in which each vertex is adjacent to at least k other nodes of the sub-graph. In directed graphs as the ones of this study, then there exist two different k-core decompositions (for in- and out-degrees). A graph's node has a k-index equals to k if it belongs to the k-core but not to the (k + 1)-core.

4.4.2. *Community detection*

The Louvain method is a greedy optimization algorithm to detect communities of nodes, also called modules, based in the modularity of the graph. The modularity is a function that quantifies a particular division of a graph into communities and obtains high values in graphs with dense edges between the nodes within communities and sparse edges between nodes in different communities.

5. RESULTS⁴

We analyse the behavioural patterns that emerge along time between and within the three events: 15M, its first anniversary (12M15M) and the events of the 25S.

5.1. Data: participation of users in the events

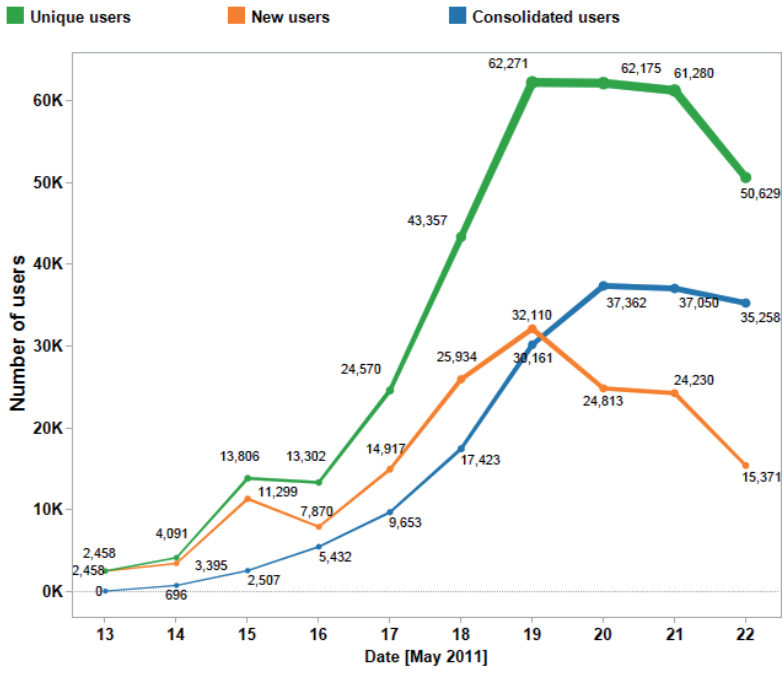


Figure 1: Participation of the users in 15M

First, we observe in Figure 1 that the 15m broke the general trend of immediateness of social movements: expectation and interaction lasted for days and even transcended one event into the other⁵. Indeed, the number of total users on 15M (37,362) does not differ a lot from the estimated number of demonstrators on the streets. Thus, even if the movement was born online, it definitely went offline and Twitter acted as a communication platform between the participants.

⁴ The whole set of figures in higher resolution can be accessed at <http://www.barriblog.com/idp2013/>

⁵ Evolution of 12M-15M (<http://t-hoarder.com/12M-15M/>) and 25S (<http://t-hoarder.com/25S/>).

Regarding coincidence between the three events, Figure 2 confirms the volatility of Twitter in the political engagement of users in several periods. Only thee 3.22% of all participants took place in the three events, 16.30% participated in at least two of them and 83.70% only participated in one of them, following Pareto’s Principle of participation.

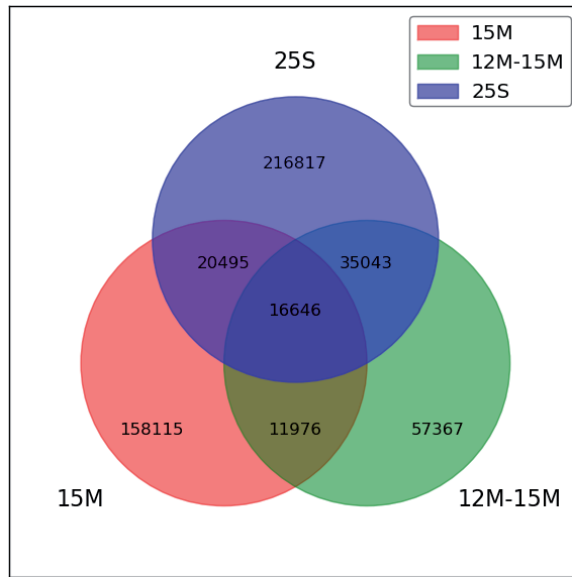
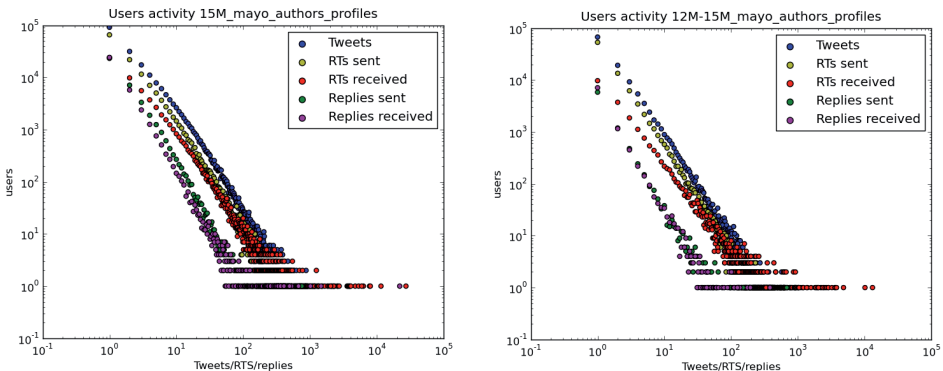


Figure 2: Participation of the users in the three events

Besides the different events, Figure 3 shows a Pareto’s Power Law in the tweets, retweets and replies distributed by users. In other words, there is a low number of users that are very active while the rest shows much less activity. From now on, we denote as *Core* the subset of users that participated in the three events.



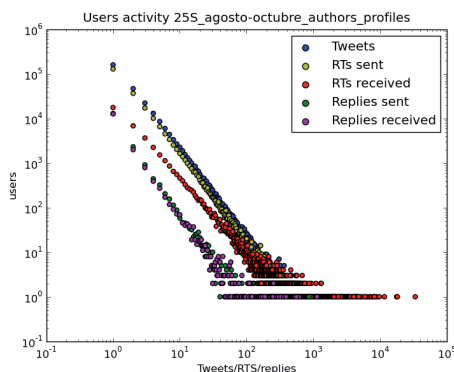


Figure 3: Tweets, retweets and replies by users during 15M, 12M15M and 25S

5.2. Demographical characterization

In this subsection, characterize the users who tweeted during the 15M, 12M15M and/or 25S events in terms of geographical location, gender, occupation, role and tribe.

5.2.1. Gender

Twitter provides no data for gender, and it has to be guessed by given names stated by users in their user names. Gender has been identified for about two-thirds of users. From 15M to 25S the percentage difference between men and women was cut by ten points. The Core group was mostly male.

| Gender | Core % | 15M % | 12M15M % | 25S % |
|--------|--------------|--------------|--------------|--------------|
| Men | <u>43.88</u> | <u>43.92</u> | <u>38.51</u> | <u>37.93</u> |
| Women | 23.12 | 23.78 | 26.74 | 27.44 |
| Unknow | 33 | 32.3 | 34.75 | 34.63 |

Table 3: Distribution of the users by gender

5.2.2. Geography

The geographical origin of the tweets was identified in almost a half of them, enough to know their distribution in the three events. Madrid, Catalonia, Andalusia and Valencia generated most of the messages. From 15M to 25S the percentage of tweets fell in the largest cities (Madrid and Barcelona) and instead the number of users with an unknown location increased. It is worth noting that people from the *Core* group provide their location most frequently (more than half, 53.08%) and they most belong to big cities, especially Madrid (16.73%).

| Location | Core % | 15M % | 12M15M% | 25S% |
|---------------------|--------------|--------------|--------------|-------------|
| Andalusia | 6.61 | 4.82 | 6.22 | 6.44 |
| Aragon | 1.77 | 1.22 | 1.50 | 1.12 |
| Asturias | 1.21 | 0.95 | 0.97 | 0.99 |
| Balearics | 0.71 | 0.61 | 0.55 | 0.44 |
| Canary Islands | 1.10 | 0.95 | 0.95 | 0.88 |
| Cantabria | 0.48 | 0.31 | 0.38 | 0.36 |
| Castilla y Leon | 2.64 | 1.99 | 2.27 | 2.23 |
| Castilla la Mancha | 0.85 | 0.71 | 1.00 | 1.16 |
| Catalonia | <u>10.01</u> | <u>8.67</u> | <u>8.20</u> | <u>4.94</u> |
| Ceuta and Melilla | 0.06 | 0.05 | 0.08 | 0.05 |
| Valencian Community | 4.19 | 3.31 | 3.92 | 3.21 |
| Estremadura | 0.93 | 0.67 | 0.92 | 0.93 |
| Galicia | 2.43 | 1.81 | 1.95 | 2.14 |
| Rioja | 0.21 | 0.17 | 0.18 | 0.17 |
| Madrid | <u>16.73</u> | <u>10.87</u> | <u>10.74</u> | <u>9.25</u> |
| Murcia | 1.47 | 1.06 | 1.35 | 1.31 |
| Navarre | 0.50 | 0.37 | 0.39 | 0.37 |
| the Basque Country | 1.16 | 0.97 | 0.86 | 0.98 |
| unknown | 46.92 | 60.51 | 57.58 | 63.04 |

Table 4: Distribution of users by geographical areas

When classified by urban or local origin, tweets show a trend towards decentralization from urban to local. As the *Core* group is more urban than local, the movement was initially mostly urban, but as it grows, so does decentralization.

| Urban-Local | Core % | 15M % | 12M15M % | 25S % |
|-------------|--------------|--------------|--------------|--------------|
| Urban | <u>25.96</u> | <u>18.81</u> | <u>18.25</u> | <u>13.95</u> |
| Local | 23.25 | 18.25 | 20.93 | 20.38 |
| Unknow | 50.79 | 62.94 | 60.82 | 65.67 |

Table 5: Distribution of users by urban-local

5.2.3. Occupation level

We observed that the most common occupation level is «professional», though it showed a decreasing pattern in contrast to the participation of students. In the *Core* group the percentage of professionals was twice higher than on common users.

| Level | Core % | 15M % | 12M15M % | 25S % |
|-------------------|--------------|-------|----------|--------------|
| Manager-Executive | 0.94 | 0.96 | 0.73 | <u>0.52</u> |
| Professional | 20.99 | 13.93 | 14.02 | <u>10.30</u> |
| Support staff | 0.35 | 0.28 | 0.35 | 0.37 |
| Manual worker | 0.32 | 0.25 | 0.33 | 0.35 |
| Student | 3.93 | 3.08 | 5.3 | 5.53 |
| Unknown | 73.47 | 81.5 | 79.27 | 82.93 |

Table 6: Distribution of users by occupation level

5.2.4. Tribes

From the total set of users, a new categorization was made in tribes according to their general profiles: Activists, Media, Politicians and Unions. Evolution in time shows a greater involvement of unions at the expense of the Platforms and Media. Politicians do not present major changes with just a slight decrease in matters of presence.

| Tribes | 15M % | 12M15M % | 25S % |
|-------------|--------------|--------------|--------------|
| Activists | <u>17.03</u> | <u>13.74</u> | <u>11.72</u> |
| Media | <u>19.12</u> | <u>17.12</u> | <u>14.77</u> |
| Politicians | 55.20 | 47.84 | 49.12 |
| Unions | 8.65 | 21.29 | 24.39 |

Table 7: Distribution of users by tribes

5.3. Evolution of the movements

We captured the formation and rise of 15M and 25S on Twitter. In both cases we find that the first users who participated and got notoriety were often overshadowed by others who joined later. We also note that at the *Boom* period there was a central core with many relevant users of different communities, but when the movement got into later stages, these groups took a distance from the main activities.

During the 15M movement, @democraciareal, the main convener, was quickly overtaken in the *Early* phase. On the other hand, the group that claimed free culture (@bufetalmeida, @julioalonso, @edans, etc...) was also overshadowed in the *Boom* stage. Two users that not existed in May 15, @AcampadaSol and @acampadabcn, were finally the most enduring users. Figure 4 to Figure 7 below portray the evolution of the relationships established during each stage of the 15M.

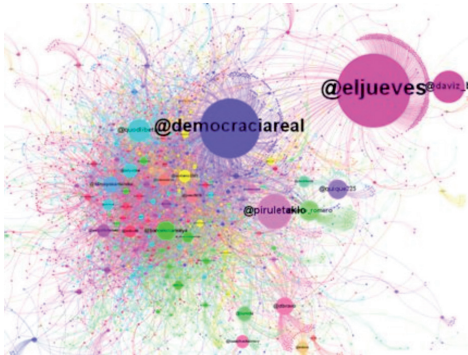


Figure 4: 15M- Map of RTs Origin

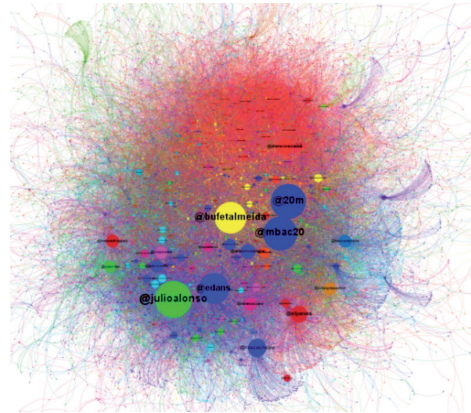


Figure 5: 15M- Map of RTs Early

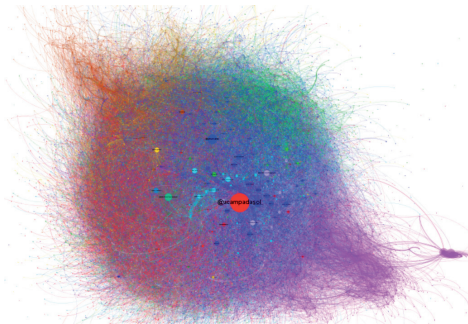


Figure 6: 15M Map of RTS Boom

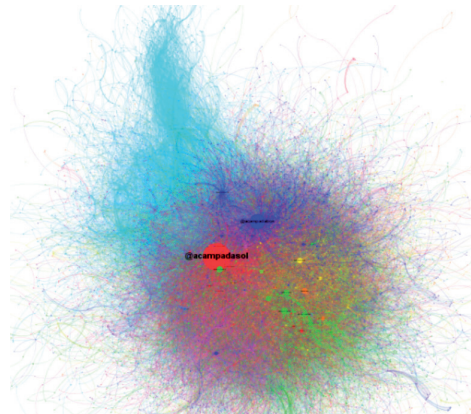


Figure 7: 15M- Map of RTs Late

As per the call for September 25 (Figure 8 to Figure 11) it can be seen that in the *Origin* stage there is no central node playing a coordinating role. Instead, the major roles are played by individual users and, later on, by the collective user @democraciareal. Though it has an important role in the diffusion of information, it is worth clarifying that it did not have a major role in terms of centrality.

During the *Early* stage from August 24 to September 24, a network around the call for a new event is created. The user @Coordinadora25S appears to, precisely, explicitly coordinate the movement, as do @OcupaelCongreso and @DemocraciaReal. Only two of the initial users are still on this stage.

On the *Boom* of the call –September 25 to 30– well defined communities have already appeared. Central nodes –in deep blue– are the platforms, with a strong relationship with media –painted in salmon. The periphery is populated by the political left

–red– and in the upper right corner –light blue the initial group, now not occupying the geographical center of the movement. At their side, in yellow, the *acampadas*.

Last, the *Late* stage maintains the spirit of the call of @coordinadora 25S and @democraciareal, but now split in different communities.

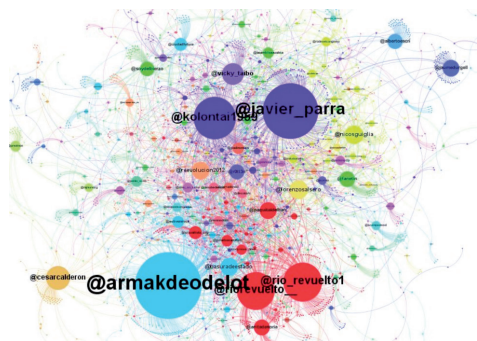


Figure 8: 25S- Map of RTs «Origin»

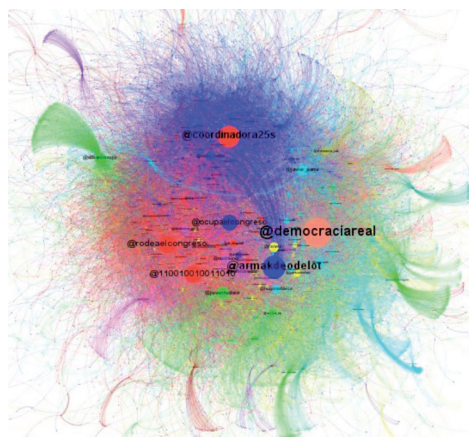


Figure 9: 25S- Map of RTs «Early»

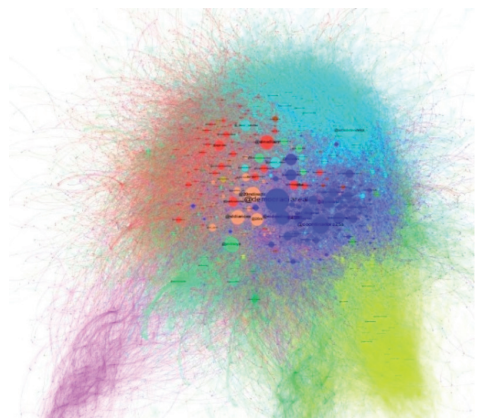


Figure 10: 25S- Map of RTs «Boom»

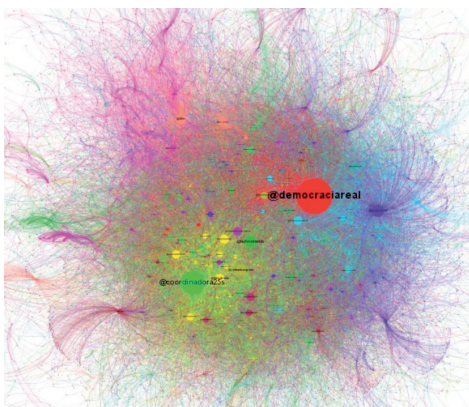


Figure 11: 25S- Map of RTs «Late»

5.4. Relationship between the 15M and 29S and institutional politics

In this subsection, we study the relationship among the 15M movement tribes, mass-media (channels, programs and journalists) and the democratic institutions (parties and trade unions) in the mention graphs. For this purpose we analyse the connectivity of each group, through the *k*-index decomposition, and the connections between groups, through the detection of communities.

5.4.1. K-index decomposition

Table 1 shows the maximum, the average and the standard deviation of the k-indices of the nodes which form each group in the three moments in time (15M, 12M15M and 25s).

In the 15M period, we observe that in almost every group there is at least one node with the maximum k-index ($k_{\max}=12$), except for the parties CUP and COMPROMIS and the trade union CCOO. According to the average k-index, the 15M tribes (ACAMPADA, DRY, PAH) and MEDIA are distinguishably the best connected groups in this period ($k_{\text{avg}} \geq 7$). Then, we note that the parties with the highest average k-index are the three newest ones: EQUO, PIRATA and UPYD ($k_{\text{avg}} \geq 3$). The trade unions and the rest of the parties obtain the lowest average k-index values without any ideological ordering pattern ($k_{\text{avg}} < 3$).

The results in the 12M15M period show that only the two main 15M tribes (ACAMPADA, DRY) and MEDIA contain a node with the maximum k-index ($k_{\max}=19$). In this period, DRY emerges as the best connected group according to the average k-index ($k_{\text{avg}} \geq 7$), followed, by the two other 15M tribes (PAH, ACAMPADA) ($k_{\text{avg}} \geq 7$). The newest parties political parties PIRATA and EQUO are still the best connected ones ($k_{\text{avg}} \geq 3.88$) while UPYD shows greater disaffection in the anniversary period ($k_{\text{avg}} = 1.45$). We also observe that MEDIA do not play such an important role in this network when some left-wing parties (ICV, IUNIDA) and the trade unions (CCOO, UGT) get higher average k-index values.

In the 25S period many groups contain at least one with the maximum k-index value. However, we observe than in this period the average k-index value of the 25S group formed by the organizer accounts is significantly higher ($k_{\text{avg}} = 21.67$) than the rest of the groups ($k_{\text{avg}} \leq 10.34$). After 25S group, the best connected groups are the two main 15M tribes (ACAMPADA, DRY) ($k_{\text{avg}} \geq 9.65$). The position of MEDIA in the ranking is considerably upper than its position in the previous period ($k_{\text{avg}} = 6.92$) and EQUO remains as the best connected political party ($k_{\text{avg}} = 6.15$).

Finally, we found that the standard deviation is notably higher in the best connected groups except for the 25S group, formed by just 6 accounts, in the last period. This indicates a greater diversity of values in high connected groups while in most parties the standard deviation is considerably lower because of the inactivity of most of their members during this period.

| 15M | | | | 12M15M | | | | 25S | | | |
|----------|------------|------------------|------------------|----------|------------|------------------|------------------|----------|------------|------------------|------------------|
| group | k_{\max} | k_{avg} | k_{std} | group | k_{\max} | k_{avg} | k_{std} | group | k_{\max} | k_{avg} | k_{std} |
| acampada | 12 | 7,6 | 4,11 | dry | 19 | 8,02 | 8 | 25s | 22 | 21,67 | 0,75 |
| media | 12 | 7,31 | 4,28 | pah | 17 | 6,04 | 5,95 | dry | 22 | 10,34 | 8,8 |
| dry | 12 | 7,23 | 4,94 | acampada | 19 | 6 | 6,79 | acampada | 22 | 9,65 | 8,45 |
| pah | 12 | 7 | 5 | pirata | 17 | 4,3 | 3,85 | media | 22 | 6,92 | 7,53 |

| 15M | | | | 12M15M | | | | 25S | | | |
|-----------|----|------|------|-----------|----|------|------|-----------|----|------|------|
| equo | 12 | 5,67 | 4,87 | equo | 17 | 3,88 | 3,45 | equo | 20 | 6,15 | 6,51 |
| pirata | 12 | 4,41 | 4,17 | icv | 13 | 3,2 | 3,28 | pah | 22 | 5,14 | 6,48 |
| upyd | 12 | 3,28 | 3,63 | iunida | 16 | 3,18 | 3,26 | iunida | 22 | 5,11 | 6,74 |
| iunida | 12 | 2,89 | 3,26 | ccoo | 17 | 2,82 | 2,98 | ciu | 13 | 4,16 | 5,2 |
| pp | 12 | 2,51 | 2,78 | ugt | 15 | 2,69 | 3,22 | pp | 22 | 4,13 | 5,89 |
| psoe | 12 | 2,09 | 2,76 | media | 19 | 2,16 | 3,44 | icv | 22 | 3,77 | 5,73 |
| icv | 12 | 1,81 | 2,5 | compromis | 6 | 1,78 | 1,79 | pirata | 22 | 3,11 | 5,61 |
| ugt | 12 | 1,81 | 2,81 | cup | 6 | 1,53 | 1,79 | psoe | 20 | 2,48 | 4 |
| ciu | 12 | 1,68 | 2,46 | upyd | 5 | 1,45 | 1,13 | upyd | 21 | 2,16 | 3,98 |
| ccoo | 7 | 1,36 | 1,85 | psoe | 17 | 1,19 | 1,75 | compromis | 18 | 1,84 | 4,55 |
| cup | 3 | 1,25 | 0,83 | erc | 14 | 0,99 | 1,95 | cup | 6 | 1,82 | 2,21 |
| compromis | 8 | 1,13 | 2,36 | pp | 5 | 0,54 | 0,88 | ccoo | 22 | 1,53 | 3,28 |
| erc | 12 | 0,97 | 1,87 | ciu | 3 | 0,5 | 0,7 | ugt | 22 | 1,4 | 3,07 |
| | | | | | | | | erc | 22 | 1,17 | 3,81 |

Table 8: Max k-index, average k-index and standard deviation of the k-indexes of the nodes that formed the analysed groups during the 15M, 12M15M and 25S periods.

5.4.2. Community detection

We also examine the relationships between groups, through the Louvain method for community detection, in the same three periods: 15M, 12M15M and 25S. Figure 12 shows the mention graph in the 15M period with two communities detected by the algorithm. The largest one is formed by the two main 15M tribes (ACAMPADA, DRY), MEDIA, left-wing parties (PIRATA, IUNIDA, EQUO, ICV, ERC) and the trade unions (CCOO, UGT). The second community is formed by the three major parties (PP, PSOE, CIU) accused of corruption by the platform #nolesvotes, core of the 15M movement in this period, and the liberal party UPYD.

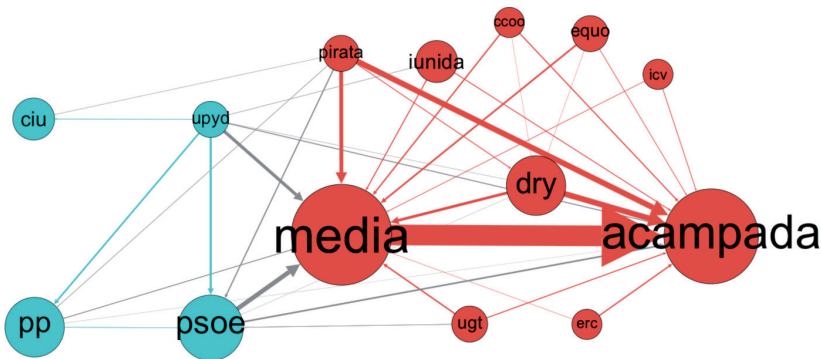


Figure 12: Mention graph of the analysed groups in the 15M period. Note: The size corresponds to the in-degree of the node.

Figure 13 shows the three communities in the mention graph of 12M15M period. In this interval, when the first anniversary of the 15M movement was held, the three 15M tribes (ACAMPADA, DRY, PAH) form one community. MEDIA act as a hub in the second community formed by the trade unions (CCOO, UGT) and most of the political parties (PP, PSOE, UPYD, EQUO, PIRATA) except for two left-wing parties (IUNIDA, ICV) which appear in the third community.

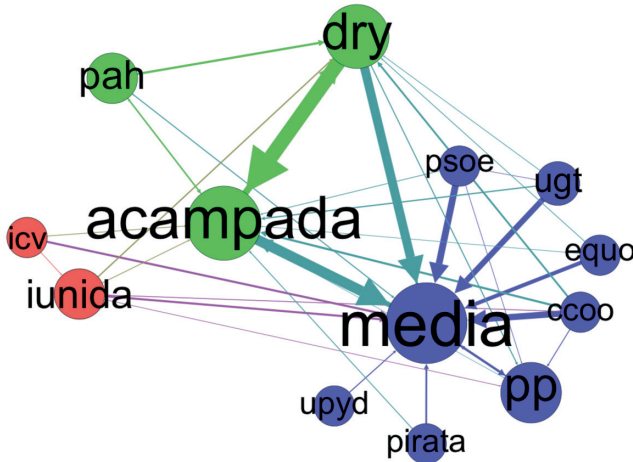


Figure 13: Mention graph of the analysed groups in the 12M15M period.
Note: The size corresponds to the in-degree of the node.

The three detected communities in the mention graph of the 25S period are shown in Figure 14. The 25s group form a community with the newest political parties (EQUO, UPYD, PIRATA, COMPROMIS) and PAH. The two main 15M tribes (ACAMPADA and DRY) are found in a community interacting with the three major parties accused of corruption by the platform *#nolesvotes* (PP, PSOE, CIU). Finally, some left-wing parties (IUNIDA, ICV, ERC), the trade unions (CCOO, UGT) and MEDIA form the third community.

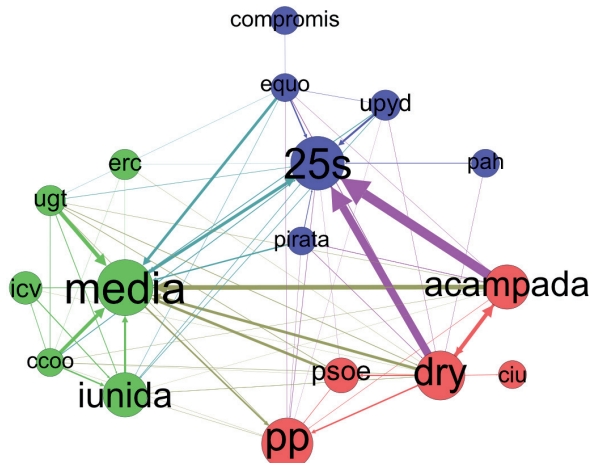


Figure 14: Mention graph of the analysed groups in the 25S period.
Note: The size corresponds to the in-degree of the node.

6. DISCUSSION

The movement of the 15M was clearly born and fostered on the Net and, later on, it did materialize in the offline world, in the *plazas*, in the *acampadas*. Initially born in big cities, they quickly spread out of urban areas to step on smaller cities and rural areas.

Totally lacking personal leaders, citizens flock around an idea or an explicit call to action and thus a movement emerges. A significant trademark of the movement is that a collective identity is created, an identity that quickly overshadows more or less relevant individuals that could very initially be identified. Collectively managed, «brands», mottos, collective users turn into real spokesman and intermediaries with other institutions such as governments, political parties, unions or media. This dialogue legitimates the collective without the need of visible individuals on the other side.

The profile of the initial participant is increasingly balanced men and women, and is a youngster, student, with a high educational level, and involved personally or professionally with communications, telecommunications or technology. This profile evolves with time into a more typical profile liked with activism, protests of demonstrations, as the increase of labour union members shows.

What ties the community –and its members– together is a strong sense of common goals, strengthened in sub-communities made up by common professional profiles, ideology or friendship.

6.1. Online vs. Offline

Unlike what common knowledge –and mainstream media messages– states, there is a strong bound between the online and the offline worlds of activism in the 15M movement. Despite the fact that the 15M and the subsequent events (12M15M, 25S) where initiated on the Net, they quickly moved offline to occupy physical public spaces. Our first hypothesis is not only validated by this observation, but also by what Aragón et al. (2012) already explained when comparing online and offline activity: growth of activity goes in parallel in both worlds, backed with political marketing and communication techniques.

We can state that these movements work as para-institutions, as they are assimilated as institutions on the outside –with explicit goals and targets, consolidated messages, collective identities that act as spokesmen– while they preserve a network-like organization on the inside, as the analysis of the inner communication clearly shows.

Indeed, the inner structure is nothing like the traditional structure of political parties, unions or other kind of citizen organizations. With free movement and possibility to participate, they use global digital networks in the most flexible way to enhance and enable any kind of participation (Castells, 2009), free in time, in space and in commitment. As we assumed in our hypotheses, members enter and leave the movement at will, or participate in different factions of it without major issues and, most important, without the movement even noticing –but the individuals, of course.

6.2. Relationship between the 15M and 29S and institutional politics

Reinforcing what has been stated before, despite the fact that many members enter or leave the movements, the movements themselves, taken as a whole, do survive like any other organization, hence their nature of para-institution. It is interesting to see how their collective identity evolves but persists along time and across the different calls and movements, from the 15M to 25S and through 12M15M. And this all happens with a most interesting characteristic: without any physical settlement of any kind.

These network para-institutions have close relationships amongst them –as it is shown comparing the different movements and calls of the 15M and 25S. In the same way, they feel closer to the organizations that have similar flexible structures, such as some media or other network parties such as the Spanish Pirate Party or the recently formed Equo.

Regarding this relationship with political parties and unions, besides this closeness to network parties, it is not surprising that these mostly protest movements have a fluid communication with left-wing parties and unions –though they are neither part of them nor can be confounded with them, which is also clear from data. Only a certain degree of confusion comes later, when the core of the movement begins to set aside and their space is taken by traditional actors of mobilization, mostly left-wing parties and unions. Most of the time, center and right-wing parties just keep a safety distance from the movement or even isolate themselves from all the buzz and debate.

It is true, then, that the dialogue between emergent citizen movement and traditional parties is weak and it varies depending on ideology and the maturity of the movement. As time passes, major and right-wing parties keep their isolation despite being constantly questioned by the movements, while minor parties try to get in the movement and media and left-wing parties have a decisive but cautious approach, benefitting from their political profile and relationship with independent activists (Elmer, et al., 2009).

6.3. Relationship with media

Is it beyond doubt that in many moments of the movement, and for many actors, media suppose the only link between the citizens and the institutions of the democracy: governments, many parties and the legislative power –the later not present in the debate, but constantly questioned about the actions it should undertake.

It is not surprisingly to see media as the intermediators of a network organization, as it was already shown by Adamic & Glance (2005) when analyzing the political blogosphere and the central role of media in bridging the two sides of the political debate.

But this «institutional journalism is threatened by the Internet» (Kelly, 2008) in the sense that once this mediation role disappears, political institutions and network

para-institutions can –as some of them do– speak one to each other and with the citizen with further mediation. We still see, notwithstanding, the mainstream media playing a major role and having a «strong symbiosis» (Kelly, 2008) between the citizen networks and other actors of the political arena. But, again, Kelly (2008) explains it for the blogosphere just the way it also happened in the 15M: »the growing networked public sphere is not just changing the relationship among actors in the political landscape: it is changing the kinds of actors found there, and changing what ‘media’ is actually doing».

6.4. Extra-representative participation

As we advanced in our last hypothesis, we can state, by comparing the actions online and offline of all democratic institutions and network movements that the cause behind participation is unrest. This is, of course, not a new finding, but the novelty are networks. When unrest cannot be channelled through representative participation –minor parties, unions, non-governmental organizations– as it was the case of 15M, extra-representative participation arises. And it does not arise in small clusters, but articulated globally by means of digital technologies. The tremendous democratic potential of Internet mobilization (Cristancho & Salcedo, 2009) is, undoubtedly, the reason behind past and actual protests, and behind the differences in organization design, behaviour and evolution.

As Font et al. (2012) explained for Spain, there is an unmet need for participation which formal politics just cannot fulfil. The need for more participation, the critical mass built in (a) urban areas and (b) through the Net, plus the extremism due to socioeconomic causes has led the citizens to find their ways around traditional institutions. Indeed, when the citizenry trusts not politicians but their own peers (Font et al., 2012), the substrate for building a strong network has just been set.

It is undecided whether «movement-parties» –defined as non-programmatic and non-bureaucratic parties– will benefit from their advantage in exploiting the interactive potential of the internet for political mobilization (Cardenal, 2013) and thus be able to interact and work with these new network para-institutions. We have already seen that, as time goes by, the igniting core leaves room to the mass for participation and, in the long term, is somewhat complemented by traditional actors.

The question is whether the movement will ever be replaced by or will merge with these actors. So far, we have witnessed the movement emerge as a collective representative and wait for other actors –media, left-wing parties, unions– to appear on the new political arena. It is soon to tell whether these network para-institutions will disappear after the current socio-economic conjuncture, will complete the evolution to a formal institution (as some splinters of the movement actually did) and become a party or an incorporated lobby, will vanish into the bigger programme of a major party or union or,

on the contrary, will be the seed of a new political paradigm based on network-centric organization models.

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