Collective Action within Socio-Technical Systems.  
Preliminary Theoretical and Methodological Considerations*

Elena Pavan  
Dipartimento di Sociologia e Ricerca Sociale  
Università degli Studi di Trento  
elena.pavan@unitn.it

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Abstract

This paper aims at contributing to the outline and to the practical addressing of the challenges posed to the study of collective action dynamics by the unprecedented level of embeddedness of Information and Communication Technologies (ICTs) in all domains of human action and, in particular, by the multiplication and the widespread use of social media.

It does so in three steps. First, it addresses from a general perspective the nexus between collective action and new ICTs thus arguing that we should approach investigations in this field from a middle-ground and challenging position which includes systematically both social and technological elements. Second, it proposes the adoption of the general concept of socio-technical systems as the overarching framework for analysing collective action instances. Third, it provides a first operationalization of this conceptual framework offering some preliminary examples taken from an ongoing research project on the nexus between social media and collective action (REACTION, http://www.reactionproject.info).

1 Introduction

Recent scholarly contributions on the nexus between Internet and politics are increasingly concerned with how the spread of Web 2.0 is impacting the conducts of politics at large, whether the focus is set on policy-making and regulatory activities or on participative dynamics (Chadwick and Howard 2009). In this context, one of the topics that have been increasingly addressed is the relationship that exists between social media, i.e., that “group of Internet-based applications that build on the ideological and technological foundations of the

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Web 2.0, and that allow the creation and exchange of User Generated Content” (Kaplan and Haenlein 2010:61), and collective action, i.e., those “coordinating efforts on behalf of shared interests or programs” (Tilly and Tarrow 2006:5) especially when this latter has taken the shape of contentious politics as in case of the Arab Spring (Kamis and Vaughn 2011; Khoury 2011) or in the rise of Indignados in Spain (González-Bailón et al. 2011).

As it happened when Internet first came onto the scene, the complex issue of how social media and collective action relate is tackled today sometimes with warm enthusiasm and, sometimes, with deep and severe scepticism. A good example is provided by the diatribe between Clay Shirky and Evgeny Morozov. On the one hand, Shirky(2008, 2009) considers social media almost causative of collective action as they empower, in an unprecedented way, individuals and groups through easy content production and sharing without the need for the intervention and the mediation of social movement organizations. On the opposite side, Morozov (2009, 2011) launches an anathema on “slacktivists”, which are criticizing for engaging in low-risk, low cost activism through one click of a mouse more to satisfy their egos rather than to engage in political struggles. Moreover, Morozov argues that activism through social media (or “nano-activism” as he calls it) is replacing more traditional and effective (in his opinion) collective action dynamics, which end up being penalized by massive, and yet ineffective and dispersive, contributions submitted via Internet by single individuals.

These two opposite points of view are well represented by the pictures below. Figure 1 shows one of the participants in the Egyptian mobilizations (January 2011) while figure 2 reproduces a tweet sent by one of the participants to the Italian protest against the annual military parade of June 2nd after the second wave of the earthquakes that hit the Emilia Romagna region in May 2012. In figure 1, the cartel screams “Who is afraid of Twitter”: here the threat to authorities is the tool of communication. In figure 2, instead, the tweet reads “Twitter asks to cancel the military parade...It is not Twitter, it is us...It is us Italians...Millions of Italians” and here the political subject is explicitly identified with “millions of Italians”, not with the tool they use to communicate.

Figure 1: Egyptian protester holding up a cartel on the “Twitter threat”
We contend that the opposition between these two extreme perspective is more fictional than substantial. In fact, neither Shirky nor Morozov (and certainly none of us) would ever deny that “technologies do not make collective action. Men and women do. They do so, it goes without saying, within the context of their times. But this is not a purely – nor a mainly – technological context (…) While communication technology does not cause collective action, it significantly affects its context and shapes its forms” (Diani 2011a: 1-2). The urgent question then is not so much if collective action today is something that should be studied starting from people or from technology but, rather, how we can study collective action today, that is a specific set of social phenomena with peculiar characteristics (Tilly and Tarrow 2006), keeping a twofold perspective on people and technology (see figure 3).

The adoption of such a twofold perspective is almost a forced pace, and not only in the study of collective action dynamics. We live in a context in which the diffusion of software is capillary and most of our daily activities are performed with the support of technology and software, whether we are aware of this or not (Beer 2008). Mediation (broadly understood as the intervention of technology in most of our activities) has gone “under our skin” thus inevitably transforming social dynamics which end up being neither purely social nor purely technical but, rather, “multidimensional” as they are jointly shaped by the intervention of both social actors (individuals, groups, institutions, etc.) and all sorts of technologies (software, portable devices, applications, database resources, etc.) used to perform activities (Contractor, Monge and Leonardi 2011).
Thus, amongst all types of mediation in which we are involved, that exerted by ICTs is perhaps the one which exacerbates to a greater extent the intertwining of social and technical elements. Indeed, as ICTs touch upon the fundamental social process of communication, which grounds community-building (Pasqualli 2001) and organizational dynamics (Monge and Conctarctor 2003), transformations in this domain impact our *modus communicandi*, that is, our way of building and organizing society connecting people, groups, data and resources. Of course, by virtue of the overall multidimensionality characterizing our time, ICTs do not alter social dynamics with their simple existence: it is their use by social actors in a way that leverages their *affordance* (i.e., their potential in comparison with other technologies) that generates alteration (Earl and Kimport 2011).

Social media represent the ultimate operationalization of the defining features of the Web 2.0 (all based on the principle of collaboration) and, in this sense, they enhance to an unprecedented level the technical possibility to realize collective efforts – hence their alternative label of “social software” to underline their keenness to social purposes (Kaplan and Haenlein 2010). That this technical potential has political consequences is proved, if anything at least indirectly, by the repeated attempts carried on by authoritarian leaders of “shutting down the Internet”\(^1\). And yet, Egyptian leaders did not engage in the effort of shutting down the infrastructure just for the sake of “killing the killer application”. They (tried to) shut down the Internet for the same reason for which bridges are blown: to isolate and disconnect contention. This control strategy was not so much aimed at blocking information flows but, rather, to impede the construction of a “personalized” network of dissent where activists, dissidents, journalists and even the members of a global audience have a name and a face (or, better, an avatar).

Not only social media are relevant to collective action as they function on the Internet infrastructure and, therefore, enhance connectivity and information availability tout court. Social media impact collective action as they extremize the Internet potential for the creation of collectivities because “as the technology continued to evolve to enable people without great technical skills to write to the Web, and as more and more people were able to access the Internet from home or mobile devices (…) the Web wasn’t about linking documents: it was about connecting people” (Hall 2011: 658). In this sense, social media “put people first” and are perceived as a step beyond to the “Web of websites”, which was certainly revolutionary but that linked this revolution more to information accessibility than to users’ connectivity.

The nexus between social media and collective action, then, has both a technical and a social side which are forged together like the two sides of a coin: without one of the two, all the value gets lost. However, while we make an explicit plea for tuning our research approaches so that they reflect the unique fusion between social and technical elements that is marking our time, we are aware that such choice forces us to rethink and, perhaps even to reinvent, the tools through which we look at the world around us in order to meet the challenges that are posed by two defining features of today’s reality: the hybridization of the social space and the centrality of individual contributions.

\(^1\) [http://huff.to/feTfIp](http://huff.to/feTfIp)
First, the ubiquitous presence of the Web (Hall 2011)\(^2\) generates what we could label a “socio-technical breakthrough”, i.e., a situation in which reality gets “augmented” because of the integration (not the simple alternation) of new possibilities, potentials and objects from the virtual world into the real one (Azuma 1997)\(^3\). In such a context, our courses of action are jointly shaped by actions we perform online and offline, as there is no actual solution of continuity between the two spaces. Hence, the social space we live in becomes hybrid and it hosts social relations that deploy recursively off- and online thus making the distinction amongst the two spaces obsolete (Beer 2008).

As the social space for action becomes hybrid, the “multipolar system of relations” (Melucci 1996) constituting collective action inherits this peculiarity and “gets hybridized”. This dimensional enmeshment is not solely expressed by the enrichment of collective action repertoires (Van Laer and Van Aelst 2010; Costanza-Chock 2003; Rolfe 2005): it is the very structure of relations supporting collective action that expands across the boundary between the online and the offline. Hence, in a hybrid social space where there is no hierarchy between the online and the offline (Rogers 2004), concrete instances of collective action can split between the two spaces (as, for example, in those cases where there is a lot of interaction through social media for ideational and/or organizational purposes but there is also a continuous presence of the collective instance also in the physical, offline space) or they can deploy mainly in one of the two (as, for example, an online petition or as a repeated sit-in in front of a symbolic building).

However, as shown by the argument of slacktivism, there is an overall tendency to conceptualize online activism as a substitution for, rather than an integration of, offline activism whereas there seems to be no evidence of in this sense (Christensen 2011). Such situation is aggravated by the limited attention that is paid to social structures that emerge online through the use of social media (Hansen, Shneideman and Smith 2010): as a consequence of the persistence of the distinction between “the virtual” and “the real”, online relationships remains almost invisible.

Second, the passage from Web 1.0 to Web 2.0 enriches our already augmented reality through the galvanization of social connectivity via content production and circulation. The current Web version allows the continuous and collective redefinition of contents through collaborative practices (as opposed to the centralized authorship of the Web 1.0) which can performed easily as the very operational elements of the Web (the HTTP protocol and the HTML language) are hidden behind user-friendly interfaces (Hall 2011). This platform shift has fostered a passage from a culture of publicity, installed through websites and grounded on the principle of accessibility to third parties, to a culture of participation sustained by users’ production and circulation of contents through

\(^{2}\)The term ubiquitous should not be interpreted in terms of global availability of ICTs or as a naive suggestion on the resolution of the digital divides. Here ubiquitous points directly at the increasingly performative nature of the Internet where the technology is already available.

\(^{3}\)What remarkably distinguishes the Augmented Reality (AR) approach in computer science from the Virtual Reality (VR) approach is that it foresees and amplification of the real world through an actual integration of virtual object and potentialities (e.g., the immediacy of interaction and the overcoming of distances). While in the substitution of the real world with a virtual world a subject has no real control on the objects around her, in an augmented reality her capacities are simply enhanced as she can enjoy the great help coming form computers in the actual realization of her courses of action.
Whereas collective action theory has traditionally developed around organizational actors’ work of stimulation and aggregation of individual inputs into a collective, consistent and shared relational and symbolic environment (Della Porta and Diani 2006; Diani 2003; Diani and Bison 2004; Tilly and Tarrow 2006), recent analyses put into question this centrality thus emphasizing the role of individual contents “prosumers” (Kaplan and Haenlein 2010:66; see also Bennett and Segerberg 2012; Earl and Kimport 2011). Practical evidence is showing us that somehow individually generated inputs do not generate cyber-balkanization (Sunstein 2001) but, quite the opposite, the easy possibility to transform private discourse into a widely accessible public discourse results in complex networks of public opinion enriching in a pluralistic way the political agenda (Papacharissi 2009).

In the attempt to meet the challenges brought about by these two profound transformations a whole strand of scholar work is progressively consolidating in a multidisciplinary fashion, mixing up social, political and technical elements to inquiry this complex domain with a proper conceptual and methodological equipment. Here, the most different case studies have been analysed in search for actual alterations of collective action dynamics generated by different uses of the Internet at all levels of collective action – from recruitment, to internal coordination, to repertoires elaboration and adoption, to impact generation. Earl and Kimport (2011) speak in this regards about the need for “theory 2.0” which is able to analyse systematically the actual transformation, as opposed to the simple scaling, of dynamics underlying collective action. Bennett and Segerberg (2012), instead, propose to consider the emergence of a new “connective action” logic for political participation, which is grounded on individual inputs submitted via social media and bypasses the intervention of formal social movements organizations. Looking specifically at the changes in the role played by organizations, some commentators speak about a compulsory contamination of organizational repertoires of action, aimed at enhancing organizational flexibility and responsiveness to individuals inputs (Bimber, Flanagin and Stohl 2005; Chadwick 2007). More in general, Chadwick and Howard (2009:6-8) propose to investigate the nexus between Internet and politics at large looking at how the defining dimension of the Web 2.0 platform become benchmarks for the conducts of policy making and participatory dynamics.

These studies have the merit of having tackled the complex nexus between social media and collective action in a rigorous and methodologically careful way thus producing theoretical and empirical and systematic knowledge in this area. However, they seldom investigate transformation of collective action focusing on those dynamics which are properly enriched by social media use, i.e., interpersonal communications. While much emphasis is put on social relations created via social media it should be clarified that a mere aggregate of individuals, groups and organizations does not necessarily point to the existence of a political collective action dynamic. As it is implied by the definition of collective action we proposed at the beginning of this paper, collective action dynamics are underpinned by coordination dynamics on behalf of shared interests. In order to witness the emergence of political collective action, a shared identity and sense of belonging has to emerge. In this sense, social media potential for collective action goes beyond the augmented possibility for massive coordination (e.g., “everyone in the square at 9pm”). It is precisely their enabling function for
user-generated-content that (possibly) transforms collective action dynamics. User-based content production and interpersonal communication dynamics imbue the construction of collective meanings and sense of belonging thus enriching traditionally studied collective action phenomena with a complex, dynamic and diversified online social capital that is inherently relational.

However, as mentioned, critical reflections on social media and collective action only seldom consider discourse (hence, collective identity) as the “locus of change” (for a partial exception see Bennett and Segerberg 2012 on the circulation of meme within online networks of contention). In fact, when social media conversational dynamics deploying during contention episodes or collective efforts are pursued (see for example González-Bailón et al. 2011; Keegan, Gergle and Contractor 2011; Lotan et al. 2011), studies are mostly coming from the computer science domain and tend to consider the nexus between social media and collective action from the point of view of information diffusion mechanisms – that is, they focus on complex systems and massive amounts of data yet without conferring any specificity to collective action dynamics in comparison with other social mechanisms.

And yet, the centrality of “collective construction of meanings” has been for a long time put at the very core of all realizations of collective action, from social movements, to coalitions, to subcultures (Benford 1993; Diani 2003; Diani and Bison 2004; Gamson 1988; Gamson and Modigliani 1989; Melucci 1996; Steinberg 1998) and its serious implications in terms of alternative power loci are well pointed out by Castells, who argues that:

social power throughout history, but even more in the network society, operates primarily by the construction of meaning in the human mind though the process of communication. In the network society, this is enacted in global/local multimedia networks of mass communication, including mass self-communication, that is, the communication organized around the Internet and other horizontal digital communication networks (2011:779).

We contend then that transformations of collective action dynamics that are brought about by social media use should be investigated through a specific focus on conversational practices activated through social media use in a way that recognizes the peculiarity of social dynamics sustaining collective action (Tilly and Tarrow 2006), i.e., the relevance of communication flows to shape a collective identity and sense of belonging. Social media discourses should be investigated looking at actors who participate within them with the aim of addressing the issue of mixed agency (individual and organizational) which characterizes contemporary collective action processes; but also at contents produced and exchanged, which vary depending on the platform used. Therefore, we propose to cast the study of collective action communicative/discursive dynamics within a “socio-technical system” (STS) perspective. As we will see more in details in the next section, we understand STSs as that overall environment “in which infrastructures composed of different technological layers are inter-operating within the social component that drives their use and development” (Vespignani 2009:425). The adoption of such a perspective is functional to us to root our investigations into a multidimensional perspective that explicitly recognizes the joint contribution of technical and social elements in the definition of collective action dynamics as well as the hybrid feature of social space and the connective logic via content production and sharing that is proper of
the Web 2.0. Thus, we propose to center our investigations on the different relational structures that emerge from the use of the most diffused social media platforms (here in particular Twitter, Facebook and Youtube) adopting a network approach, which appears to be particularly suitable for uncovering patterns of content creation and circulation in view of the construction of a collective identity (Mische 2003; Diani 2003).

In the next section, we outline the overall conceptual model of STSs wherein we cast collective action dynamics and will elaborate on how to map and analyze communicative dynamics. We then move on to provide some examples of how this overall framework can be translated into empirical analysis. Examples are derived from an ongoing research project, REACTION – www.reactionproject.info –, which aims at the elaboration of a theoretical and methodological framework for the analysis of how social media use impact collective action systems. The project foresees the analysis of different social-media enabled networks and adopts network analysis as both a conceptual and an empirical tool for analysis. Thus, for some of the case studies it covers, it supplements the analysis of conversational patterns with an in depth investigation of mobilization efforts to various methods and techniques, with the aim of deepening the nexus between online and offline processes imbuing overall collective action systems. Here we limit our discussion to an assessment of the heuristic potential of several network types drawn starting from data on the case of the Italian movement of gender and women issues “Se non ora, quando?” (SNOQ). We discuss different social media networks from a methodological perspective, paying specific attention at what type of nodes and ties we are tracing and to the elements can help uncover in terms of collective action dynamics.

2 Conceptualizing Collective Action in Socio-technical Systems

In this section we outline the overall conceptual framework we propose to study collective action as a system of social practices which is co-determined by social and technological elements and that presents some peculiar features due to the socio-technical breakthrough phase we are living in: the hybridization of the social space; and the connective logic operating via content production and sharing that is proper of the Web 2.0. Our framework grounds on the concept of socio-technical system (STSs) “in which infrastructures composed of different technological layers are interoperating within the social component that drives their use and development” (Vespignani 2009:425).

The idea of STSs is not a new one. In fact, it as a long story that goes back to the 40s and developed starting from the overarching recognition that organizational processes (in industry, as a starting point, and, later on, within society at large) entwine with technological evolution dynamics (Trist 1981). Within STSs, reorganizational processes follow from the social appropriation of technology, while a passive adjustment to advancement is what characterize traditional, static and low-efficient organizational paradigms (ibidem). In the original formulation of STSs, only a full adoption of – and not just a mere adaptation to – technological developments entail social change. This logic is very much consistent with the transformational approach to the study of
collective dynamics that, as we saw in the previous section, depends on the type of uses made of technologies.

Besides, although in this paper our focus is set on social media, the fact that STSs were not conceived initially in relation to ICTs but to technological devices at large helps us formulating a general framework that links organizational and technical evolution processes at large and that therefore is potentially applicable in the analysis of both current and past collective action dynamics. Although it is much less evident than in the current socio-technical breakthrough phase, activists have always tuned their repertoires on the technical infrastructure they were equipped with be it the transportation system, alternative press or pirate and community radio. At one point in time, each infrastructural element has been chosen strategically and has imbued repertoires of action. Yet, we acknowledge that when the technical layer has been interested by the development of mass media first and of the Internet then, the interplay between the social and the technological layers got amplified and the application of the STSs lens for the study of collective action dynamics (and not only to them) became much easier. While we admit that further elaborations are required in order to test the heuristic potential of the STS concept to study past collective action dynamics, we content that such potential is actually high for understanding current collective participative dynamics and we proceed on the elaboration of the concept referring specifically to recent instances of collective action, leaving the evaluation of its general goodness of fit to future elaborations.

Figure 4 below shows our conceptualization of STSs and outlines its principal elements. As shown, STSs result from the interaction of two layers:

- a relational infrastructure, which results from the wide variety of connections established between social actors who can be individuals, formal and informal organizations, institutions, governmental and intergovernmental entities etc. Relationships can be mediated (as it is in a phone call or in a tweet) and/or immediate (as it is in the joint organization of an event) and can exist and be maintained independently from actors’ co-presence in the same space;

- a technological infrastructure which is constituted by the plurality of physical and technical infrastructures on top of which social actors build their relations. Infrastructures can serve the most diverse purposes: e.g., connecting points that are distant in space, supplying energy, allowing global communication and information flows.

As it is foreseen by Vespignani’s definition cited above, these two layers interoperate through a process that we label mediation. As mentioned in the previous section, mediation should be broadly understood as the intervention of technology within our courses. In this sense, our understanding of mediation generalizes the use of this label domain within communication and new media studies where it is tuned specifically on ICTs and

is comprised of two interrelated modes of communicative action (…). One mode is reconfiguration where users modify and adapt media technologies and systems as needed to suit their various purposes or interests. The second mode (…) is the remediation of content, forms and structures of communication relationships, where users borrow, adapt or remix existing materials, expressions and interactions to create a continually expanding universe of innovative new works and ideas (Lievrouw 2011:4)
In our framework, as the physical/technological layer is not exclusively composed by ICTs and media we speak of mediation as a bidirectional process which is nevertheless broader in scope than that we just cited. We expand the idea of “reconfiguration” to that of technical infrastructure development to stress the capacity that social actors have not only to adapt existing technology to their needs but, literally, to drive the development of technical infrastructures at large (Vespignani 2009). Thus, we enlarge the idea of “remediation” to that of social infrastructure enrichment to underline the potential for enhancing social connectivity that characterizes technological development in our global context, which is particularly evident when we consider the Web 2.0 tools but that should be thought as the driving force for technological development at large.

The result of the interoperation between the two layers is a socio-technical system which is an environment characterized by three features:

- the space for action is hybrid, as it results from the merge of the online and offline spaces generated by the embeddedness of Internet in our lives. Social actors can interact both online and offline: hence, the social relations forming the relational infrastructure can deploy across this boundary (i.e., they are maintained by both mediated and immediate interactions, like in the case of two friends which meet at a concert and discuss the logistics for the event through Facebook or Skype) or can be located exclusively in one of these spaces (e.g., I regularly exchange emails with collaborators I have never met in person and yet we work together; or, at the very opposite, my relationship with my grandmother which has developed and is still carried on between her house and my house and – very rarely – over the phone). And yet, because the space within socio-technical system is hybrid and there is no solution of continuity, relationship can switch from a corner of the hybrid space to the other (like it happens, for example, when we move away from a place and we keep in contact with our friends through the Internet or when we meet our date in a restaurant after finding him/her on a dating website) or, more often, they hybridize and are sustained by a mix of online and offline practices;

- the time within socio-technical system is diversified, as it depends on the type of physical/technical infrastructure we lean on to establish a relation. It takes some hour to fly from Italy to Moscow to meet a friend there, it would take much more to do the same trip by car but it takes only two seconds to tweet her in Moscow;

- the structure of socio-technical systems is shaped as “fully multidimensional networks” (Contractor, Monge and Leonardi 2011) which entail: i) different sets of nodes (perfunctorily, social agents and technology) which can be differentiated using actors’ attributes (for example, distinguishing individuals and organizational members of a mobilization and social media from mass media outlets); ii) different sets of relations (e.g., using an application, consulting a database, but also technology sending automatic notifications to users); iii) the establishment of relationships both between and within the groups (e.g., collaborating in a campaign or, on the side of technology, the process of convergence which links together different ICTs and even ICTs and mass media).
Where are conversational dynamics located within this framework? The bulk of conversational relations that are established via social media are located within the relational infrastructure layer, and these relations can be between social actors (of all types, see above) via contents, or between social actors and contents they produce or between contents produced by social actors via social actors who share them in some way (e.g., because they “like” the same piece of content, because they tag images in the same way, etc.). However, as these relations are always established on top of a specific infrastructure, conversational patterns do include technological agency (in this case, the social media employed to establish conversational relations) and, therefore, they extend to the technological layer. Thus conversational dynamics can be articulated at various degrees: they can involve a diversified number of users, contents of different types and more technologies not only at one point in time but, more importantly, as they are inherently fluid – likewise idealtypical multidimensional networks (Contractor, Monge and Leonardi 2011).

We can easily adapt this overall framework to describe collective action dynamics. The whole multipolar multidimensional system of collective action is represented by the global STS. Social actors involved in the action and the relation they establish are located in the relational infrastructure level; while the bulk of technological devices they can lean on is located at the physical/technical infrastructure. Social actors are connected by a multiplicity of relationships which, on the overall, constitute the collective action effort: sharing all sort of
contents via Twitter, Facebook, Youtube or Flicrk; participation in face to face
organizational meetings; participation in voice over IP organizational meetings,
occupying a park in the finance district in Manhattan or the space in front of
the European Central Bank – just to mention a few. In most cases, social ac-
tors are connected by more that one relationship at the time, i.e., they were
in Zuccotti Park but also shared a video on Youtube, and in most cases the
overall relation that joins them is hybrid, as it is composed by online and offline
interactions. Here not only our framework allows to account for the challenging
features we mentioned at the beginning of this section in a systematic way. It
also saves us from a-priori evaluations on online activism, especially those of
slactivism (Morozov 2009). As our framework sees collective action as hybrid
systems, we conceive online activism not as an alternative to but, rather, as
a fundamental part of, collective action dynamics (see also Christensen 2011).
Whether an action is taken quickly because it leans on instant microblogging
or takes longer because it consists on marching from a point to another of the
city does not make a difference, to us, in terms of its legitimate presence in the
collective action system.

Also technologies are connected amongst themselves. Convergence is a first,
general process that establishes a relationship between different platforms (Jack-
ubovitz 2009). However, there are more interesting ties joining together, for
example, mass media outlets and social media (Castells 2011) – as it happens
when TV news announce that a video “has gone viral” on the web thus aug-
menting its popularity; or the strategic planning of information strategies: a
website linking to a Twitter account for punctual updates on the matter it
treats. Finally, there are also links going from the social relational layer to the
physical/technical layer – typically, when activists adopt a technology – and
vice versa – for example, when the technology sends a notification to check out
new contents provided by our partners.

The interoperation between the strategic choice of a certain technology, es-
pecially of social media, and the enabling potential of that technology is what
grounds our idea that collective action is multidimensional: social media be-
come true resources for mobilization, involvement and also for recruitment and
they do play an active role in the overall network depending on the type of
interaction (via contents production) they enable.

Since the underlying structure of STSs and of conversational dynamics is
precisely that of multidimensional networks, we adopt a network approach not
only as the preferred lens to describe conversational dynamics but as the very
technique to map out and analyse them. Following Mische (2003), we under-
stand networks as the locus where the IG discourse is created. Consistently,
networks are employed here both as a powerful image to depict the complexity
of the phenomena under examination (Kenis and Schneider 1991) and as an
analytic tool that allows us to concentrate simultaneously on the multiplicity of
actors and themes in the field and on the interactions they engage in via content
production. In the next section we outline more in details which types of so-
cial media networks we can map, drawing which ties between which nodes and
thus we elaborate on the heuristic potential of each of them for uncovering the
conversational patterns that emerge thanks to the use of different social media.

Before moving on to the application of this framework to our selected case
study, three specifications should be made as they translate into broad method-
ological guidelines for our research activities. First, stating that collective action
deploys in a hybrid fashion should not be interpreted as if all instances of collective action were hybridized at the same level because of the general availability of social media, nor as if online interactions did play the same function or generated the same effects just because they are enacted upon the same technological platform. While empirical investigations remain fundamental to uncover these aspects, such a characterization serves the immediate purpose of framing online practices and dynamics as an integral part of the collective system, and not as a mere alternative to it (Bennett and Segerberg 2012; Christensen 2011; Earl and Kimport 2011; Padovani and Pavan 2011; Pavan 2012).

Second, we do not link collective action dynamics to any specific type of agency. As our focus is set on conversational dynamics, agency becomes a function of authorship and not of actors’ attributes. In this sense, organizational and individual inputs to collective action coexist as both organizations and individuals can author valuable content which fuels action.

Finally, we do not consider social media as external elements that simply contribute to the definition of the overall, systemic and technological opportunity structure within which collective action dynamics deploy (Ward and Gibson 2009). Given their embeddedness and their status of performative technology, social media become endogenous components of the relational structure that grounds collective action which, in turn, becomes multipolar (Melucci 1996) and multidimensional (Contractor, Monge and Leonardi 2011). Different social media will be more or less important depending on concrete instances we are examining because, although they share the same purpose of connecting people, they do so in different ways and through different contents (Hansens, Shneiderman and Smith 2011; Kaplan and Haenlein 2010). Once again, empirical analysis will help us understanding what application serves what purpose within collective dynamics. And yet it is important to bring social media within relational structures shaping collective action today.

3 Application of the Conceptual Framework

In the previous section we illustrated how collective action dynamics can be portrayed from the point of view of discourse and using the overall framework of socio-technical systems. Thus, we have argued that a network approach is particularly suitable, both from a metaphorical and an empirical point of view, to move towards empirical investigations. In this section we will explore some possible applications of social media network analysis. We will do so drawing from research activities carried on within an ongoing research project, REACTION that is aimed at exploring the nexus between online and offline dimensions of current collective action dynamics.

The overview on different network types that we offer in this section represents an insight on a specific part of the project, i.e., mapping and analysing online conversational dynamics. Analyses conducted at this level are to be integrated by other elaborations realized with other methods and analytical techniques. While we will offer some hints on this integration aspect in the concluding section, here we focus on social media networks and their potential for shading new light on how social media use fuel a composite transformational process within collective action.

The case study for this illustration is provided by the Italian mobilization
on gender and women’s issues – *Se non ora, quando?* (SNOQ). SNOQ emerged in 2011 with a set of simultaneous mobilizations realized in the afternoon of February 13th in many Italian cities and which gathered on the overall almost 1 million of people. Since then, the SNOQ platform has organized a set of events (including a follow up to the February event in July 2012 and a second national-level mobilization in December 2012) during which it show off at the national level but, most of all, has been a constant presence in the articulation of a gender-sensitive agenda in Italy. SNOQ effort to push gender and women’s issue at large in the political agenda has been particularly strong when the initiative first emerged in 2011, when Silvio Berlusconi’s involvement in several doubtful situations (connected with prostitution and abuse of power) generated an overall and widespread public reaction on the necessity to reform political conducts also through a re-discussion of women’s role within the Italian society. After Berlusconi resigned, SNOQ has been less present in the squares but its mission to adress women’s issues and gender stereotypes within the Italian society has been carried on with no interruption through a constant dialogue built through the Web and which is, from time to time, pinpointed by physical meetings.

As stated in the “About us” section of its website, SNOQ defines itself an “open and transversal movement” gathering women and men concerned with gender stereotyping and issues (http://www.senonoraquando.eu/?page_id=4). The movement is sustained by a light-weighted organizational structure which parallels the presence of a “promoting committee” (Comitato Promotore, CP), located in Rome, with a multiplicity of local committees which are based in almost all Italian cities. Local committees are independent from the central one: they can engage at their own discretion within local issues and mobilizations but they nonetheless maintain a tight link to the CP, which does represent the overall national face of the SNOQ. In the website, the CP is described as a group of women who launched a call for action on February 13th which was then taken up by a million between women and men all over Italy. No further specific functions are assigned to the CP, which seems to remain simply the overall starting point and a general point of reference for the movement. Also, the websites lists all local committees and provides, for almost all of them, some contacts and URLs of webpages (often hosted on Facebook). No specific function is associated on the websites to these local committees: they are described as simply local groups “supporting” the movement.

While we acknowledge the internal heterogeneity and the articulated structure of SNOQ on the whole Italian territory, we focus on the activities of the CP as it initiated this collective action effort and remains an overall point of reference for the movement also for local, more or less autonomous, instances⁴. Hence, we will examine SNOQ’s collective action effort looking in particular at dynamics that deploy around initiatives and communication strategies promoted and carried on by the CP.

The main tool of communication for SNOQ is the main website (figure 5) – www.senonoraquando.eu – where users can access a wide variety of contents (organized within the website in photo-galleries and in press-releases archives) and can comment most of them. The website communication is sustained by a multi-faceted social media strategy played out on Twitter, Facebook and

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⁴Current research activities within REACTION are exploring the light-weighted and yet complex internal organization of the SNOQ movement.
Youtube. More recently, a free smartphone app has been released in order to access SNOQ contents and to intercat with the CP on mobile devices.

Figure 5: Homepage of the SNOQ website http://www.senonoraquando.eu

In the following subsections we explore some of the conversational dynamics revolving around SNOQ on Facebook, Twitter and Youtube. For each social media, we will map networks representing a certain type of conversation, we will explain what nodes and what edges are traced and we will indulge what is the overall meaning of the network. In doing so, we take for granted readers’ knowledge on how these social media work and, therefore, we introduce just briefly the three platforms thus paying more attention to the types of network we analyse.

Before proceeding, two further specification must be made. First, the networks we present here are not the only type of relational structure it is possible to draw starting from social media data. Rather, the networks we present here have been chosen as they are considered particularly illustrative of interesting elements in relation to the overall questions we posed at the beginning of the paper. In this sense, they provide a first example of how we can map and ac-

5For a more detailed overview on how Facebook, Twitter and Youtube work, we recommend to visit their websites and explore the guides provided by developers online. Also, a short introduction on their functioning is provided in chapters 10, 11 and 14 in Hansen, Schneiderman and Smith (2011).
count for online relational structures as complements of offline collective action
dynamics and they are aimed at facing the challenge of finding a new balance
between individual and organizational presence.

Second, all network types illustrated below are comprised of social actors, contents and relations amongst them while the platform upon which they are built remains, so to say, on the background. Although networks joining together actors and/or the contents they produce are not strictly multidimensional – as they do not explicitly include social media as nodes – we intend them as such as the conversational dynamics we analyse would not be possible in the absence of Facebook, Twitter or Youtube. In this sense, all the nodes (whether they are social actors or contents) would be connected to the social media enabling interaction under examination. However, we deliberately leave this connection behind and concentrate on relations that develop, using our terminology, within the relational infrastructure layer as it is where the added value of social media and their transformational potential can be studied at best. We will further elaborate on this methodological choice in the concluding section of the paper.

3.1 SNOQ Twitter information and attention networks
Twitter (http://www.twitter.com) is a microblog free service through which
users can exchange short text messages (140 characters) about all sort of news, facts and private issues. In order to do so, users must have an account which has the form of @username to indicate that tweets are directed or take into consideration that specific user. Users can follow one another, i.e., they can decide whose contents they want to receive, and this relationship can be mutual (if A receives contents from B and vice versa) or unidirectional (when A follows B but not vice versa). Even when they do not follow each other, users can reply to or mention each other in their tweets. Also, to organize messages around topics, hashtags are created in the form #issueXYZ: all short messages pertaining to the issue XYZ will be threaded together and users will be facilitated in their search for interesting topics.

Twitter networks can be therefore comprised first of all of users and the relations joining them – who follows who, who mentions/reply to whom – both in general or in relation to a specific issue/hashtag. However, there are other types of networks which can be traced starting from tweets and information they carry, for example URLs or hashtags. Which network to map depends very much on our research questions.

As we outlined above, conversational dynamics can be participated by both individuals and organizational actors and this, in turn, links to the highly debated issue of mixed agency within contemporary collective action efforts. Twitter networks based on relationships amongst users can be rather useful in this regard as they allow to uncover the actual relational patterns which sustain the collective construction of discourse. Such patterns can be investigated looking at the positions of specific organizations (in primis, leading organizations within the mobilization) and of specific individuals trying to understand what reasons can explain their position within the overall conversational flow.

However, as relations that can be established on Twitter between users are multiple (following, mentioning, replying) then different networks would convey different pieces of information. In this regard, Barash and Golder distinguish between information and attention networks (2011:149-150). On the one hand,
users who receive someone’s tweets are followers and the network of communication from a user to her followers can be thought as an information network – one in which information flows from the user to her followers. On the other hand, those from which a user receives tweets are her friends and the network which joins together a user and her friends can be thought as an attention network – one in which the user pays attention to contents produced by others. Studying relational patterns in information networks can help understanding what is the relational milieu around which the message coming from organizations circulates; while studying relational patterns in attention networks can help understanding what are the sources of information from which movement organizations derive (part of their) information.

Figure 6 shows SNOQ information network on Twitter: at the core of the network stands SNOQ (identified by its logo) and all over it there are small disks representing all users following it. Most of the ties are coloured in yellow, indicating that an orange vertex receives tweets from SNOQ’s account (@comitato13feb). However, there are also green ties indicating that some of SNOQ’s followers also follow amongst themselves. These ties are better represented in figure 7, where SNOQ’s vertex is skip and only following relationships amongst SNOQ’s followers are represented. In the passage from figure 6 to figure 7 we witness a fundamental modification in the structure of the network: from one gigantic component hold together by SNOQ we pass to a fragmented situation in which there are 2819 isolated vertices, one big component in which 1356 nodes are joined together either directly or indirectly and 42 vertices are distributed across much smaller components.

Against this background, it would be possible to explore different aspects, such as the level at which SNOQ work as a catalyst for interested parties to engage in the conversation. In this regard, changes in the size of the network should be read in conjunction with levels of internal connectedness once the focal account is excluded from analysis. A higher number of isolated nodes could suggest that the central organization is attracting new members; while if new members join the already connected components of the network illustrated in figure 7 then considerations on such an aggregative potential should be evaluated in conjunction with a deeper analysis of network internal dynamics as it could be the consequence of a pre-existing relationship between users (Monge and Contractor 2003).

Moreover, this type of analysis could help to identify and study the nature of informational hubs within the networks, i.e., those nodes who are not focal but that are nonetheless informational points of reference within the conversation. Once that informational hubs are identified, reasons for their prominence might be searched amongst their attributes: are they public personalities or established organizations in the field? have they been on Twitter for a long time and/or very active? Does the focal organization follow them, i.e., beside sending them its info it also pays attention to them?

A very initial analysis of the network above shows, for example, that the principal informational hub in the SNOQ information network is a journalist publishing daily on a national newspaper while the second is an organization which has been active for a long time on gender and gender stereotypes. While the first hub has a large number of followers and is very active on Twitter,

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6Single-vertex components are hidden in this visualization for the sake of visibility
Figure 6: SNOQ Information network

Created with NodeXL (http://nodexl.codeplex.com)
Figure 7: SNOQ information network skipping the promoting committee account
the second has a much lower profile on the platform. Yet, SNOQ follows only the little organization while does not “pays attention” to the very followed journalist.

This specific finding links to the necessity to parallel the study of information networks with that of “attention networks” (see figure 8. This network type is more consistent with what in social network analysis is called an “ego network” as it gathers ego (in our case SNOQ’s Twitter account), its alters (i.e., other Twitter users who are followed by SNOQ) and relationship amongst alter (who follows who). Attention networks on Twitter can be analysed so to uncover who are the informational points of reference (or authorities) that are considered as such by the main organizational actors in the movement and to study the extent to which these reciprocate this acknowledgement (i.e., how much the attention network overlaps with the information network). For example, in the network represented in figure 8, more than half of SNOQ’s alters do reciprocate the follow relationship (127 over 199) and no other vertices reaches this level of acknowledgment within this network. Most of these reciprocal relations are established with organizations working in the field of gender and women issues (such as ZeroViolenza or LeVocianti) as well as with single women who are active in this field and, sometimes, also belong to the CP itself. However, if we look at the second most recognized protagonist (i.e., Nichi Vendola, the governor of the Puglia region) we notice that the relationship between SNOQ and Vendola is not reciprocal as this latter does not follow SNOQ updates. While this very preliminary observation suggests a certain consolidation of the organization within the area in which it is active and a substantial circulation of information on the issues at the core of the mobilization itself, it also points to the necessity to see how far gender issues reach outside the gender field into a broader agenda for social change at large.

3.2 Facebook fanpage: user-content networks

Facebook is the most known social network site (SNS) in the world with its more that 800 millions users all over the globe\textsuperscript{7}. In Italy, Facebook is used by almost 27 millions Internet users (74% of Italian Internauts) and its penetration rate is always increasing\textsuperscript{8}. Facebook’s users generally maintain a personal profile page on which contents can be posted by the user herself or by her “friends”, namely other users who have been allowed by the page owner to do so. Contents of profile pages are visible depending on privacy settings specified by page owner (from totally open pages to totally private pages). Beside personal profiles, users that are typically public entities, brand, media outlets, public personalities or celebrities can have a “fanpage” that is basically structured as a personal page but that does not require a confirm for friendship in order to get “fans” to get in contact with the page owner but a much easier “Like”. Friends, fans and Facebook users in general have several other ways to get together: they can create and/or become members of groups (whose access can be more or less restricted); they can create/participate to events; or they can exchange messages in private within the ad-hoc inbuilt message board system.

All in all, Facebook offers several ways of creating and maintaining ties amongst Internauts and for its increasing popularity has become the “social

\textsuperscript{7}source: http://www.internetworldstats.com/facebook.htm
\textsuperscript{8}http://www.socialbakers.com/facebook-statistics/italy
Figure 8: SNOQ attention network
network” par excellence. Given the internal complex structure of the SNS, Facebook allows the creation of different networks. A first, general distinction, is between personal networks (amongst friends on the overall or between members of a group), and users/posts networks. In the first case, ties between users will be determined by the existence of friendship relations or membership within a group. Denser personal networks indicate the presence of closer communities and groups; while sparser structures point towards more fragmented communicational environments. In the case of users/posts networks, ties will establish between users and posts they like or comment to; between users who commented/liked the same post; or between posts liked/commented by the same users. Here the connection between conversational dynamics and contents discussed becomes more evident and, in the case of collective action, it is possible to study how the actual discourse is framed and evolves.

Although personal networks can be studied also in connection to contents posted by users and users/posts networks can be characterized by considerations on ties existing between users, from an analytical point of view it is suitable to maintain a distinction between the former, intended as a proxy for the evaluation of the social structure sustaining conversational dynamics, and the latter, intended as a multimodal discursive structure shaped around speakers and contents. Also, where personal networks are more easily traced starting from personal pages, users/posts newtorks are more commonly associated with fanpages: as two fans not necessarily are also friend amongst themselves, tracing personal networks from fan pages would require to retrace all personal networks of fans and this would turn out to be a very demanding task. Finally, it should be mentioned that accessibility of data is different in the two cases. In order to trace personal networks it is often required to possess access credentials of the user whose network we are interested in. If it is about our personal network, then the problem is not relevant; but when we need to map personal networks of third parties, some major obstacles might come into the play. Quite the opposite, as fan pages are public by definition, tracing users/contents relationships poses less challenges from the point of view of privacy.

SNOQ started to be present on Facebook from January 2011. Initially, the CP had a regular user profile page but, after the organization became prominent in the Italian political landscape, it soon reached the maximum number of friends allowed by Facebook (i.e., 5000). Due to the continuous requests for contact, SNOQ opened a fan profile, which does not foresee thresholds in terms of number of fans. At the time of writing (July 2012), SNOQ has reached 62298 fans, while the profile page of the CP continues to exist and to be used by some of the 5000 friends as well as by members of the CP. However, as the fanpage is the one linked from the website senonoraquando.eu and it is labelled as the “official” SNOQ page on Facebook, we decided to map conversational dynamics starting from this page, while we leave behind an evaluation of SNOQ personal network.

As we are looking at a fanpage, the overall format of the network we can trace is that of users/posts and it depends on the actual research question we are facing if we want to focus on the multimodal users by content structure or if we want to investigate one of the two dimensions in particular projecting the underlying structure into a user by user or post by post networks. In our case, the multimodal structure user by posts is perhaps the one that offers us with the more interesting insights on conversational dynamics. Figure 9
shows a snapshot of networks users by posts where ties are given by “like” and comment relationships. Pink disks are fans of SNOQ which were active over the January 2011 on the fanpage; and green squares represent the posts made by SNOQ in that same month. Yellow ties are the “Like” expressed by users; while red ones represent commenting actions. As it shows, some posts receive more attention than others, and some users commented or liked more than one posts. As posts mapped in this type of networks are authored exclusively by SNOQ’s CP, an evaluation of centrality of posts would provide us with some useful insights on what are the contents that stimulates participation of fans. Moreover, distinguishing between posts that are more liked than commented and vice versa would help us further distinguishing between contents that are shared and agreed upon from those that stimulate discussion and direct interactions between fans.

For example, a simple measurement of the number of comments and likes received by SNOQ posts in January 2011 shows that the main post for the month of January is announcement of the national mobilization for February 2011. There is also a second post which has received the same number of comments and likes but in this case no contextual data cannot be retrieved about it from the Facebook server (indeed, it is represented by a solid green square with no text within it). If we split these indegree measures into comments and like, though, we notice that the most commented post is the link from the national newspaper “La Repubblica” which, on January 31, analysed the reasons behind the national manifestation that would happen in two weeks from that moment. Six months later, in July 2011, not only the number of posts from SNOQ had increased (from 7 to 20) but the most commented ones are about violence against women and rape.

This very initial exploration based on simple criteria such as the number of posts, the number of comments and/or likes received by each of them, suggests an internal fluidity in the shape of the agenda of the movement which should be studied more in details and adding further contextual elements. To deepen this perspective of analysis, it appears particularly useful to integrate network analysis with content analysis techniques to systematically evaluate how issues and topics emerge, evolve through conversation and comments and, eventually, exit the agenda. Not only posts authored by SNOQ can be analysed with this twofold perspective but also comments submitted by users to see what expressions, arguments and topics are associated with SNOQ agenda.

3.3 SNOQ Youtube channel

Youtube is a platform owned by Google which has rapidly become the main service for sharing audio-visual materials online. Non registered users can watch videos online and search contents they are interested in; while registered users can also upload their own videos and comment on stored files. When uploading their videos, users are invited to tag them with keywords so to facilitate their indicization and, therefore, their retrieval in search operations. To increase efficiency in searches and content retrieval, the platform has evolved over time paralleling its original content-based nature (exemplified, for example, by the video recommendation system implemented by the platform) with more “social network style” set of functions. A recent transformation pertains to the multiplication of so called “channels” which are individual streams of video which can
Figure 9: SNOQ fanpage network – January 2011
be opened by any registered users and which, from December 2011, replaced the “Youtube friendships” relationship. Channels gather video uploaded by their owner and other users can subscribe, receive a notification anytime a new video is available, access the video from the list of subscribed channels form their Youtube home page. Also, Youtube recommends channels with similar contents to those already subscribed by the user. On the overall, then, The subscription and the channel recommendation mechanisms makes it easier for users to find useful contents and, in this way, they fosters a sort of continuity of consumption patterns as they limit the risk of getting lost amongst the millions of videos that are present on Youtube.

Youtube is, then, primarily about contents but, also, increasingly about users. This translates in the possibility to draw two general types of networks: users networks and video networks (Rotman and Golbeck 2011). User networks trace ties between registered users, for example, common membership within a channel (what was once the “friendship” relationship). Video networks instead gather videos which are link by virtue of sharing the same tag, being commented by the same user or for being posted as a reply one to the other.

Coming to our case study, video production has always been part of the communication strategy of SNOQ. Starting from videos recorded during February 2011 national manifestations passing through short films on women stereotypes and publicizations of various initiatives (especially the second gathering in Siena in July 2011) and campaigns (in particular that against domestic violence), SNOQ CP has produced, directed and/or collaborated to the realization of more than 70 videos. These materials are gathered in the Youtube channel “Snoqtube” which was opened in July 2011. Outside the Snoqtube channel there are many other videos which contain, in their description, or keywords or tags the sentence “se non ora quando” and that were shot ad uploaded by SNOQ supporters and/or participants to SNOQ’s manifestations and events. Here we focus in particular on the Snoqtube videos while we leave the examination of other audio-visual contents for future inquiries.

Because SNOQ videos are made available through Facebook and Twitter and, more importantly, because it is not necessary to subscribe to Snoqtube to watch these videos online, SNOQ Youtube channel has still a limited number of subscribers (up today they are 103) but the 70 videos in the channel have been watched more than 80 thousands time. Also, comments to the videos are not numerous, as rating and favouriting actions – but this seems to be something that deals more with standard behavior of content consumption in Youtube rather than an index of low appealing of the channel itself. However, a more detailed analysis of videos and their tags do provide us with interesting insights on how the principal organizing entity of the movement is contributing to the construction of its overall community as well as of a shared identity through videomaking and digital storytelling, two practices that are increasingly studied from the point of view of community building strategies (Lambert 2009 and 2010, Lundby 2008). Figure 10 shows the network of videos that are hosted in the Snoqtube channel based on common tags. Videos which have been seen many times are shown with their label and the corresponding number of views.

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9A search for this exact sentence in the search engine of the platform retrieves 2370 videos in total, including the 70 of the Snoqtube channel.

10Videos were retrieved through a query which searched for the keyword “snoqtube” in various field: author, keywords, title, description, categories.
Figure 10: SNOQtube network
Videos that share the larger number of tags are instead shown with a preview icon. As it shows, videos that are viewed more often are not necessarily those who share the higher number of tags with others. In fact, the overlap concerns only the video of the third national manifestation of December 2011 and the very recent video for the campaign against violence against women featuring the famous Italian singer Gianna Nannini. However, most seen videos and more “embedded” videos (in terms of number of shared tags, all belong to a major connected component which gathers the majority of videos and testifies the presence of a certain thematic cohesiveness in the construction of the SNOQ discourse.

Still, overall cohesiveness is built on a relatively low number of shared tags. While the majority of videos are joined into a major connected components but the network is actually fragmented into 18 components, 12 of which are isolated – that is, there are 12 videos that do not share any tag with others in the SNOQ channel. In between the major connected component there are three dyads, one triad and a smaller component of five vertices. This suggests that there is not a unique tagging strategy in the channel which is aimed at keeping together all videos under a common descriptive nucleus. Moreover, edges opacity in figure 10 is proportional to the number of shared tags between two videos: the maximum of shared tags is 13 and, on average, videos share 2 tags. This seems to suggest a certain heterogeneity of descriptive elements which, in turn, is certainly due to differences in tagging behaviours (for example, if channel owner tags with a single label “se non ora quando” or with four different labels “se/non/ora/quando”) but also points to a possible thematic heterogeneity of SNOQ agenda.

If we look at most commonly used tags in the channel, beside single pieces of the label “se non ora quando”, we find the Italian correspondents for manifestation, women, February 13, December 11, advertisement. Indeed, there are only three videos that are connected in a clique of strong ties (i.e., with strength ≥ 5): the video publicizing the last national manifestation on December 11, 2011; the video publicizing the manifestation in Siena (July 2011); and the video produced soon after Silvio Berlusconi’s resignation. Conversely, isolated nodes are videos of individual contributions recorded during national meetings and telling individual or specific stories that find a space in the overall SNOQ conceptual environment (e.g., migrant women, young students, female entrepreneurship etc.) but are tagged in a way that describes the story told in the video yet without assigning explicitly a link to SNOQ. For example, in the case of the isolated video titled “Goghi Lavoratrice Indiana” (Goghi, an Indian worker), the tags are the three single words Goghi/Lavoratrice/Indiana and not with “snoq” or “se non ora quando”. More in general, individual and/or local experiences do shape minor components: one of the dyads and the five vertices components are formed by videos coming from Genova and Palermo and tagged consistently; while the triad is formed by videos about experiences of teachers of primary schools). If single experiences are connected to the main component is by virtue of tags that recall national elements such as siena (a tag recalling the national manifestation) or thematic concerns of the movement (e.g., with the tag “donna”, women) but they never reach high level of embeddedness.
4 Challenges and Future Perspectives for Research

In this paper we addressed the nexus between social media and collective action proposing to analyse transformations of dynamics underpinning collective political participation from the point of view of discursive dynamics that are enabled by these new tools of communication. We proposed to cast this study in a socio-technical perspective which acknowledges simultaneously the social and the technical elements that co-determine collective action dynamics today. Thus we operationalized this perspective through a network approach and we illustrated some preliminary applications to the case of the Italian mobilization “Se non ora, quando?”.

In concluding this work, we would like to point out some critical issues that emerge from this preliminary phase of research. As shown, each network traced starting from Twitter, Facebook and Youtube has a different meaning and suggests different insights on the relationship between social media and collective political participation. However, all networks traced do share a common feature: despite digital communications through social media leaves traces in the Web that can be identified and transformed into analysable structures of communication, data are often incomplete. This incompleteness takes different forms depending on the medium we are considering: it could be missing data on Twitter followers, or a lack of information on post contents in Facebook or a lack of metadata in a Youtube video. Whenever we change the type of network we trace (we proposed here just some illustrations), we will find different discrepancies and gaps. Yet, the roots of these different gaps are the same: working on communication networks established through social media means to be dependent on social media’s servers – hence, on their way of storing, maintaining and giving back data when we ask for them – but also on privacy policies adopted by the different platforms. Indeed, we may miss data because of an error in a retrieval process but, more often, data are simply not disclosed – hence, they are not retrievable (think for example at data about channels’ subscribers in Youtube or private profiles on Facebook).

Gaps in data-retrieval can translates into different biases: losing a node in a network means losing also all of its ties and implies an alteration of the structure we are looking at. And yet, as it is almost impossible to avoid them, we propose a solution that is consistent with the overall socio-technical perspective of this contribution. From a first, technical point of view, efforts to retrieve data thus minimizing the risks of losses during the procedures is a necessary step. On the other, social side policies for data disclosure for research purposes should be pushed forward so that data can be elaborated also for non-commercial practices. Thirdly, from a methodological point of view, attempts to trace and analyse communication networks online should not be conceived in terms of a one-to-one mapping activity in which the absence of certain information would vanish all our knowledge-oriented efforts. Rather, mapping as a methodology “has emerged in the information age as a means to make the complex accessible, the hidden visible, the unmappable mappable” (Abrams and Hall 2006). In this sense, our network analyses should be understood as a systematic attempt which, although built over available and possibly uncomplete data, is conducted with the aim of rendering visible online structures that complete today complex
and hybrid collective action dynamics. Within networks we can find traces of mixed agencies, evaluate the relevance of visual, textual and multimedia contents in the definition of an overall framework and action programs and we can uncover patterns in which augmented communication possibilities translate into truly transformational inputs for collective political participation.

In order to realize this potential, we argue it is necessary to extend our mapping activity to a larger extent. Twitter networks could and should be traced beyond existing ties amongst followers, in order to test possible organizational mechanisms of triadic closure and/or transitivity (Monge and Contractor 2003) to evaluate the extent at which individuals and organizations play the role of “opinion leaders” within networks thus fostering the tendency amongst their followers to follow social movements’ organizations Twitter accounts. Also, attention and information networks should be paralleled with a periodical study of mention, reply and retweet networks, which could provide us with a more systematic insight on the actual communication flow within which individuals and organizations are involved in. Facebook networks should be studied integrating the user by post structure designed starting from collective action organizers with the same structure designed starting from supporters’ contribution. Finally, Youtube video networks should be integrated with a more extensive overview on audio-visual contents produced and tagged by actions’ supporters and members.

All networks should be then traced periodically to study the evolution of patterns identified at one point in time. Longitudinal analysis should become an integral component of our approaches, as nothing is more fluid than online communication. Persisting trends that will emerge from such examinations will point out more easily systematic transformations in the way collective meanings are constructed in the social media era.

References

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