

THINK INDIVIDUALLY, ACT COLLECTIVELY: STUDYING THE DYNAMICS OF A TECHNOLOGICALLY ENABLED CIVIC MOVEMENT

Research-in-Progress

Ana Cardoso
Centre Algoritmi
University of Minho, Portugal
anachcardoso@dsi.uminho.pt

Marie-Claude Boudreau
University of Georgia
Athens, GA
mcboudre@uga.edu

João Álvaro Carvalho
Centre Algoritmi
University of Minho, Portugal
jac@dsi.uminho.pt

Abstract

The use of information and communication technologies pervades our lives. Beyond the formal application of these technologies at work, we have recently seen civil society groupings using information technologies to facilitate the organization and coordination of civic actions aiming at collective goals. This research in progress addresses the study of a technologically enabled civic movement wherein ordinary citizens supported and organized a civic action aiming at cleaning up the litter illegally dumped in their country's forests. Our preliminary results indicate that information and communication technologies had different roles throughout this process of organizing a nationwide civic action, which are influenced by the underlying dominant logic of action. This research contributes to a better understanding of the use of information and communication technologies as catalysts for change at societal level and its role in supporting entrepreneurial civic participation.

Keywords: Collectivism, ICT, mass collaboration, tragedy of the commons, case study

Introduction

Ever since the dawn of humanity, humans have associated with others to solve problems and to realize collective goals that cannot be achieved individually. In most cases, people addressing collective goals are banded through formal organizations, either for profit or non-profit. In other cases, people associate with others in an informal way. Some examples include communities of programmers revolving around open source software projects, or interest groups organized through social media like MeetUp, Ning, or Facebook groups. Often, these informal civil society groupings leverage information and communication technologies (ICTs) for coordinating and organizing their initiatives and support their functioning.

This research-in-progress discusses the case of one such civil society grouping that commenced informally as a grassroots civic movement, and evolved into a formal civil society organization after having successfully mobilized a huge number of citizens to take part in a massive clean up effort of littered forests. The project, named *Let's Do It Portugal* (LDIP), was primarily supported by a group of ordinary citizens (not a formal organization), and used different ICTs to enable the organization of the clean up event. The objective of this research is to understand how a grassroots civic movement like LDIP uses ICTs to support its functioning, and thus our research question asks *how do ICTs support the unfolding and evolution of grassroots civic movements?* And, more specifically, in what ways the use of ICTs affects the structure and operation of grassroots civic movements over time?

We draw on the literatures of online communities and collective action to explain this phenomenon. In terms of methodology, we adopt the case study method and an event-based approach to analyze our data. Our preliminary results uncover how ICTs have been used at the onset of the technology-based social movement, and indicate that the role of ICTs used in LDIP evolved over the lifespan of the civic movement. Moreover, the dominant logic of action also evolved over time. Hence, it seems that the role of ICTs in LDIP is influenced by changes in the dominant logic of action. We expect that these preliminary findings will contribute to a better understanding of the use of ICTs in contemporary civic movements.

The remainder of this paper is organized as follows: in the next section, we present the literature related to the phenomenon under study. In Section 3, we describe the case we have elected to study and the methodological approach we used. Next, in Section 4, we report on our preliminary findings. Section 5 concludes with a summary of expected contributions and some final remarks.

Literature

When we started this investigation, we searched the literature for any existing theory that could help explain it, based on what we understood of the phenomenon. We tried, for example, green information systems literature and even persuasive technology because we were mostly puzzled with the fact that use of ICTs aimed at marshaling people to actively participate in a civic action tackling an environmental problem. However, as we could not find a definite explanation for the phenomenon, it seemed logical to carry an in-depth case study in order to delineate a thorough explanation for its occurrence. So, when the fieldwork started, we had no preconceived ideas or restrictions in terms of theory but of course we kept looking for theories and constructs that could help us in building an understanding of “*what was going on*”. Hence, we came across collective action theory and the body of research on online communities, which looked sound in the context of our case.

Online Communities

Online communities as groups that use computer-mediated spaces and technology to foster communication, interaction, and building of relationships among its members (Lee et al. 2003). Albeit relatively new, the phenomenon of online communities has already received considerable attention. For example, different reasons have been suggested to explain why some online communities are sustainable while others are not, such as: community size and variability of topics discussed (Butler 2001); member reputation, statute concerns, and shared cultural knowledge (Markus et al. 2000); benefits accrued from collaboration (Wasko and Faraj 2000); and the ability to replicate the sustainability properties that characterize colonial systems (Porra and Parks 2006).

Research has also focused on the motivation to contribute to online communities, uncovering, for example, intrinsic motivators (Lakhani and Von Hippel 2003), gift-giving culture (Bergquist and Ljungberg 2008), and community commitment (Bateman et al. 2011) as reasons why people participate in online communities. Moreover, other aspects studied include effects of membership turnover (Ransbotham and Kane 2011), governance structure (O'Mahony and Ferraro 2007), and the mechanisms for developing member attachment and commitment (Ren et al. 2012).

Despite this significant body of literature, a panel of experts on this topic (e.g., Johnson et al., 2010) recently highlighted a number of issues that deserve further investigation, among which the evolution of online communities enacted by the varied technological solutions that support their needs. We propose to leverage the lens of logic of action to better understand this evolution, as it suggests different frames, or dominant logics, to make sense of a community.

Collective Action

Collective action consists of the pursuit of a common goal through the joint action of a group of individuals (Marwell and Oliver 1993; Marwell et al. 1988; Oliver et al. 1985). Because the group provides to its members collective goods that have the property of non-excludability, self-interest rational individuals may “free ride” on the effort of others and choose not to cooperate, especially in relatively large groups (Oliver and Marwell 1988). For this reason, it is argued that organizations are needed in order to endorse the interest of the group and empower its members to act and succeed at collective action (Olson 1965).

Collective action has been the object of interest of different disciplines. For example, in economics, collective action problems like the provision of public goods and the use of common-pool resources have received attention from scholars. In the field of information systems, collective action phenomena have also been analyzed. Examples include knowledge contribution in electronic networks of practice (Wasko and Faraj 2005; Wasko and Teigland 2004; Wasko et al. 2004) standardization in vertical information systems (Markus et al. 2006), and the diffusion of interactive media toward universal access (Markus 1987).

Sociology scholars have also studied collective action related phenomena, such as social movements. Social movements are a non-institutional form of collective action with some degree of organization and temporal continuity that aims at producing change (Snow et al. 2004). Social movements theory attempts to explain why the mobilization for a collective cause occurs. Classical social movements theory emphasizes the preconditions for the emergence of collective action leading to social movements, and posits that social uprisings ultimately originate in the psychological states of the collective, namely in the face of shared grievances and generalized deprivations within a collectivity (Della Porta and Diani 2009). A different perspective was produced by resource mobilization theory (McCarthy and Zald 1977). This theory posits that collective action requires the acquisition of varied resources that hinge on supply and demand laws and are aggregated through social movement organizations. Mobilization for a collective action is thus contingent of the availability of resources at a certain moment.

However, the mobilization of resources seems to lose centrality in contemporary social movements (Buechler 1995; Hannigan 1985; Pichardo 1997). The new social movements theories emphasize individualized issues of contention originated in the civic sphere, such as minorities' rights, environmentalism, and anti-globalization causes (Castells 1983; Habermas 1981; Melucci 1980; Touraine 1985). Moreover, the rising social fragmentation and decline in civic organizations membership (Putnam 2001) have given room to personalized collective action frames wherein people join loosely technologically coordinated groups, such as “We are the 99%” or “We are all Khaled Said”. Such personalized action frames have arguably a different underlying logic, termed connective action logic (Bennett and Segerberg 2012), wherein organizational hierarchy, membership, and group identity are not central. Table 1 depicts the characteristics of connective and collective action logics and also of the hybrid type of logic, which assimilates elements from both connective and collective.

Connective action logic differs from the traditional collective action logic in that it suggests that individual agency and technologically enabled coordination and communication are at the core of a loose organization requiring little resources. The pervasiveness of ICTs, in particular social media technologies, has put individuals at the center of a vast universe of dense networks where they can activate and act as

catalysts of collective action. Individuals leverage the technological affordances of social media systems and Internet in general to coordinate collective action, namely by honing on the much-reduced cost of organizing online and on the reduced need for co-presence (Earl and Kimport 2011). On the one hand, the significantly lower costs of participating in some actions override the threat of individuals' "free riding" and allows for scaling or supersize effects in some kinds of collective action (e.g. online petitions supporting a cause). On the other hand, technological affordances are leveraged to improve the process of organizing and coordinating a collective action, which becomes more efficient both in time and space.

Logic of Connective Action	Hybrid Logic of Connective and Collective Action	Logic of Collective Action
Individually and technologically organized No requirement of collective framing Low requirements of organizational resources Easily personalized action frames that scale through social technologies Communication is centered on emergent personalized action frames	Organizations are often in the background in loose networks Organizations provide resources without imposing collective identities Informal coordination and organization of action Communication is centered in network-created personalized action frames	Hierarchy, membership and retention are central Collective identity Higher demands of education and socialization Requires formal organization and resources Introduction of social technologies is induced by efficiency and does not change the action dynamics Communication is centered on collective action frames

Despite some interest of information systems community in collective action phenomena, there is a limited understanding of how ICTs enable grassroots' organizing and mobilization for collective action. We still know little about the appropriate combination of information technology capabilities to support the realization of the goals of these emergent civil society groupings. However, it seems that these civil society initiatives will be less of a rare example in the future, and thus it is important that we understand the role of ICTs in how they work and evolve. This research intends to contribute to address this void.

Method

The overarching research approach is interpretive in-depth case study (Klein and Myers 1999; Walsham 1995). Interpretive research is not set out to test theory but aims at producing an understanding of a phenomenon and its social context. Hence, the goal of this research is to understand the sequence of events leading to a result over time and therefore our approach is process-oriented research (Langley 1999; Markus and Robey 1988). In other words, our aim is to provide an inductive in-depth examination of how the phenomenon of grassroots civic movements enabled by ICTs unfolds over time.

Case study methodology is particularly well suited to answer "how" questions, as the one we posed for this research. Moreover, the focus of our research is a phenomenon occurring in a real-life context and thus a field study is more appropriate. Our case constitutes a rather unusual or extreme case of a technological enabled social movement because, contrary to other modern SM such as *Los Indignados* or *The Occupy*, it was not organized for protesting or "doing-against". Rather, it had an entrepreneurial stance to the problem the activists were trying to tackle and therefore, instead of complaining and blaming others for what that people would like to see changed, activists were mobilized for an experience of "doing-with" other stakeholders of the problem and actually create change in their community.

In terms of strategies for data analysis, we selected techniques from grounded theory methodology that lend themselves to support our examination of data, namely constant comparative analysis, open, selective, and theoretical coding, and analytical memo-ing (Glaser and Strauss, 1967). As such, our use of

grounded theory methodology had the only purpose of supporting the examination of case data, particularly as a means of developing concepts, as the overarching research approach is in-depth interpretive case study (Klein and Myers 1999; Walsham 1995). Our approach with respect to grounded theory is similar to the methodology depicted by Andrade (2009) and Andrade and Urquhart (2008). We found this combination of case study method and grounded theory techniques suitable for our purposes of inductively studying LDIP case because of the lack of empirical studies theorizing about the role of ICTs in supporting grassroots civic movements.

Site Description

The selection of the case site was based on criteria of uniqueness, interestingness and opportunity. Thus, we analyzed a grassroots civic movement that ignited in 2009 in Portugal. The name of the civic movement is *Vamos Fazer! Limpar Portugal* (which translates to English as: Let's Do It! Clean up Portugal, and is further referred to with the acronym LDIP). LDIP was a grassroots initiative that mobilized 100.000 volunteers for a countrywide organized clean up of littered forests on a single day. The inspiration for this event came from an identical, precursor event that happened in 2008 in Estonia.

Let's Do It Portugal started with a bottom-up communication strategy that leveraged chains of e-mails and a social networking website in Ning platform to mobilize volunteers to participate. Later, local and national media helped promote it and its communication campaign was everywhere – in radio, television, and newspapers. The project adopted a crowd sourcing approach for the discovery of the location of dumpsites to be cleaned, enticing volunteers to report the existence of dumpsites across the country to a website (<http://www.3rdblock.net/>), such that an online map of trash locations could be created.

On the cleaning day, March 20th 2010, more than 100,000 volunteers went to the Portuguese forests to clean up about 13,000 illegal dumpsites registered in the 3rdblock database. Over 50,000 tons of waste were removed. The success of LDIP was surprising, especially considering the large volunteer participation and the impressive quantity of waste removed. Moreover, the project was exceptional in terms of its results, its lack of financial capital, and the non-institutionalized structure it adopted.

Data Collection and Analysis

Data collection involved both the consideration of secondary data and the conduct of interviews. We have been collecting secondary data since February 2011, and the interviews were conducted from June to October 2012 and a few more from January to June 2013. Secondary data included minutes of meetings and written reports of events, forms, manuals and tutorials created, posters, flyers, and presentations used for promoting the project, which we collected from LDIP website. Because this case was widely promoted online and through mass media, a rich collection of archival data was also available in different online outlets and therefore we also collected news clippings and reportages appearing in newspapers, national television and national radio. The collection of secondary data amounted to 150 files in text, audio, and video formats.

This collection of secondary data was useful to get acquainted with the case and to prepare the entry in the field especially with regards to the preparation of the interviews because it broadened the understanding of the case and facilitated the elicitation of relevant and insightful questions for the interview guide. While in the field, we conducted 39 in-person interviews and 2 interviews over Skype with individuals having different roles in this civic movement. To select our informants, we adopted a combination of methods: first, a random sample of volunteering respondents that answered the call for participants that was broadcasted to the universe of LDIP volunteers; second, a snowball sample that results from interviewees recommending other knowledgeable individuals for future interviews; and third, a number of theoretically sampled interviews that were useful in enriching our findings. Therefore, our sample of informants is varied and includes ad-hoc volunteers for one-off tasks (e.g. leading a group of volunteers to clean a dumpsite), members of the municipal groups scattered through the country, and members of the national coordinators group (includes the founders of LDIP movement and district leaders).

The interviews consisted primarily of open-ended questions, lasted on average 55 minutes, were audio recorded and transcribed according to a transcribing protocol. We also had follow-up emails with some participants, when some clarifications were found necessary. Participants were informed that the focus of

the study was on understanding the role of ICTs in projects like LDIP; some reported being motivated to contribute because they also wanted to make sense of what had happened. Interview questions focused on the use of ICTs by respondents in the context of the project, including the preparatory work and the coordination of efforts for organizing the cleaning event, the challenges they faced, and the outcomes of LDIP. After each interview, the field researcher wrote detailed notes about what was learned and, on the basis of these handwritten notes, the interview guide was appended and amended in order to have the next respondents validate, disconfirm, and further explain the core themes that had been identified.

For data analysis purposes, we leveraged grounded theory techniques namely constant comparative analysis, open, selective, and theoretical coding, and analytical memo-ing (Glaser and Strauss, 1967). Coding was an iterative process and started with the fragmentation of data through descriptive (open) coding. Open coding involved an encompassing classification of every facets of a document or interview, especially as they related to ICT usage, and the consideration of significant events. Our initial set of codes was revised two times until we found a coding structure that was stable and fit to the data. Revising the coding scheme did not mean that we discarded or replaced all codes, but instead allowed us to stabilize the structure of our code book at around 80 codes for 1744 coded segments (including documentation and interview transcripts data). Selective and theoretical coding, which are still in progress, involve the consideration of the logic of action and the role of ICTs in the civic movement.

Preliminary Findings

Through our examination of LDIP data, we distinguished four developmental phases, and for each, the key events shaping them, the different roles of ICTs, and the dominant logic of action. These phases, represented in a timeline in Figure 1, are: building structure, building support, scaling, and formalizing. Table 2 summarizes the main events for each phase of LDIP, the different roles of ICTs and the dominant logic of group action throughout the timespan analyzed. However, given that the analysis of our results is still ongoing, we only report here on the first phase.

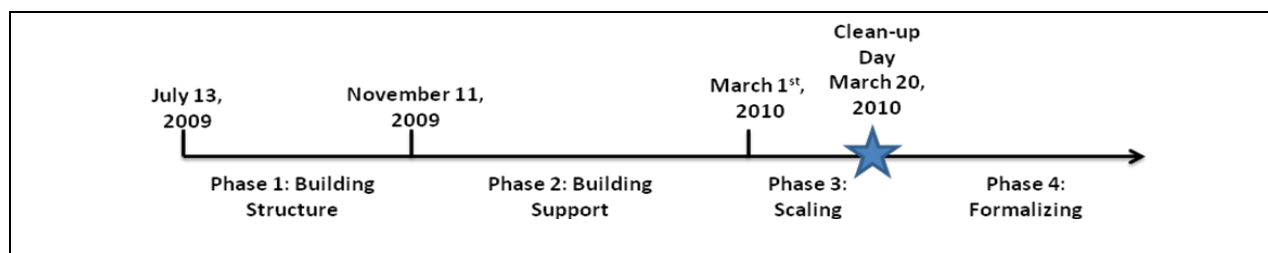


Figure 1. Timeline of the four phases

Phase 1: Building Structure

In 2009, a Youtube video was released about *Let's Do It Estonia*, a grass root project that had been successful in removing litter deposited in Estonian forests in one single day. This video became viral, and in July of the same year, a group of three Portuguese friends came across it and pondered “*Why not? What if we did the same here, in Portugal?*”, and decided: “*Ok, let's do it, but let's do it without raising any funding [unlike Estonia].*”

The group created a social network website in the free platform Ning to host their project and contacted, via email, as many of their friends, inviting them to volunteer. They also sought the involvement of various online communities related with outdoors activities in forests, such as all-terrain vehicle owners, cyclists, and geocachers. Moreover, they invited municipalities and parishes, public and private schools, Scouts groups, military, and private companies to partner and support them in this countrywide clean up project. Within two weeks, over 3,000 persons registered to the social network website of LDIP. As an open project supported by and benefiting ordinary citizens, LDIP had much appeal:

“I registered in Ning [social network website of LDIP] and started to follow the discussions that were

going on there and I remember thinking: this is an outstanding idea, but it's completely crazy, they will never make it! [...] I mean, these guys are completely insane: they are inviting people to clean up the litter that others created and they want to do that without spending a penny! Unbelievable!" (LDIP member)

Table 2. Summary of LDIP phases with ICTs used, roles of ICTs, and logic of action				
	Phase 1 Building structure	Phase 2 Building support	Phase 3 Scaling	Phase 4 Formalizing
Main events	Video about Estonia's clean up becomes a viral email; In 2 weeks, 3,000 persons join LDIP social network website of LDIP; In-person meetings of volunteers; Emergence of sub-groups in the social network website mirroring a decentralized structure.	Volunteers scan forests for dumpsites and upload the location to the database of waste map application; Meetings with city councils, private companies and central government bodies are organized; Learning from Let's Do It Estonia.	Many city councils, private companies, and citizens volunteer; Promotion and advertising campaign in mass media, for free; Public figures volunteer for LDIP and endorse it; The President of Portugal endorses the initiative;	Social network website of LDIP is closed; A non-profit NGO is founded under the name AMO Portugal; LDIP is awarded the prestigious prize Green Project Award for their innovative communication campaign;
Dominant Logic of Action	Logic of connective action	Hybrid logic of connective and collective action	Hybrid logic of connective and collective action	Logic of collective action
Primary ICTs used	Social network website E-mail Forum pages of various online communities Blogging tools Open content management system (CMS) for the website	Waste map application E-mail Social network website Search engines Mobile app LimparPT File sharing applications Discussion groups	Email Social network website Blogging tools Discussion groups Social media pages and groups	Open CMS (website) E-mail Electronic newsletter software Social media pages and groups
Role of ICTs	Recruitment Grouping Communication and sharing Discussing Brainstorming	Aggregation Visualization Communication and sharing Coordination Legitimization	Reporting Communication Promotion	Promotion Communication

The project presented itself as an independent civic movement of volunteer citizens mobilized to remove illegal dumpsites from the country's forests on a scheduled day. They specifically requested for monetary donations not to be made, but in-kind donations of goods, workforce and services were accepted. Many volunteers and private companies donated or lend resources, such as tools, bags and gloves, trucks and tractors, and transportation for volunteers. In addition, associations (such as the Scouts) provided a volunteer workforce to help with the cleaning effort. Whereas many groups were associated with the project, any attempt to institutionalize the LDIP group into a formally registered organization was rejected. Special care was taken to avoid that the movement was exploited to serve the interests of institutionalized groups, especially political parties or similar organizations:

"One of our concerns when we started was to accept everyone and at the same time to prevent any from taking advantage of the project. Later, XYZ [environmental NGO] joins and says they will participate, and ABC [political association] joins and says they will participate. And all were welcome aboard as long as they... I came to delete messages in Ning [social network website of LDIP] that tended to be political... I deleted a message from a member of Parliament and sent the person an email right after saying: 'Don't do that again because in this social network I will not allow it!'" (LDIP member)

“I heard from the Ning discussion that they had some problems earlier because someone tried to institutionalize the initiative and turn it into an association or a foundation...” (LDIP member)

An important event of this phase was the organization of three in-person (national) meetings to which all volunteers registered in the social network website of LDIP were invited. These meetings sought to recruit additional volunteers, promote the project, and brainstorm the preparation of the cleaning event. Although only a few dozen volunteers participated, these meetings were significant in the establishment of a leading group, who issued broad guidelines about the cleaning event, but did not otherwise impose itself in local initiatives. The project was indeed decentralized, and local (municipal) groups had much freedom into the organizing of the clean up effort of their municipality. Moreover, despite the involvement and support of institutional partners, the project remained largely independent because citizens were at the core of its organizational structure.

“The organization of this project was the most decentralized thing that happened in Portugal in the recent past. [...] We didn’t have: “I am in charge so you will do it my way”. Each group of volunteers began to work as desired and made their own decisions” (LDIP member)

“There were many associations adhering to the movement, but mostly we had people disconnected from associations. We had Scouts and associations related to the environment, but it was a very small number [...] Our main target was the ordinary citizen. We encouraged him to get involved and to organize something because we always conveyed the idea that locally, everything depends on the citizen, and it couldn’t depend on national [centralized] coordination.” (LDIP member)

In this first stage, we see evidence of a dominant connective logic (Bennett & Segerberg, 2012) wherein easily personalized action frames such as the meme *“Let’s clean up the Portuguese forests in one single day! I am going and you? Are you going to stay at home?!”* were shared through email, posted in forum pages of different online communities, and blogged about in the blogosphere community. This allowed for the bridging and grouping of like-minded citizens in a social media website especially created for this project. Moreover, it was conducive to discussions and brainstorming about how to realize the projects’ goal of cleaning up the forests in one single day. In essence, this first developmental phase was one where the loose organizing of the group came into being, and where technology was primarily used to recruit volunteers, to communicate information about the project, to share meeting minutes and related videos, and to let volunteers organize themselves into groups, first within the social network website of LDIP and then in their actual local communities.

Phase 2: Building Support

After local groups emerged from the social network website, they started working locally in order to assess their cleaning needs and obtain the resources necessary for doing the clean up locally, on the scheduled day. Local groups surveyed the forests in their vicinity and sourced information about dumpsites’ location to 3rdblock website. The aggregation of the data sourced by volunteers to this website allowed the mapping and visualization of the problem of illegal littering at a national scale. This previously unavailable information coupled with the fact that a group of volunteer citizens were willing to solve the problem without raising any monetary donations contributed to the legitimization of LDIP as a civic movement. Hence, many institutions, including private companies, municipalities, and the military recognized the value of such civic initiative and volunteered with their personnel, cleaning supplies and transportation means to help remove the garbage with their trucks and tractors to the nearest landfill or recycling center.

Phase 3: Scaling

A few weeks before the cleaning event, efforts were concentrated on promoting it at national and local scales. The idea was to create a big “wave” of volunteers that would collaborate with local organizing groups and help remove the litter from previously identified locations. Local groups were reporting to local newspapers and radio on their work of the previous months and were working on building public awareness of the problem of littered areas in the forests. Moreover, the names of LDIP partners and the famous personalities that endorsed the civic movement were also publicized. Therefore, LDIP got much public attention during this period, and about 100,000 citizens volunteered for the cleaning event.

Phase 4: Formalizing

Following the cleaning event, most local groups were dismantled because they had been created with the only objective of organizing the event. Moreover, there was no reason for maintaining the social network website of LDIP beyond the completion of the project, and accordingly, the site was closed. Some discussion about what to do next ensued; it indeed did not seem reasonable to squander the social and organizational capital that had been built throughout LDIP. Hence, a small group of citizens involved in LDIP from its very beginning founded a non-governmental organization (*AMO Portugal*) under the same principles that guided the organization of the massive cleanup event. *AMO Portugal* aimed at promoting national events through the mobilization of volunteers and the establishment of public and private partnerships at no pecuniary advantage. *AMO Portugal* could not own any financial assets or patrimony; its only assets were its creativity, its know-how, and its ability to mobilize volunteers when necessary.

Conclusion

Nowadays, groups of concerned citizens are increasingly turning to ICTs to help them intervene in their communities and produce change through collective action. As a result, contemporary societies are reformatted in the light of citizens' activism and emergent civic movements, which are often enabled by ICT-based platforms such as social media systems and crowd sourced applications (Castells 2007). Moreover, the way common tasks and problems are approached is also changing (Greengard 2011).

This paper discusses the case of a technologically enabled grassroots civic movement that is exemplary in terms of how ICTs enable the coordination of emergent groups of citizens organizing a collective initiative that had real impact in their community. We have almost completed our data collection, but are still analyzing our data. Our research question, which asked how ICTs support the unfolding of grassroots civic movements, is not yet fully answered, but we already discern changes in how ICTs were used across the different phases of the LDIP project, and conjecture that these roles are influenced by changes in the dominant logic of action.

In our study, we found different roles for ICTs throughout the four developmental phases resulting from our ordering of the key events. These different roles mesh quite well with the characteristics of connective, collective, and hybrid logics of action (Bennett and Segerberg 2012). For example, in phase 1, where the organizing structure of the civic movement emerges, the logic of group action was dominantly connective and centered on binding individuals sympathetic to the cause together. Thus, ICTs were used to recruit and group volunteers for the civic movement and also to discuss and brainstorm different ideas of how to organize such cleaning action, as they stemmed from disparate individuals and groups.

This research contributes to the literature in several ways. First, by studying an entrepreneurial civic movement enabled by ICTs to tackle a collective problem – the littering of forested areas of one country – this research sheds light on the uses of ICTs that promote civic engagement, and hence contributes to the stream of research on ICTs at societal level. Second, through the answering of our research question, we expect to characterize and explain this new phenomenon by using constructs from established theories (e.g. collective action) and also by adding others that we find necessary to deal with the idiosyncrasies of online organized collectives. Third, by studying this civic initiative and the different ICTs that enabled it, we contribute to improving the understanding of the process of organizing online, and hence we move forward the research directions pointed by experts in online communities (e.g. Johnson et al. 2010). Fourth, this paper is part of our first steps in trying to develop a process model of how ICTs enable grassroots' organizing for collective action and, therefore, upon completion of this research, we expect to be able to identify the combination of technological affordances that enable the realization of the goals of such emergent collectives.

Acknowledgments

We acknowledge support of FCT via Bolsa de Doutoramento SFRH/BD/60838/2009 and also support of Fundos Feder-COMPETE and FCT via FCOMP-01-0124-FEDER022674.

References

- Andrade, A. D. 2009. "Interpretive research aiming at theory building: Adopting and adapting the case study design," *The Qualitative Report* (14:1), pp. 42–60.
- Andrade, A. D., and Urquhart, C. 2008. "The value of extended networks: Social capital in an ICT intervention in rural Peru," *Information technology for development* (15:2), pp. 108–132.
- Bateman, P. J., Gray, P. H., and Butler, B. S. 2011. "The Impact of Community Commitment on Participation in Online Communities," *Information Systems Research* (22:4), pp. 841–854.
- Bennett, W. L., and Segerberg, A. 2012. "The Logic of Connective Action," *Information, Communication & Society* (15:5), pp. 739–768.
- Bergquist, M., and Ljungberg, J. 2008. "The power of gifts: organizing social relationships in open source communities," *Information Systems Journal* (11:4), pp. 305–320.
- Buechler, S. M. 1995. "New social movement theories," *The Sociological Quarterly* (36:3), pp. 441–464.
- Butler, B. S. 2001. "Membership size, communication activity, and sustainability: A resource-based model of online social structures," *Information systems research* (12:4), pp. 346–362.
- Castells, M. 1983. *The city and the grassroots: a cross-cultural theory of urban social movements*, Univ of California Press.
- Castells, M. 2007. "Communication, power and counter-power in the network society," *International journal of communication* (1:1), pp. 238–266.
- Della Porta, D., and Diani, M. 2009. *Social movements: An introduction*, (2nd ed.) Malden, MA: Wiley-Blackwell.
- Earl, J., and Kimport, K. 2011. *Digitally enabled social change: Activism in the internet age*, MIT Press.
- Glaser, B. G., and Strauss, A. L. 1967. *The discovery of grounded theory: Strategies for qualitative research*, Aldine de Gruyter.
- Greengard, S. 2011. "Following the crowd," *Communications of the ACM* (54:2), pp. 20–22.
- Habermas, J. 1981. "New Social Movements," *Telos* (1981:49), pp. 33–37.
- Hannigan, J. A. 1985. "Alain Touraine, Manuel Castells and social movement theory: A critical appraisal," *The Sociological Quarterly* (26:4), pp. 435–454.
- Johnson, S. L., Butler, B., Faraj, S., Jarvenpaa, S., Kane, G., and Kudaravalli, S. 2010. "New directions in online community research," in *Proceedings of International Conference on Information Systems*, , p. Paper 173.
- Klein, H. K., and Myers, M. D. 1999. "A set of principles for conducting and evaluating interpretive field studies in information systems," *MIS quarterly*, pp. 67–93.
- Lakhani, K. R., and Von Hippel, E. 2003. "How open source software works: 'free' user-to-user assistance," *Research policy* (32:6), pp. 923–943.
- Langley, A. 1999. "Strategies for theorizing from process data," *Academy of Management review* (24:4), pp. 691–710.
- Lee, F. S. L., Vogel, D., and Limayem, M. 2003. "Virtual community informatics: A review and research agenda," *Journal of Information Technology Theory and Application (JITTA)* (5:1), pp. 47–61.
- Markus, M. L. 1987. "Toward a 'Critical Mass' Theory of Interactive Media Universal Access, Interdependence and Diffusion," *Communication Research* (14:5), pp. 491–511.
- Markus, M. L., Manville, B., and Agres, E. 2000. "What makes a virtual organization work?," *Sloan Management Review* (42:1), pp. 13–26.
- Markus, M. L., and Robey, D. 1988. "Information technology and organizational change: causal structure in theory and research," *Management science* (34:5), pp. 583–598.
- Markus, M. L., Steinfield, C. W., and Wigand, R. T. 2006. "Industry-wide information systems standardization as collective action: the case of the US residential mortgage industry," *Mis Quarterly* (30:Special Issue), pp. 439–465.
- Marwell, G., and Oliver, P. 1993. *The critical mass in collective action*, Cambridge University Press.
- Marwell, G., Oliver, P. E., and Prahl, R. 1988. "Social networks and collective action: A theory of the critical mass. III," *American Journal of Sociology* (94:3), pp. 502–534.
- McCarthy, J. D., and Zald, M. N. 1977. "Resource mobilization and social movements: A partial theory," *American journal of sociology*, pp. 1212–1241.
- Melucci, A. 1980. "The new social movements: A theoretical approach," *Social science information* (19:2), pp. 199–226.
- O'Mahony, S., and Ferraro, F. 2007. "The emergence of governance in an open source community,"

- Academy of Management Journal (50:5), pp. 1079–1106.
- Oliver, P. E., and Marwell, G. 1988. "The Paradox of Group Size in Collective Action: A Theory of the Critical Mass. II.," *American Sociological Review* , pp. 1–8.
- Oliver, P., Marwell, G., and Teixeira, R. 1985. "A theory of the critical mass. I. Interdependence, group heterogeneity, and the production of collective action," *American Journal of Sociology* , pp. 522–556.
- Olson, M. 1965. *The logic of collective action: public goods and the theory of groups*, Cambridge, MA: Harvard University Press.
- Pichardo, N. A. 1997. "New social movements: A critical review," *Annual Review of Sociology* , pp. 411–430.
- Porra, J., and Parks, M. S. 2006. "Sustainable virtual communities: suggestions from the colonial model," *Information Systems and e-Business Management* (4:4), pp. 309–341.
- Putnam, R. D. 2001. *Bowling alone: The collapse and revival of American community*, Simon & Schuster.
- Ransbotham, S., and Kane, G. C. 2011. "Membership turnover and collaboration success in online communities: Explaining rises and falls from grace in Wikipedia," *MIS Quarterly* (35:3), pp. 613–627.
- Ren, Y., Harper, F. M., Drenner, S., Terveen, L., Kiesler, S., Riedl, J., and Kraut, R. E. 2012. "Building member attachment in online communities: Applying theories of group identity and interpersonal bonds," *MIS Quarterly* (36:3), pp. 841–864.
- Snow, D. A., Soule, S. A., and Kriesi, H. 2004. "Mapping the terrain," in *The Blackwell Companion to Social Movements*, D. A. Snow, S. A. Soule, and H. Kriesi (eds.), Oxford: Blackwell, pp. 3–16.
- Touraine, A. 1985. "An introduction to the study of social movements," *Social research* , pp. 749–787.
- Walsham, G. 1995. "Interpretive Case Studies in IS Research: Nature and Method," *European Journal of Information Systems* (4), pp. 74–81.
- Wasko, M. M., and Faraj, S. 2000. "It is what one does': why people participate and help others in electronic communities of practice," *The Journal of Strategic Information Systems* (9:2), pp. 155–173.
- Wasko, M. M., Faraj, S., and Teigland, R. 2004. "Collective action and knowledge contribution in electronic networks of practice," *Journal of the Association for Information Systems* (5:11), pp. 493–513.
- Wasko, M. M. L., and Faraj, S. 2005. "Why should I share? Examining social capital and knowledge contribution in electronic networks of practice," *Mis Quarterly* (29:1), pp. 35–57.
- Wasko, M. M., and Teigland, R. 2004. "Public goods or virtual commons? Applying theories of public goods, social dilemmas, and collective action to electronic networks of practice," *Journal of Information Technology Theory and Application (JITTA)* (6:1), p. 4.