Collective Action and Information and Communication Technologies: The Case of Consensus Movements

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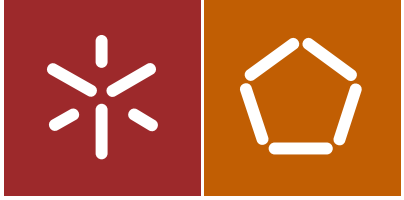

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Collective Action and Information and Communication Technologies: The Case of Consensus Movements

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Trabalho efectuado sob a orientação de
Professor Doutor João Alvaro Carvalho
Professora Doutora Marie-Claude Boudreau

abril de 2016

STATEMENT OF INTEGRITY

I hereby declare having conducted my thesis with integrity. I confirm that I have not used plagiarism or any form of falsification of results in the process of the thesis elaboration.

I further declare that I have fully acknowledged the Code of Ethical Conduct of the University of Minho.

University of Minho, 5th of April 2016

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Resumo

Atualmente, as tecnologias de informação e comunicação (TIC) são utilizadas em diferentes facetas da vida humana. Para além da aplicação destas tecnologias em contextos relacionados com o trabalho, cada vez mais as TIC estão implicadas em interações sociais e em formas informais de organização. Por exemplo, uma considerável parte da socialização ocorre em contextos electrónicos e, frequentemente, pessoas com interesses comuns coordenam ações de grupo através de diferentes plataformas electrónicas, tais como sites de redes sociais, forums de discussão em grupo, e sites de comunidades virtuais.

A existência de pessoas que se organizam informalmente para desenvolver interesses comuns ou para colaborar em atividades em prol de uma comunidade ou de um grupo não é uma coisa rara nem nova. Na verdade, isso é essencialmente ação coletiva – entendida como atividade intencional e coordenada de indivíduos com interesse na provisão de bens comuns, ou seja, bens que geram benefícios coletivos para uma comunidade ou um grupo independentemente das contribuições individuais dos seus membros. A ação coletiva é um fenómeno que tem sido investigado por várias áreas científicas, nomeadamente economia, sociologia, ciência política, e ciências da comunicação. Apesar de os fundamentos teóricos deste fenómeno estarem já bem estabelecidos, as implicações do actual contexto tecnológico para a organização de ação coletiva não são ainda bem conhecidas.

A fim de estreitar esta lacuna de conhecimento, esta tese investiga o entrelaçamento da organização de ação coletiva com as TIC. O trabalho empírico consiste em estudos de caso de dois movimentos cívicos que organizaram ações coletivas de âmbito consensual, em Portugal e na Estónia, e explica de que forma a organização dessas ações foi facilitada ou dificultada pela utilização destas tecnologias. Os resultados desta tese desvendam sete dimensões de ação coletiva estreitamente entrelaçadas com a utilização das TIC, e desenredam o papel facilitador ou constrangedor destas tecnologias em cada uma dessas dimensões. Esta investigação também enfatiza a agência dos organizadores de ação coletiva e a utilização das TIC como amplificadores de capacidades e de intenções humanas. Estes resultados permitem compreender melhor o papel das TIC nos processos de mudança social que são organizados *online* e portanto contribuem para a literatura sobre sociedade de informação e consequências societais das TIC.

Palavras-chave: ação coletiva, tecnologias de informação e comunicação, organizar online, colaboração em massa, movimentos cívicos.

Abstract

The use of information and communication technologies (ICTs) currently permeates different facets of human lives. Beyond the application of these technologies in work-related contexts, ICTs are increasingly supporting social interactions and facilitating informal ways of organizing. For example, a significant part of sociality is nowadays enjoyed through social media, and people with common interests often assemble and coordinate group action through different ICT platforms (e.g. social networking sites, community websites).

People organizing informally to further common interests or to collaborate on communal goals is not something unusual or even new. In fact, that is the essence of collective action – understood as coordinated action undertaken by individuals who have a shared interest in the provision of common goods, that is, goods that yield collective benefits to all members of a community irrespective of their individual contributions. Collective action is a phenomenon that has drawn scholarship from various scientific areas, namely economics, political science, sociology, and, more recently, communication studies. Although the theoretical underpinnings of collective action are well established, the implications of the contemporary technological mediated context for the organizing of collective action are not well understood.

In order to narrow this knowledge gap, this thesis examines the entwinement of ICTs with collective action organizing. Through the study of two cases of civic movements that organized consensual collective action, this research explains how this kind of organizing is facilitated and hindered by the use of ICTs. The results of this thesis unveil seven dimensions of collective action closely entwined with the use of ICTs and extricate the constraining and facilitating role of ICTs within each of these dimensions. This research also underscores the agency of organizers of collective action and the instrumental role of ICTs, which worked as an amplifier of human forces and intents. These findings constitute an improved understanding of ICTs' role in the process of organizing online for societal change and thus contribute to the literature about the information society and societal impacts of ICTs.

Keywords: collective action, information and communication technologies, organizing online, mass collaboration, civic movements.

To my grandmother Encarnação, in memoriam,
and to my children David and Alice,
for teaching me the essence of unconditional love

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I am indebted to many people who helped me getting through this intellectual journey. This thesis would not have been possible without the input, attention, and care of great mentors. I thank Professor João Álvaro Carvalho for his thoughtful advice and trust, and I thank Professor Marie-Claude Boudreau for her stimulating guidance and continuous encouragement. I sincerely thank them for allowing me a great degree of freedom in pursuing my research interests and for accommodating the challenges of my nomadic family life. I will always cherish their concern for my personal and professional well-being, and look forward to future collaborations. I also thank Professor Rick Watson for helping me finding a direction and for his valuable suggestions.

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I offer a heartfelt thanks to friends and relatives who made this journey a more pleasant one. I am eternally thankful to Maria Isabel Pereira and to Maria José Pereira for helping with family moves and transitions and, most importantly, for their love and

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Thank you all, it has been an amazing journey!

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Acronyms

CAN Connective Action Networks

CPR Common Pool Resources

CMC Computer Mediated Communication

ICT(s) Information and Communication Technology(ies)

LDI Let's Do It

PLP Project Let's Cleanup Portugal

QDA Qualitative Data Analysis

SaaS Software as a Service

TIC Tecnologias de Informação e Comunicação (in Portuguese)

Chapter 1

Introduction

This thesis is about how people organize informally, with the support of information and communication technologies (ICTs), to collaborate on civic actions aiming at collective goals. Remarkably, some of these civic actions attain a high degree of legitimacy and support from various quadrants of society, and achieve results with various order effects. Nowadays, when we look closely at these informal groups, we see that the functioning and sometimes even the constitution of these informal collectives is intertwined with the appropriation and use of various ICTs. To date, research has not however thoroughly explain the role of ICTs in these civic initiatives. Hence, the aim of this thesis is to examine how the use of ICTs facilitates (or not) the informal organizing of these civic actions.

This introductory chapter consists of five sections, organized as follows. Section 1.1 establishes the context for this study. Next, section 1.2 states the aim of the research. This is followed by an explanation of the research approach (section 1.3), and a discussion of potential contributions in section 1.4. The last section provides an overview of the thesis structure.

1.1 Background

Ever since the dawn of humanity, people have banded together to collaborate in the realization of collective goals that cannot be achieved individually. Often, people associate with others to cooperate in the production of private goods or services that are tradeable and can be sold for a profit – this is what business associates do. Yet, people also work together in the production of common goods that, by their very own nature, cannot be privately owned and are not meant for trade. The acting together for the provision of these common goods is, in essence, what collective action is about. Examples include interest groups seeking benefits, voluntary associations administering common resources, and social movements' striving for civil rights (Oberschall, 2001).

People collaborating on collective goals usually are banded in formal organizations, either for profit or non-profit. Yet, people also associate informally in structures such as hobby groups, neighborhood clubs, and grassroots movements of citizens. These informal groups of people nowadays leverage information and communication technologies (ICTs) for coordinating and organizing their group activities and supporting their functioning. Examples are interest groups organized through social media platforms like MeetUp, Ning, or Facebook; grassroots social movements constituted in internet websites and social media, such as *Los Indignados*, or *The Occupy*; and also communities of programmers revolving around open source software projects hosted in group-owned repositories or in platforms such as GitHub or SourceFourge.

The research documented in this thesis focuses on the entwinement of ICTs with collective action, particularly on the role of ICTs in the organizing of this kind of action. Since a broad array of phenomena can be categorized under the umbrella of collective action, additional clarifications are necessary to narrow the context of this research. As such, this research looks at the organizing of collective action by consensus movements.

Consensus movements, as portrayed in this research, are grassroots civic movements[1] that can be defined as collectives of ordinary people that attempt to promote change in society, acting with some degree of organization and temporal continuity, and pursuing their collective objectives through repertoires of action other than protesting or contestation (Snow et al., 2004; Turner and Killian, 1964).

The *Arab Spring*, *Los Indignados*, and *The Occupy* are civic movements that came into prominence recently. However, these movements engage in conflict-oriented collective action and adopt repertoires of action that are contentious, such as protests, boycotts, or demonstrations. Conversely, consensus movements' collective action mobilizes participants for cooperative solutions that achieve a high degree of popular and institutional support and that "do not imply redistribution of power nor alterations in social structure, but focus instead in service delivery, self-help, personal and community empowerment" (Della Porta and Diani, 2006, p.23). Examples are the anti-poverty movement (of which Band Aid and Live Aid concerts have been part), and the global movement for a cleaner planet "Let's Do It! World", which is studied in this thesis.

Another useful clarification is the concept *information and communication technologies*. In general terms, this concept refers to the combination of computation and telecommunications for the purposes of storage, retrieval, processing and dissemination of information. The use of this term has burgeoned since the massification of internet use, and nowadays is perhaps more prominent than the term 'information technology' itself. Actually, information technology is often seen as an imprecise term that encompasses both the activities involved in the design and in the use of devices that gather, transmit, or process digital information, including digital and cable television, flash memory devices, digital cameras and photocopiers, and the application of computer based systems to the storage, retrieval, processing, and dissemination of data (Keary, 2003, p. 868-869).

[1]Grassroots is a term used to refer to "ordinary people as the main body of an organization's membership" (Grassroots, 2010)

1.2 Research Objective

Collective action encompasses diverse empirical phenomena and has drawn interest from different scientific areas. For example, collective action phenomena such as the provision of public goods (e.g. lighthouses, street signage) and the management of common resources (e.g. river basins) have been studied by economists and political scientists. Likewise, the activities of interest groups, unions, and other forms of organized group action have been investigated by sociologists and political scientists. To a great extent, research has established that formal organizations are necessary for collective action success because organizations can empower individuals as collectivities, act on their behalf, and organize their contributions (Olson, 1965).

Yet, the centrality of formal organizations for collective action success has recently been questioned (Bimber et al., 2012). Many contemporary instances of collective action lack the formal organizational structure deemed necessary for coordinated action, and emerge instead as the result of the enhanced agency of individual entrepreneurs or small groups of organizers who leverage different ICTs (both ready-to-use and custom developed software) to organize individual participation and coordinate shared actions (Bennett and Segerberg, 2012). Moreover, traditional organizations have also embraced these technologies and adapted their repertoires of action to create additional opportunities and contexts to engage members and specially non-members in their collective actions. As a result, collective action nowadays takes place in a context where diverse organizational structures (e.g. formal organizations, individual entrepreneurs, informal groups) co-exist and sometimes even collaborate. Overall, this transformation means that, currently, the "fundamental solution to the challenges of collective action is not organization, but *organizing*" (emphasis added), as Bimber et al. (2012, p.5) argue.

However, there is a limited understanding of the role of ICTs in collective action organizing. Particularly, we know little about how grassroots civic movements use ICTs

to support the realization of their collective goals. Since these informal groupings are potential prominent players in civil society, it is important that we understand how they function and evolve. Hence, the aim of this research is to explain how collective action organizing is facilitated or hindered by the use of ICTs. In particular, the focus of this thesis is the organizing of consensual collective action by grassroots civic movements.

Thus, this thesis inquires about the experiences of people who organize and participate in consensual collective action in the current technological context. I am primarily interested in ICTs as part of organizers' toolkit and as part of the environment in which participants engage in collective action. This means that this research will not focus on how specific ICTs (e.g. social networking sites) are used for collective action or on how organizers make decisions as to use certain ICTs in lieu of others. Instead, my interest lies in ascertaining the ways in which the use of ICTs interferes, positively or negatively, with the organizing of collective action.

1.3 Research Approach

The overarching research approach selected to address the aforementioned objective is multiple interpretive in-depth case study (Klein and Myers, 1999; Walsham, 1995). The case study methodology is well suited for examining phenomena that can only be observed in naturalistic settings, as the one this research addresses. Moreover, interpretive research is not set out to test theories but aims at building an understanding of a phenomenon in its social context (Walsham, 2006), which is in line with the aim of this research.

The cases examined in this thesis are the civic movements *Let's Do It!* (LDI), from Estonia, and *Project Let's Cleanup Portugal* (PLP). These civic movements organized collective action events that mobilized thousands of people in their respective countries to tackle environmental and social problems insufficiently addressed by the existing policies and governing structures. The collective action event that draw more contributions in

both countries was the first-organized cleaning event, a national cleaning day in which people came together to remove tons of litter illegally dumped in forests (more details in chapter 4). The organizing of this event is thoroughly scrutinized in this thesis with respect to ICTs in use.

Both LDI and PLP combine characteristics of social movements and social entrepreneurship. On the one hand, these movements – just like social entrepreneurs – implement solutions to neglected societal problems which bring about positive value spillovers (Santos, 2012). On the other hand, PLP and LDI use tactics that are typically found in social movements repertoires (e.g. mass mobilization, campaigns). However, unlike conflict-oriented movements, PLP and LDI mobilize people for an experience in the actual doing together of whatever people would like to see changed in their community. Organizers prefer this empowered approach to the typical oppositional stance of social movements that usually involves blaming and confronting the establishment in an attempt to change the prevailing policies (McCarthy and Wolfson, 1992).

In my view, this amalgamation of characteristics results in a quite unique kind of consensus movement wherein power struggles are set aside, in favor of a more constructive approach, which in fact involves cooperating with other stakeholders of the collective problem being addressed, including the governing elites. As such, PLP and LDI do not fit neatly in Lofland's depiction of consensus movements as "timid politics", "derailed dissent", or "disguised rebellions of timid rebels" (Lofland, 1993, p.52) but, I argue, represent instead a novel variation of this phenomenon and therefore their study has revelatory potential.

1.4 Relevance

In order to thoroughly examine the role of ICTs in the organizing of collective action by consensus movements, this research looks at different perspectives: the emergence

of collective action groups; the underlying organizational structures; and the way these movements operate. The main result of this study is the identification of the dimensions of collective action organizing that entwine with the use of ICTs and the conceptualization of the different ways ICTs facilitated or hindered the organizing of collective action. This thesis also provides a nuanced view of ICTs as organizing agents of collective action, and a survey of the characteristics of organizational structures best poised to succeed in mass-mobilization for collective action.

These results are relevant to collective action scholarship in general, and to social movements research in particular. Because this research examines two cases of consensus movements, a phenomenon that has hitherto received little attention, the results of these thesis contribute to this literature niche. Nonetheless, the understanding of the mechanisms and dynamics of consensual collective action supported by ICTs is also useful knowledge for the study of other types of collective action, including conflictual group action.

In terms of practical relevance, the results of this thesis are useful for organizers of collective action, especially those that do not have a technological background (e.g. managers of civic organizations). The understanding of the ways the use of ICTs may enhance or constrain their agency can certainly contribute to the development of policies and practices that better work for them instead of working against them. In addition, the results of this thesis may be relevant for the design of systems that support collective action (e.g. Shaw et al. (2014); Zhang et al. (2014)) because this research improves the understanding of how ICTs are used and appropriated in real collective action situations.

1.5 Thesis Outline

This thesis consists of seven chapters organized as follows. **Chapter 1** (the current chapter) introduces the reader to the research discussed in this thesis. This overview

consists of the context of the study, the motivation for the research, the strategy of inquiry adopted, and the potential impact of the research. This first chapter terminates with a synopsis of the thesis structure.

Chapter 2 provides the theoretical underpinnings of the current study. In the first part, I conceptualize the phenomenon of collective action and present different collective action theories. This is followed by a discussion of the impacts of use of ICTs on collective action organizing and its implications at individual, organizational, and societal levels of analysis. The subsequent section explores three different theoretical perspectives about collective action in the ICT mediated context: Bennett and Segerberg's *logic of connective action* (2013) is about different patterns of participation and organization in contemporary contentious politics (a form of collective action); Lev-On and Hardin's *mechanisms of internet-based collaboration* (2007) concerns with identifying the components that make internet-based collective action viable; and Bimber et al.'s *collective action space* (2012) conceptualizes the experience of collective action within formal organizations. In the final part of chapter 2, I identify research gaps in the literature and outline the research questions this thesis aims to answer.

Chapter 3 deals with the research design. The first part recalls the research questions and explains the research approach selected to addressed them. Next, section 3.3 introduces the research sites, and sections 3.4 and 3.5 explain the methods and techniques used for data collection and data analysis, respectively. The last portion of the chapter provides a summary of the key aspects discussed in it.

Chapter 4 provides a detailed description of the empirical cases studied in this thesis. This chapter includes a narrative of case Let's Do It (section 4.1) and a narrative of case Project Let's Cleanup Portugal (section 4.2), in which I provide a thorough account of the cases' facts for the time period analyzed (2008-2013). Section 4.3 complements the previous sections with an explanation of the technological systems used in both cases.

The last section of this chapter is a summary of chapter's main aspects.

The analysis of case data and presentation of results is the matter of **chapter 5**. First, I examine how the organizational structure of Let's Do It and Project Let's Cleanup Portugal evolved over time. The following section compares the communication practices of both cases, and section 5.3 scrutinizes their use of ICTs in collective action organizing. A summary of chapter's key points is provided in section 5.4.

Following the presentation of results, **chapter 6** provides a critical discussion of case findings. Next, **chapter 7** explains the implications of findings for theory and practice, outlines the limitations of this research, and proposes a number of possible avenues for future research.

Chapter 2

Collective Action and Information and Communication Technologies

The purpose of this chapter is to review the literature relevant to the characterization of the phenomenon under study, which is the entwinement of information and communication technologies (ICTs) with collective action. The chapter is organized as follows: section 2.1 outlines the scope of the literature survey and the working steps used to produce the literature synthesis herewith; section 2.2 explains what is collective action, and section 2.3 summarizes the contributions of different scientific areas to augmenting the comprehension of collective action phenomena. The subsequent section discusses collective action theories, and is followed by section 2.5 about the impacts of ICTs on collective action at the individual, organizational, and societal levels of analysis, and also the implications for collective action organizing. Next, section 2.6 examines three different theoretical frameworks on collective action and ICTs. The chapter concludes with the identification of relevant research opportunities in section 2.7, and a summary of key points in section 2.8.

2.1 Introduction

The literature on collective action is extensive because collective action phenomena have been the object of interest of several different scientific areas, namely economic sciences, sociology, political sciences and, more recently, communication. Although in the following chapters I underscore the central issues in the literature, it is out of the scope of a thesis chapter to review completely the scholarship pertaining to all of these areas of study. Hence, the focus of this review is the topic studied in this thesis, which is conceptualized as *the entwinement of information and communication technologies with collective action*.

This survey of the literature followed, with some adaptations, the working steps outlined in Vom Brocke et al. (2009) framework and Wolfswinkel et al. (2011) five-stage approach, as explained next and depicted in table 2.1. In this table, the steps actually adopted from each framework are highlighted in bold font type.

The first step was the formulation of the topic under review. In this step, my goal was to define clearly the topic of this review and exclude related phenomena. For that reason, this step involved extensive reading and summarizing of literature about related topics, namely virtual organizations, online communities and, in a incipient phase of this research, also persuasive technology and green information systems. Although Vom Brocke et al. (2009, p. 7) suggest that prior to phase 2 reviewers ought to define the "appropriate scope and flavour of the review", I skipped this step because the scope of this review is already bounded by the fact that the resulting synthesis of literature is meant for a chapter of a doctoral thesis.

The second step consisted of the literature search, and corresponds to the collapsing of stages 1 and 2 of Wolfswinkel et al. (2011) approach, which are roughly equivalent to phase 3 of Vom Brocke et al. (2009) framework. In this step, I made decisions about appropriate sources (academic journals and books), keywords and search terms,

Vom Brocke et al (2009)	Wolfswinkel et al (2011)	Working steps actually used
1. Establishing a review scope	1. Identification of relevance criteria, fields of research, appropriate sources, and search terms	1. Conceptualization of the topic under investigation
2. Conceptualization of the topic under investigation	**2. Literature search**	2. Literature search
3. Literature search	**3. Refinement of literature sample**	3. Refinement of literature sample
4. Examination and synthesis of literature	**4. Coding of literature**	4. Coding of literature
5. Definition of a research agenda	**5. Representation and structuring of content**	5. Representation and structuring of content

Table 2.1: Working steps for literature survey.

and criteria for including or excluding a source. For the search of citable documents, I considered the following search terms and databases:

1. Search terms: collective action AND (information technolog* OR information system* OR information and communication technolog*);
2. Database selection: EBSCOHost, supplemented with Google Scholar;

As to the criteria for including or excluding a document, given that the topic of the review spans different areas of study, I accepted journal articles originating in any area insofar as the topic of the article (assessed by reading the title and abstract) was relevant to the review. Moreover, the appropriate time frame considered was articles published within the last two decades, but this criterion was relaxed for backward citation tracking. Table 2.2 shows the number of hits obtained in EBSCO database for the different search terms

I used and the number of articles I included for further examination in the following step.

Search terms	Hits	Incl.
collective action AND information system* IN ALL FIELDS	76	18
collective action IN ABSTRACT AND information system* IN ALL TEXT	71	10
collective action AND information technolog* IN ALL FIELDS	77	17
collective action AND information and communication technolog* IN ALL FIELDS	40	4
Total	264	49

Table 2.2: Results of literature search

In the third step, I selected the relevant sources to be included in this literature review. I adapted this step in the following way: instead of filling a table with the reasons for selecting each paper as the authors suggest, I found it more useful to fill in a basic concepts matrix (see appendix A) similarly to what Webster and Watson (2002) recommend. Moreover, I also identified additional articles through backward citation tracking. From the resulting sample of 54 articles (49 obtained from direct search, plus 6 from citation tracking), 11 were discarded in this step because either the paper did not discuss any ICTs, or the research outcomes were not relevant for my topic. Appendix B lists the bibliographic references of the remainder 43 articles included in the final sample.

In step 4, articles were more closely examined in terms of definition of terms, research outcomes, gaps of investigation, and calls for research. As suggested by Wolfswinkel et al. (2011), documents were coded using qualitative data analysis software, and codes were later sorted by similarity in order to identify focal themes to be used as a conceptual schema and organize the writing of the literature review. This was a challenge because of articles originating in different disciplines and thus lacking transversal anchor points.

Nevertheless, I found that the consideration of levels of analysis, as suggested by Webster and Watson (2002), was helpful for the conceptual framing of this literature synthesis and hence the individual, organizational, and societal dimensions of the use of ICTs on collective action were examined hereto. The coding book that resulted from the examination of documents is shown in appendix C.

The last step consisted of presenting findings in the form of a review document. Arguably, the advantage of Wolfswinkel et al. (2011) approach is that when the analytical stage is completed, writing takes less effort because much of the thinking about organizing the content is done when coding and sorting codes. However, after I started writing, I had to revisit the coding because I had difficulties in finding a logical thread to structure the content. Later, I found that the problem was that I had not integrated the insights I had from reading several books and from my previous knowledge about collective action with the sample of articles I had systematically examined. Therefore, in the last step I did use the outline of the code book (appendix C) to help me section the review chapter but, to a great extent, I devised it based on my own mental schema of the knowledge about the topic.

Even though following a systematic approach to preparing a literature review was fruitful, there was also some improvisation and chance in the process that I cannot accurately map and integrate into the working steps used, especially in the last step. Looking at the whole process retrospectively, I can emphasize the following aspects: firstly, the coding of literature (step 4) was specially effective in getting a structured overview of the topic, and personally I found it superior to a concepts matrix; secondly, writing is a creative endeavor and consequently there is a high variability in the final result; and lastly, the process of surveying the literature hinges on researchers' tacit knowledge and therefore is difficult to document exhaustively.

In conclusion, although adopting a systematic approach as Wolfswinkel et al. (2011)

and Vom Brocke et al. (2009) advocate introduces more structure in the process of surveying literature, the writing of a review article is well beyond following a list of steps. Ultimately, the main challenge is how to create a well-crafted document that is interesting to read and goes beyond summarizing the literature to providing new insights about a research topic. Thus, I agree with Boell and Cecez-Kecmanovic (2015) in that there are advantages of systematic reviews but there should be also space for a more critical engagement with the literature in order to produce diverse and original perspectives about a certain topic.

2.2 The Nature of Collective Action

Collective action is concerned with the situation of groups pursuing a collective interest outside the marketplace (Olson, 1965) and is generally understood as intentional, coordinated actions undertaken by individuals or groups who have a shared interest in the provision of a collective good (Marwell and Oliver, 1993). A collective good is one which is characterized by difficult or unfeasible excludability – meaning that it is difficult to prevent those who have not contributed to its provision from reaping its benefits, as for example a clean city park (Hardin, 1982).

Different types of goods and services are considered in the literature. Figure 2.1 depicts a taxonomy with four basic types of goods, depending on their different degrees of excludability and subtractability (or rivalry in consumption / in use). Collective goods, such as public goods and common-pool resources, are characterized by difficult excludability (top two cells of the matrix). However, some authors, as for example Olson (1965) and Della Porta and Diani (2006), consider that club goods are also collective goods. The reason for that is that a club good is non-excludable for club members and, in such circumstances, it is identical to a public good.

Some collective goods are not rival in consumption, which means that one's enjoyment

Possibility of exclusion	Rivalry in consumption / in use: Low	Rivalry in consumption / in use: High
Difficult	**Public goods** Lighthouses City parks Fireworks display	**Common-pool resources** Libraries Wild fisheries Irrigation systems
Easy	**Club goods** Daycare center Country club Gymnasium	**Private goods** Food Clothing Personal computer

Figure 2.1: Basic types of goods. Adapted from Ostrom (2005)

of such goods does not subtract the enjoyment of others: that is the case of public goods; whereas others, known as common-pool resources, are both rivalrous and difficult to exclude others from fruition (Ostrom, 2005). In contrast, private goods and club goods do not have problems of excludability and can be provided by individual action (Ostrom, 2005). In fact "only where common purposes or collective goods are concerned is organization or group action ever indispensable" (Olson, 1965, p.16).

Because exclusion is difficult, collective action is problematic. Indeed, a group interested in providing collective goods faces a potential collective action problem. A collective action problem, or social dilemma, is a situation where a conflict exists between individual rationality and group optimal outcomes (Poteete et al., 2010; Kollock, 1998). In other words, a conflict arises because the independent choices made by individuals are not in the best interest of the group. This creates the possibility for free-riding, (also known as *social loafing* in sociology and social psychology), which means that when interests are shared, rational individuals tend to prefer to let others bear the cost of providing the collective goods that will benefit everyone (Olson, 1965). Free riders are then those people that do not contribute to the collective action but enjoy its benefits as everyone

else.

Collective action problems are ubiquitous in social life. For example, collective goods[1] such as city parks or street lighting are usually provided by the public sector because there are not enough incentives for individuals or private organizations to produce them since the benefits from its provision spillover to others that have not contributed to it. Another example is that of an industry with a vertical employment contract; in such case, the employment conditions and benefits negotiated by the unions will affect all the workers of that industry, even those that are not unionized.

However, there is no single type of collective action problem that can be analyzed by a set of one-size-fits-all theoretical propositions, as Oliver and Marwell (2001, p.308) contend (emphasis in original): "It is clear that most social scientists have finally moved away from trying to develop *the theory of collective action* to recognizing that there are many different issues and many different kinds of collective action and that one can shade into another depending upon the structural characteristics of the situation."

Perhaps this explains the variety of scholarship that has addressed this phenomenon. For example, research in economics has addressed collective action phenomena such as the provision of public goods, externalities, and the management of common pool resources. Research in political science has also been concerned with common pool resources, with how collective decisions are made, and the emergence of social movements. Research in sociology has looked into social movements, riots and mobs, and collective reaction to disaster situations. The phenomenon of cooperation, as broad as it is, has also interested researchers from these three scientific areas, and also from computer science, biology, mathematics, psychology, and physics.

In addition, collective action theory has been found to be suitable to explain certain phenomena in information systems and management areas. Examples include the devel-

[1] I use the term *collective goods* in a broad sense to include both tangible and intangible goods. The latter are an abstract class of "goods" that are usually perceived as common benefits or common welfare.

opment and diffusion of technical standards (Markus et al., 2006; Zhao et al., 2011), the adoption of interorganizational systems (Steinfield et al., 2005; Monge et al., 1998), the diffusion of interactive media (Markus, 1987), the contribution to electronic networks of practice (Wasko and Faraj, 2005; Wasko and Teigland, 2004; Wasko et al., 2004), the model of innovation of open source software software (Von Hippel and Von Krogh, 2003), and models of institutional change (Hargrave and Van de Ven, 2006).

Collective action is about individuals cooperating in the pursuit of their joint welfare (Ostrom, 1990). The possibility of that joint welfare is usually not enough to get individuals to act collectively, and therefore collective action is problematic. In order to understand what makes collective action happen, the next section examines different collective action phenomena and theories of collective action.

2.3 Collective Action Phenomena

Diverse empirical phenomena, abstracted as collective action, have drawn interest from different scientific areas, as table 2.3 shows. This section describes the main collective action phenomena studied in economics, political science, and sociology, and discusses some of the analytic approaches that have been advanced in order to improve the understanding of collective action.

Public goods

Public goods are a special type of goods that have the properties of non-excludability and non-rivalry of consumption, which means that it is difficult or unfeasible to exclude individuals from its consumption and that consumption does not reduce availability for others. A classic example of public good is street signage: no individual can be excluded from its benefits and, when one enjoys it, others can still fully enjoy it as well. Because of these characteristics, the production of public goods is problematic.

Phenomena	Economics	Political Science	Sociology
Public goods	✓	✓	
Externalities	✓		
Common-pool resources	✓	✓	
Cooperation	✓	✓	✓
Collective decision making		✓	
Social movements		✓	✓
Reaction to disaster			✓
Riots and mobs			✓

Table 2.3: Diversity of scholarship about collective action phenomena

Public goods theory basically states that public goods will be under provisioned by the market and hence they require the state to intervene in order to efficiently allocate these goods and overcome this market failure (Samuelson, 1954, 1967). State intervention could be replaced with collective action; however, the public sector is arguably more efficient in organizing the necessary resources for the provision of these goods and acting in representation of collectives, given that rational individuals tend to free ride.

Externalities

Externalities are spillover effects, either positive or negative, experienced by someone not directly involved in what has caused it to happen (Pigou, 1932). Positive externalities are benefits accrued to someone who did not participated in what caused it; for example, vaccination provides benefits also to the unvaccinated because it reduces their possibility of getting infected with that disease. Negative externalities are costs that affect a party who did not contribute to the decision that caused that cost, as for example the costs that air pollution caused by industrial activity inflict to society.

The Coase theorem (Coase, 1960) posits that it is possible to find an efficient solution to an externality problem without state intervention, if the transaction costs[2] are sufficiently low. For example, those affected by air pollution borne to industrial activity could collectively bargain with polluter the obligation to repair or indemnify the environmental damage caused. However, in many cases this is not practical because it is very difficult to assess the real value of damage caused and the costs of organizing collectively are often high.

Common pool resources

Common pool resources (CPR) are quasi public goods in that they share the property of non-excludability but they are rivalrous in consumption. In other words, it is not possible to exclude individuals from the consumption of a CPR but its consumption reduces the availability of the resource for others in the group. Examples include fisheries, groundwater basins, grazing lands, and mainframe computers (Ostrom, 1990). At a general level, the governance of CPR is a problem of organizing, that is, how to move from independent action to coordinating strategies that will maximize the common benefits of the group.

Common pool resources theory identifies the conditions that enable individuals to overcome self-interest and engage in collective action to successfully govern these resources (Poteete et al., 2010; Ostrom, 1990). The theory suggests that institutions, at multiple levels, will, under certain circumstances, find policies that increase the levels of cooperation and compliance to successfully govern CPR. Particularly, collective action will occur in institutional settings where the following structural features are found: existence of reliable, highly frequent communication among participants; known reputation of participants; existence of entry and exit capability; high marginal return and long

[2]Transaction costs are, in general terms, the costs of making a transaction and typically include: the cost of surveying the market, the cost of bargaining with vendor, and the cost of enforcing the terms of the contract with vendor.

time horizon for those who participate; and clearly defined sanction mechanisms for non compliance.

Cooperation

Cooperation occurs when two or more agents (individuals, groups, organizations, countries) act in a way that is beneficial for their mutual welfare (Diekmann and Lindenberg, 2001). Despite rational choice theory depicting human behavior as narrowly rational and self-interested, cooperation happens everywhere. For example, numerous studies conducted across different cultures found an interesting pattern: only 30 per cent of individuals consistently behave selfishly, whereas at least 50 per cent consistently behave cooperatively (Benkler, 2011b). Moreover, individuals tend to cooperate conditionally, in a way that has been depicted as tit-for-tat: an individual cooperates as long as others also cooperate, and if others defect he will also defect (Axelrod, 2006).

Game theory, in general terms, is the study of how rational decision makers interact in situations of cooperation and conflict (Von Neumann and Morgenstern, 1944). The theory translates collective action dilemmas into formal mathematical models (depicted as games) and provides the analytical tools to solve these games. A very popular game named *Prisoner's Dilemma* has been used to analyze cooperation and also the contribution of individuals to public goods, and the management of common resources such as fisheries and irrigation systems (Poteete et al., 2010).

Benkler (2011a) identified several elements of successful cooperative systems, and named them 'design levers'. Insofar as some of these levers can be wired and switched, either naturally or artificially, in the situations requiring cooperation, it is expectable that cooperation will occur. Examples of these levers include:

- *Framing of the situation*: people are more likely to act selfishly in a business like situation than in a situation that is framed as prosocial or service to the community;

- *Visibility of behavior*: people behave more cooperatively when they know that their behavior will be visible to others;
- *Communication*: in many cases the ability to communicate and coordinate with others is enough to get people to act together for a common goal;
- *Social capital*: due to peer pressure, we tend to cooperate more when we are around others that also cooperate;
- *Solidarity with group*: humans have the capacity to feel solidarity with others and to feel part of a community, and hence many are willing to sacrifice individual well being for the collective benefit of community;
- *Reciprocity and reputation*: direct and indirect reciprocity can sustain cooperation, especially when coupled with reputation mechanisms;
- *Providing information*: information that humanizes the situation requiring cooperation will nudge people into cooperation;
- *Modularity of contribution*: breaking the work needed to achieve a collective goal into small independent modules encourages cooperation because contributions will be less burdensome for individuals.

Collective decision making

Collective decision making, or public choice, relates to the behavior of political agents and aims at understanding how these agents make decisions that affect them collectively (Hardin, 1982). Collective decisions are not made by the voters themselves, but by the politicians elected to represent them, and that is problematic because decisions often do not achieve an efficient collective outcome. On the one hand, legislators who seek reelection have strong incentives to support programs that provide benefits to their constituency, irrespective of the impact of such programs at the national level. On the

other hand, small, homogeneous groups tend to be more effective suppliers of political pressure than larger groups, who have more difficulty in organizing for collective action. Consequently, representative democracy often leads to the "tyranny of minority interests" at the expense of collective welfare (Mueller, 2003). This public choice theory reasoning explains, for example, why in some industries a small group of entrepreneurs are able to obtain government subsidies at the expense of the larger group of consumers.

Another example comes from the behavior of the electorate itself. Voting can be seen as a collective action problem, when considering the angle of the electorate that supports a certain candidate. The benefits of voting are collective but the costs of doing it are individual and the marginal impact of voting is negligible. Yet, many individuals choose to vote and bear the individual costs of doing it, rather than free-riding (abstaining). Public choice reasoning actually suggests low voter participation because it assumes that political agents are rational. In reality, most election's turnout are not that low and in this case it is collective action that needs to be explained (rather than collective inaction). Voting behavior is explained by normative motivations like valuing doing the right thing which, in certain cultures, affect pro-social behaviors and cooperation (Hardin, 1982).

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). Movements are different from campaigns: whereas movements are sets of interrelated actions oriented toward social change, collective campaigns are sets of smaller, less complex actions that are oriented towards more specific social goals (Oliver, 1989). Social actors engaged in movements' collective action "are involved in conflictual relations with clearly identified opponents; are linked by dense informal networks; and share a distinct collective identity", (Della Porta and Diani, 2006, p. 20). Examples of movements in modern times include the labor movement, feminism movement, environmental movement, peace

movements, ethnic and nationalist movements, and religious movements.

This definition of social movements pertains to the most well-studied type of citizen's movements: the conflict movement. However, citizen movements' collective action does not always have a conflictual nature. Not seldom, citizens mobilize on solidarity issues, as for example human rights, pro-peace, and hunger-aid movements. In these cases the movement's action finds no organized opposition in the attempt to bring change to the social structures and existing policies and hence is called consensus movement (Della Porta and Diani, 2006). Consensus movements are social mobilizations that enjoy broad attitudinal support, both institutional and from population, and encounter little or no organized opposition (McCarthy and Wolfson, 1992; Schwartz and Paul, 1992). Movement members often claim that their undertakings are nonpolitical, educational, nonpartisan, or humanitarian (Lofland, 1993). Consensus movements have certain peculiarities that are not found in social conflict movements' (Schwartz and Paul, 1992; McCarthy and Wolfson, 1992) and which are emphasized next:

- Consensus movements organize themselves around the cooptation of human and material resources, that is, they mobilize civic and state infrastructural resources, rally constituents from existing networks of relations (e.g. civic associations, church groups, local clubs), and enjoy generous media coverage;

- Consensus movements attract people who favor a nonpolitical and noncontroversial approach to activism, and often do not require heavy commitment or intense association from members.

These structural characteristics create strategic rigidity and thus limit the movement's ability to adopt new goals and tactics. Also, consensus movements have difficulties in sustaining the membership they initially attract, and when consensus declines, cooptability also declines, especially for the infrastructure and media coverage. Hence, Schwartz and Paul (1992) argue that the virtues of consensus movements actually work against them.

Particularly, the broad support that consensus movements enjoy bring confidence in the legitimacy and future of the movement and often these movements struggle to convince ordinary people to join or to contribute as most people tend to think their contribution is not necessary or will not alter the outcome of the movement's activities.

There is scant scholarship on consensus movements; perhaps because, unlike social conflict movements, consensus movements usually do not produce massive mobilization or bring significant societal change. Nonetheless, pundits agree that the investigation of instances of consensual collective action is beneficial for better understanding social movements and mobilization, and that social conflict movements scholarship is also relevant for consensus movements (McCarthy and Wolfson, 1992; Della Porta and Diani, 2006). Different theories have attempted to explain mobilization for collective action by social movements. The following perspectives are among the most well-known.

- *Classical theories*: Early scholarship on social movements was concerned with the interpretation of social conflict. In Europe, scholars drew on the Marxist theory as an explanation for social transformation, and thus argued that societal conflicts were shaped by the dynamics of class relations (Della Porta and Diani, 2006). In the United States, however, collective action was seen as crisis behavior that originated on feelings of deprivation or aggression resulting from frustrated expectations or negative comparisons between groups (Gurr, 1970; Della Porta and Diani, 2006).

- *Resource mobilization theory*: This theory posits that mobilization for collective action requires the acquisition of varied resources that hinge on supply and demand laws and are appropriated through social movement organizations (McCarthy and Zald, 1977). Mobilization for a collective action is thus contingent of the availability of material and non-material resources at a certain moment, and these resources also define the tactical choices for action and the social and political consequences of collective action (Della Porta and Diani, 2006).

- *Political process theory*: This theory posits that collective action is explained by changes in the political opportunity structure. Social movements' collective action is opportunistic and emerges or increases in the presence of an opportunity set created by the political context. Variables such as the degree of openness of political system, degree of electoral stability, availability of influential allies, and existence of conflicts among the elites explain the rising of contentious collective action (Della Porta and Diani, 2006). Moreover, the action repertoires evolve across protest waves in response to shifting opportunity structures, in a process designated as tactical innovation. Thus, peaks of protest occur around tactical innovations introduced by newly mobilizing movements, which surprise the political regime and then diffuse easily due to its novelty and success. However, tactical innovations offer a temporary advantage to challengers because movement opponents develop counter-tactics in reaction to the innovation introduced in order to reinstate the previous order (McAdam, 1983).

- *Interpretive frames*: The origin of the framing perspective is the constructionist principle that the meanings of objects, events or experiences are interpretive processes. Social movement activists and participants engage in 'framing', that is they interpret certain conditions and events in ways that are intended to mobilize support and to demobilize opposition for a certain collective action (Snow and Benford, 1988; Snow, 2004). The outcomes of the framing process are collective action frames. This kind of symbolic elaboration succeeds in motivating individuals for action, when there is frame alignment. That is, when frames connect with identity and link individual spheres with the collective experience. Moreover, the uncertain outcomes and individual costs of collective action are devalued if participants are convinced of the legitimacy and opportunity of the collective action (Della Porta and Diani, 2006).

- *New social movements*: The mobilization of resources seems to lose centrality in contemporary forms of mobilization (Buechler, 1995; Hannigan, 1985; Pichardo, 1997). Contemporary explanations of mobilization for collective action moved away from availability of resources and collective grief issues into more individualized and identity-based issues of contention originated in the civic sphere such as minorities' rights, environmentalism, and anti-globalization causes (Castells, 1983; Habermas, 1981; Touraine, 1985; Melucci, 1980).

Reaction to disaster

Disasters are uncontrolled events, concentrated in time and space, that disrupt the social structure and the fulfillment of the essential functions of society (Fischer, 1998). Recent examples are earthquakes in Philippines (2012) and Haiti (2010), and the hurricane Katrina (2005). When facing a natural or human-caused disaster, individuals usually are first concerned with theirs and their significant ones' safety, but they also experience a heightened community spirit and tend to cooperate extraordinarily. Most often, communities and societies coordinate resources and quickly organize collective action in order to assist those affected by the disaster (Miller, 2000). As such, scholars have found that the communication infrastructure is a critical requirement for collective action in the aftermath of disaster situations (Comfort and Haase, 2006; Thelwall and Stuart, 2007).

Given the unpredictability and high variability of contexts that exist in disaster situations, scholars agree that it is unlikely that a grand theory of disaster management will appear (Koehler, 1996). Nevertheless, chaos theory has been found to provide some empirical support to the study of emergent organizing in disaster response situations (Drabek and McEntire, 2003; Koehler, 1996). Moreover, a structural theory of emergence has also been developed, which explains how domains, tasks, resources, and capacities are combined to originate different types of emergent organizations – ranging from organized collective behavior to formal organizations (Bosworth and Kreps, 1986).

Riots and mobs

Rioting is a defiant and non-routine form of collective action that involves a group of people assembled with the goal of disrupting the social order using violent means (Useem, 1998). *Breakdown theory* explains the existence of riots by pointing that these events occur when "the mechanisms of social control falter or everyday routines are disrupted" and extreme violence emerges out of polarizing events or conflicts (Useem, 1998, p. 233).

Mobs are also a non-routine form of collective action that consist of a crowd of people acting in a concerted manner. However, mobs do not always resort to violent behavior; they assemble for peaceful or non-violent purposes too. For example, in 2001 more than one million of Filipinos converged to a central location in Manila, all wearing black clothes, with the purpose of showing their discontentment with the halting of the impeachment trial of President Estrada, who eventually resigned as the outcome of this public demonstration. Another example is the critical mass moving events, in which cyclists, in certain cities around the world, assemble once a month and coordinate a collective ride around the city in order to gather public support for cycling-friendly cities (Rheingold, 2002).

2.4 Collective Action Theories

The previous section examined some of the most prominent phenomena of collective action and the analytical approaches that have been been used to make sense of them. Table 2.4 summarizes the key points discussed heretofore. This section covers theories of collective action in broad terms; that is, theories that are general enough to explain phenomena from different scientific areas. These theories are: the traditional theory of collective action, and the critical mass theory of collective action.

Phenomena	Theoretical approaches
Public goods	Public goods theory
Externalities	Coase theorem
Common pool resources	Common pool resources theory
Cooperation	Game theory
Collective decision making	Public choice theory
Social movements	Resource mobilization theory Political process theory Interpretive frames New social movements perspective
Reaction to disaster	Structural theory of emergence Chaos theory
Riots and mobs	Breakdown theory

Table 2.4: Collective action phenomena and theoretical approaches.

Traditional theory of collective action

Collective action, as articulated by Olson (1965), is concerned with the logic underlying groups' action, particularly the provision of collective goods by political interest groups, as for example unions, professional associations, and industry or agriculture lobbies. The theory challenged the commonly held assumption that the existence of a potential benefit (the collective good) for a group is itself sufficient to generate collective action to optimally achieve that benefit, and posited that:

- A group of people, whatever its size, has difficulties in providing a collective good efficiently because rational individuals tend to free ride;

- Group size caveat: smaller groups are privileged and presumably will succeed in collective action, yet they tend to provide a suboptimal amount of the collective good; larger groups will often fail to provide any amount at all and hence remain

latent;

- Heterogeneity of interests caveat: the group member with the highest interest in the collective good will tend to contribute a bigger share to its provision, whereas the other members will tend to free ride;

- The necessary conditions for the optimal provision of a collective good are: the sharing of the marginal costs and the marginal benefits in exactly the same proportion for each member.

- Selective incentives (economic and social incentives) are necessary to induce contributions from the members of latent groups; social incentives, such as social sanctions and social rewards, usually operate better in smaller groups because members can have face to face contact.

The theory of collective action *à la Olson* has been criticized in respect to its assumptions about the advantages of smaller groups (Oliver and Marwell, 1988; Hardin, 1982). According to Oliver and Marwell (1988, p.6), group size is not determinant of successful collective action, what matters is whether there is some "social mechanism that connects enough people who have the appropriate interests and resources to act collectively". Hence, resources and social organization are key to collective action, not group size.

More recently, the group size assumption has again been disputed, but this time in relation to the costs of organizing collective action. Arguably, organizing collective action is more costly for a large group but, with information and communication technologies, it may not to be. Evolving information and communication technologies reduce the costs of sending information to many people and hence eliminate the communication disadvantages of large groups, which need not remain latent. Moreover, ICTs augment individual capacities for monitoring and for the imposition of social incentives that earlier

were only possible within smaller groups. However, the same technologies provide more opportunities for individuals to free ride: when individuals can obtain the collective good on their own, they have fewer incentives to contribute (Lupia and Sin, 2003). As an example, the number of lurkers in many online forums and mass collaboration projects clearly shows that free riding is difficult to overcome in technology mediated collective action.

The critical mass theory of collective action

The critical mass theory of collective action is a mid-range theory that aims at identifying the necessary conditions for collective action to emerge (Marwell and Oliver, 1993). In other words, the theory questions under what circumstances will collective action emerge. Marwell and Oliver (1993) make some assumptions about collective action that are more in line with how collective action materializes in practice, as follows:

- Rather than individuals making their decision about contributing to collective action independently, the authors emphasize that the decisions of group members are usually interdependent. For instance, when contemplating the possibility of joining a demonstration, individuals weigh in how many others are participating as well because people usually get involved in groups they regard as efficacious. Typically, groups that are large and resourceful are regarded as efficacious, and the groups' growth itself tends to attract still more contributions.

- Groups are heterogeneous because group members have different resources and interests in collective action. For example, a parent may have less time (resources) for demonstrating than a childless fellow employee; and a home owner is more interested in having legislation that protects ownership and inheritance than someone who lives in a rented house. Moreover, groups encompass participants and organizers. The latter have resources and interest in the collective good as everyone

else, but they use their resources to organize and coordinate the collective action.

- There are different kinds of collective action, with different production functions for collective goods. The production function depicts the way in which contributions of group members translate into units of collective good being provided. Sometimes a few group members can provide the collective good for many (decelerating production function), while other times collective action requires nearly unanimous collective action from the group (accelerating production function).

- Some collective goods have decelerating production functions (convex shaped), which means that the first units of resources contributed to collective action have the highest impact and the subsequent have progressively less impact. For example, lobbying has this kind of production function because a few people can provide the collective good for all, and once action reaches a basic level, additional contributions do not add much. A decelerating production function is conducive to negative interdependence: each additional contribution makes subsequent ones less worthwhile.

- Other collective goods have accelerating production functions (concave shaped), in which early contributions have little impact and the later ones produce much larger impact. Examples include strikes, boycotts, mobs, and demonstrations, and other types of collective actions in which their impacts increase with the number of participants. Accelerating production functions lead to positive interdependence: each additional contribution makes the next one more worthwhile.

The analysis of the mathematical modeling of these assumptions led Marwell and Oliver (1993) to arrive at some interesting results. They demonstrate the importance of the critical mass of contributors, that is the subset of highly interested and/or highly resourceful group members that play a key role in the preliminary phases of collective

action. The role of critical mass is different depending on the type of collective action at stake. For accelerating types of collective action, the critical mass works as a threshold, that is the minimum number of group members that are necessary to overcome the start-up costs of collective action and create the conditions for the involvement of less interested or less resourceful others. Conversely, for decelerating types of collective action, the critical mass ends up providing the collective good themselves and giving the others the opportunity to free ride. Hence, collective action is easier in the decelerating case, in the sense that the collective good is provided at a lower interest level; yet, collective action in the accelerating case, when started, leads to self-reinforcement and explosive growth.

Moreover, Marwell and Oliver (1993) also found that social networks' configurations affect collective action. In organizer-centered mobilization with heterogeneous groups, the concentration of ties around one person, that is network centralization, has a positive effect on collective action because centralization increases the probability that an organizer will be connected to the critical mass of contributors (Oliver and Marwell, 2001). In fact, organizers do not choose people randomly from their network; they rather are selective because they have limited resources. Typically, organizers prefer to engage first the individuals more likely to contribute the most resources (Marwell and Oliver, 1993, p. 122), and later move on to engage the less resourceful individuals.

The bottom line of the critical mass theory of collective action is that "there are no general principles of collective action" (Oliver and Marwell, 2001, p.296), because it all depends on the production function and on the kind of group involved. The nature of collective action dilemma is not the same for everything defined as collective good or collective action, but actually depends on the nature of collective good and the social structural situations within which group members make interdependent choices.

2.5 Effects of ICTs on Collective Action

In the previous sections, we saw that collective action is fundamentally a social phenomena centered on cooperation that has stimulated scholarship in different scientific areas, including economic sciences, sociology, and political sciences. Social scientists have looked into collective action phenomena from different perspectives: economists and political scientists have been more concerned with how to get individuals to cooperate instead of free-riding and solve collective action dilemmas; whereas sociologists have tried to explain the conditions under which mobilization for certain types of collective actions occurs and the effects of these mobilizations on society.

Despite the differences, there are also important similarities. Collective actions with different goals and tactics are often mobilized and organized in similar ways: these same processes arise in social movements, charitable causes, interest groups, some kinds of political groups, volunteering, and even in the management of common pool resources. The reasons for this might be that these groups are oriented towards a collective goal that benefits others than themselves, and also that volunteers, activists, participants, or community members often draw on the same knowledge about how collective actions are done (Oliver and Marwell, 1992). A similar consideration can be said about collective action supported by ICTs, as Lev-On and Hardin (2007, p. 8) put it: "And indeed, the organizational logic of producing public goods using the internet as a hub to attract and synthesize many small-scale contributions is gradually applied by a variety of political actors and organizations. Phenomena such as internet-based party and interest group organization, virtual-community-based organization, and citizen- and social-movement-Web-based organization, are typically studied in different sub-disciplines. But across these phenomena, the agencies organizing collaborations benefit from the same affordances, that is, to extract many small contributions from their constituency, or support base, or followers, through the Internet."

The advent of ICTs has impacted collective action especially at the level of organizing processes. On the side of technology, there has been a progressive integration of communication and computing (information processing) processes that before were clearly separated, and hence the distinctions between information systems and communication systems have become increasingly less meaningful (Fulk et al., 1996). Moreover, communication has been found to have significant influence on the levels of cooperation in collective action because when participants have the opportunity to dialogue they can more easily develop trust, create norms, and reinforce commitment (Ostrom, 1998; Lupia and Sin, 2003; Bimber et al., 2005). For this reason, collective action phenomena have also captured the interest of communication theorists, especially those concerned with the evolution of computer-based communication systems, particularly the internet (Oliver and Marwell, 2001).

Nowadays, many collective goods generated by collective action are communication-based because the production of these goods is sustained through the collective actions of individuals and organizations within a communication network or system (Bimber et al., 2005; Flanagin et al., 2006). Two types of communication-based collective goods have been identified by communication scholars: connective goods, where technology-enabled communication systems connect members within a collective, as for example inter-organizational hyperlink networks; and communal goods, which are collections of information, originated in individual or group contributions, that are publicly accessible, as for example Wikipedia (Fulk et al., 1996; Shumate and Lipp, 2008).

The progressive integration of ICTs in the organizing processes of collective action has made another classification relevant: the distinction between offline collective action and online collective action. In some cases of collaboration enabled by ICTs, contributions are information-rich and do not require much offline interaction, as for example electronic networks of practice (Wasko et al., 2004), collaborative encyclopedias (Anthony et al.,

2009), or public document repositories (Peddibhotla and Subramani, 2007). However, other cases involve legwork on the ground, that is, a certain level of offline interaction, despite the organization of collective action being centralized on the internet, as for instance marches, demonstrations, and interest groups found on platforms such as Meetup. The fundamental difference is that offline collective action uses the ICT infrastructure for organizing the contributions of participants, which take place mostly offline; whereas online collective action is fundamentally based on the use of ICTs (Lev-On and Hardin, 2007).

People seem to adhere to online collective action because they perceive that their self-efficacy is superior, given that their individual costs of participating are significantly minor when compared to offline participation (Rao, 2012). In addition, it is much easier for some people to commit online, and perhaps self-revoke that commitment later, than to do that same thing in person. Moreover, online collective action potentially can assemble much more people, even though not physically, because ICTs afford a kind of connectivity that is independent of geographic location (Brunsting and Postmes, 2002).

The impact of ICTs and particularly the internet on collective action phenomena has been considered at different levels. Theoretical attention has diverted from the causes and effects of individual actions within activities where the free rider problem exists, and has focused more on the social and organizational processes that make collective action possible or viable in the current technology-mediated social context. In other words, the core issue has been centered on the processes that enable individuals to coordinate their actions into a single collective action (Oliver, 1993). The following sections consider the individual, organizational, and societal levels of analysis to explain how ICTs have impacted the organizational and social processes that make collective action possible.

2.5.1 Impacts at the Individual Level

At the individual level, an important issue is how computer mediated communication and information technology has affected the individual decision to engage in collective action. It has been argued that ICTs enable sociotechnical capital – a special case of social capital defined as productive social relations that are enabled by the ongoing use of information and communication technologies (Resnick, 2002). This kind of capital allows people to connect to information, connect to others, exchange resources, and to coordinate interdependent actions, which are all very important for collective action to unfold. Moreover, sociotechnical capital enables this connecting to happen without in-person contact and organizing to happen outside the bounds of organizations, and these new forms of organized interaction enabled by ICTs are likely to cause structural transformation in society (Resnick, 2005).

The decision to engage in collective action is often (restrained) accelerated by the (lack of) visibility of others participating (Hampton, 2003). Technology mediated contexts afford this kind of visibility about the conduct of other members of the collective (Wasko et al., 2004), and such visibility contributes to the self-regulation of one's conduct within the collective due to the possibility of sanctions in case of defection (Sandoval, 2005; Lev-On, 2013). This visibility is further extended to organizational and societal contexts: for example, the visibility of contributions to organizational repositories, intranets, and electronic networks of practice (Fulk et al., 2004; Wasko and Faraj, 2005), and the growing trend of citizen journalism in which citizens armed with mobile devices record and disseminate incidents with their governments and ruling elites (Hussain and Howard, 2013; Thigo, 2013).

Another aspect that has been investigated is identity. Identity is important for collective action because it operates as an organizing principle of collective engagement: the lines of solidarity and opposition to the action of a certain group are identity-

based. The interactivity and geographic neutrality of ICTs redefine identity because individuals are ever more exposed to different ideas that are not bounded by social class or neighborhood, but only by their own limits of exploration with ICTs. Individuals can explore and interpret these ideas in new ways and hence self-determine their identity in the online context (Townsend, 2000). Moreover, conventional markers of social status are not easily perceptible (or can be omitted) in computer mediated communication (CMC) and hence individuals can construct their own identity online, depending on their uses of technology (Agre, 2002).

There are yet other ways in which ICTs are transforming collective action. Specifically, in the realm of contentious politics, it has been found that ICTs lower the individual costs of participation in collective actions and therefore more non-activists and peripheral members may get involved because participation consumes less of their resources (Coopman, 2011; Nielsen, 2009; Klein, 1999). This has been empirically confirmed for the persuasive kind of collective actions, as for example online petitions (Brunsting and Postmes, 2002; Earl and Kimport, 2011). However, scholars caution that this increased participation does not directly imply that ICTs makes societies more democratic or that technology savvy individuals are in general more civic minded or politically engaged (Agre, 2002; Bimber, 2001; Klein, 1999).

Although significant, the transforming role of ICTs must be considered in relation to the social context. On the one hand, ICTs allows citizens to create their personalized media spheres wherein they have ever more control over the issues they want to know about and are better able to engage their social networks in the collective actions they choose to participate (Agre, 2002; Bennett and Segerberg, 2012). On the other hand, technologies and individuals are embedded in institutional contexts and hence the roles, relationships, and expectations of interaction among networked individuals are molded by institutional architectures, which reflect and amplify the spacing (institutional dis-

tance) existent among individuals. Overall, ICTs might hinder structural changes in how individuals engage in political collective action due to the inertia of institutionalization, or they might strengthen the growth of a global civil society beyond institutional boundaries: but it can only be assessed on a case by case basis because it depends on the outcome of the full range of interacting forces in this domain (Agre, 2002).

2.5.2 Impacts at the Organizational Level

At the organizational level, the use of ICTs has introduced structural changes in how collective action is organized and has induced diversity in organizational forms. Traditionally, collective action has hinged on the existence of formal organizations that provided the infrastructure and resources for coordinating individual actions and protected the collective interest from individuals' tendency to free-ride (Olson, 1965). Furthermore, communication was assumed to be costly because it required direct interaction between the parties involved, which does not resemble much our present times of generalized computer mediated communication and people constantly tethered to their mobile communication devices (Lupia and Sin, 2003).

Hence, some communication theorists have found enough reasons to reframe modern collective action as a communicative phenomenon of boundary crossing between private and public domains, that is where individuals use communication technologies to project interests from their private domain into the public domain (Bimber et al., 2005). Specifically, many instances of collective action nowadays simply involve connecting to people who share a private interest in a good from the collective domain, communicating with them, and coordinating individual contributions to that collective good (Bimber et al., 2012). Therefore, a multitude of organizing structures – not just formal organizations but also entrepreneurs, informal groups and hybrid organizational types, are nowadays building arenas for collective action and engaging diverse audiences (Chadwick, 2007).

Another impact of the use of ICTs is found in the repertoires of collective action, that is the set of tactics and routines used in the organization of collective actions. Social movement organizations, particularly the anti-globalization movement, were the early adopters of ICT based repertoires of collective action, but they were quickly followed by more conventional organizations, such as interest groups, non-governmental organizations, and political parties. Nowadays, political organizations, interest groups, and social movements borrow tactics of mobilization and organization from each other and consequently it is more difficult to perceive the differences between these entities. This amalgamation trend due to the use of ICT based repertoires of collective action has been conceptualized as *organizational hybridity* (Bennett, 2012; Chadwick, 2007).

Besides organizational hybridity, ICTs also affect organizational fluidity. For example, the way social movements are organized nowadays pretty much reflects the organizational values behind internet technologies by reinforcing a network kind of structure rather than traditional, hierarchical organizations and their constituencies (Chadwick, 2007). Moreover, the ongoing development of ICTs has enabled some collective action projects to materialize in dissent networks, which are defined as action oriented heterogeneous networks formed by homogeneous nodes (individuals, groups, or organizations) that result from an emerging consensus on the failure of existing institutions to meet collective goals (Coopman, 2011).

A dissent network rests on a communication infrastructure (the ICT based network) that facilitates process and resources sharing, reduces the need for formal organizational structures, and handles coordination in geographically dispersed groups. The dissentworks framework (Coopman, 2011), developed after the study of the phenomenon of dissent networks, explains emergent forms of ICT enabled collective action and posits that when it is consensual that some system is unable to meet collective needs, individuals or groups will cooperate through ICT based infrastructure to create a new system to meet

those needs. Further, it argues that this style of collective action collapses mobilization and latency into one process and is very efficient in terms of costs of collective action, which makes it specially attractive for resource poor groups and organizations (Coopman, 2011; Pickerill, 2009; Hara and Youngmin, 2007).

In summary, at the organizational level, ICTs have induced changes in how collective action is organized and stimulated the emergence of hybrid organizational forms. Particularly, the use of ICTs by civil society groups has facilitated the opening up and enlargement of new, self-created spaces for political and civic action, and has accommodated novel configurations of collective action that would not be available otherwise (Bennett and Segerberg, 2012; Thigo, 2013). A good example is Ushahidi and Huduma: these are socially emancipatory technologies, developed and used in Kenya, that leverage crowd-sourced data to monitor critical issues in the country, namely post-election violence and public service delivery. These people-centred ICT platforms give equality to popular voices, empowering the poor and rightless groups in the country, irrespective of political power distribution (Thigo, 2013).

2.5.3 Impacts at the Societal Level

The impact of ICTs on collective action at the societal level is concerned with the interaction between macro level actors, such as the civil society and the state. A question that has been frequently posed in relation to this issue is whether the use of ICTs can make societies more democratic or cause political change. Varied scholarship in social movements and contentious politics has contributed to debating the role of ICTs in democratic processes but, in general, scholarship can be grouped in three different kinds of discourses: the optimistic, the pessimistic, and the contextualist.

The optimistic discourse, commonly known as 'cyber-enthusiastic' or 'techno-utopian', overemphasizes the role of technology in collective action by arguing that technology

empowers citizens and levels off existing disparities of power, thus contributing to more democratic and participatory societies. Enthusiasts, such as Shirky (2008), argue that ICTs allow information to spread faster and farther and this expansion in information coupled with facilitated conversations online is beneficial for political engagement and participation.

This discourse is in line with technological determinism and is quite prevalent in the literature. For example, Hussain and Howard (2013) argue that digital media had a causal role in the Arab Spring because ICTs provided the informational infrastructure that created strong communication ties and organization capacity. Likewise, Livingston and Klinkforth (2010) claim that ICTs have an ontological role in the constitution of political organization because the existence of some types of collective actions is predicated on the use of ICTs. For example, a combination of ICTs and mobile phones has been used to collectively monitor post-election violence in Kenya (Greengard, 2011), and volunteered geographic information (Goodchild, 2007) has been harnessed to support humanitarian logistics in disaster response situations (e.g. aftermath of Haiti earthquake (Gao et al., 2011; Meier and Munro, 2010)), and to monitor deforestation and carbon stocks in Amazon rain forest (Forero, 2013).

On the opposite side of this debate lies the pessimistic discourse. 'Cyber-skepticals' downplay the role of technology by arguing that technology distracts and deviates people from real participation in civic life (Gladwell, 2010). In fact, the use of ICTs for political action may backfire because in many autocratic countries these technologies are, above all, instruments of repression and surveillance (Morozov, 2011). The reinforcement model (Agre, 2002) is aligned with this techno-skeptical discourse. This analytical model questions if ICTs alter the problematic aspects of societal institutions. Because the answer is negative, the reinforcement model views technology as reinforcing the patterns of institutional power in existence in society rather than repairing or re-balancing power

differences (Yzer and Southwell, 2008). According to Agre (2002), an example of this model is the study of the role of ICTs in the politics of local governments by Danzinger et al. (1982), in which the authors found that the application of ICTs contributed to "reinforcement politics", that is, the application of ICTs in local governments' governance left the existing distribution of power unchanged.

The contextualist discourse lies in between the pessimistic and the optimistic discourses. Fundamentally, contextualism emphasizes the influence of political, social, and economical environment in the appropriation and use of ICTs for collective action. ICTs are put in the context of the situation, alongside other media, and against the backdrop of structural factors that explain political mobilization (Wolfsfeld et al., 2013). The contextualist stance is in line with the amplification model (Agre, 2002), which posits that ICTs amplify the existing forces in political processes (the aggregated effects of the actions of individuals within societal institutions), and those amplified forces might cause structural change. However, it is necessary to take each case on its own terms and analyze the full range of forces that affect the substance and process of politics.

The amplification model subscribes to a social constructionist view of technology because its focus is the mutual shaping of social forces and technology (Pilny and Shumate, 2012; Hara and Youngmin, 2007), and it rejects the deterministic view of technology, which assumes that technologies per se cause change in society (Anthony et al., 2009). It is based on the amplification model that researchers have argued that ICTs accelerate and scale collective action processes by speeding the flows of information and extending offline collective action to the online domain (Rao, 2012; Agre, 2002).

A different issue that has also been investigated at this level of analysis is the interaction strategies between macro level actors. An empirical study about China considered the role of internet in collective actions that succeeded in changing policies and practices in the country, and found that interaction strategies with the state are important (Yong-

nian and Guoguang, 2005). When a collective action is perceived as undermining the legitimacy of the state (a threat), it becomes a conflict interaction and is very unlikely to succeed because it elicits coordinated action on the part of the state to eliminate it (Hardin, 2008). A different interaction strategy is the cooperation interaction, that is when civil society groups express dissatisfaction directly to some authority who cares to listen and to engage in searching the causes and solutions to the voiced dissatisfaction (Hardin, 2008). It was found that internet-based collective actions have facilitated the voicing of concerns by Chinese civil society and that this cooperation interaction has challenged the state but has not undermined its legitimacy. As a result, this kind of interaction strategy has succeeded in eliciting reformist answers from the state and in introducing small, incremental political changes in the country (Yongnian and Guoguang, 2005).

Figure 2.2 summarizes the key points discussed in respect to the effects of ICTs on collective action at the individual, organizational, and societal levels of analysis.

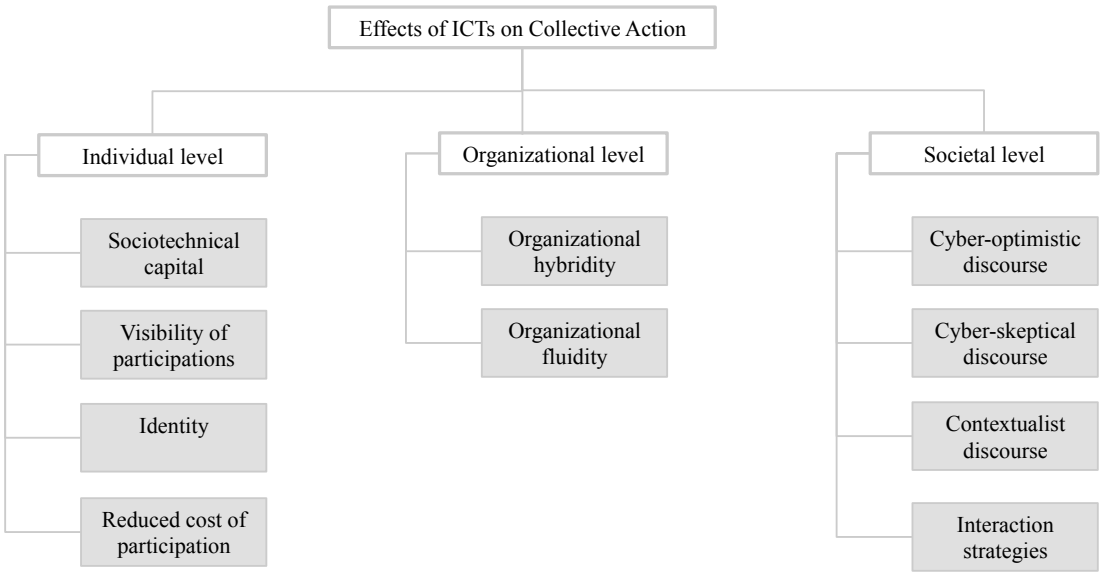

Figure 2.2: Effects of ICTs on collective action

2.5.4 ICTs and Collective Action Organizing

In this sub-section I explore the specific ways in which the use of ICTs has caused change in how collective action is organized. First, I explain how ICTs facilitate coordination, mobilization of participants, integration of online and offline action, harnessing multiple contributions, and reduced organizing costs of collective action; and after I move on to explain that ICTs can actually have a detrimental impact due to limitations in terms of accountability, commitment, control, and increased global communication costs.

Coordination: the use of ICTs facilitates the coordination of collective action because organizational demands are met by increasingly autonomous members connected to network structures where central organization and leadership is minimized (Flanagin et al., 2006). In addition, problems of coordination due to geographical and temporal constrains are easily overcome with asynchronous forms of computer mediated communication (Hampton, 2003; Lin and Dutton, 2003; Lomicky and Hogg, 2010; Earl and Kimport, 2011), and information sharing can be elevated to a global level, removing limitations on the number of participants (Wasko et al., 2004; Klein, 1999).

Mobilization of participants: the use of ICTs offers resources for the rapid mobilization of participants thanks to instantaneous communication and sharing of information online. Particularly in situations where mainstream media are critical or indifferent to some collective actions (e.g. a protest movement), ICTs are used as an alternative medium to disseminate information and distribute calls on mobilization (Vasi, 2006).

Integration of online and offline action: ICTs facilitate the integration of online information with offline interaction, and often computer mediated communication works like a virtual extension of face to face interaction (Lomicky and Hogg, 2010).

Moreover, ICTs are used to complement offline media because the mixture of media increases the reach and global effectiveness of the action (Harlow and Harp, 2012; Pickerill, 2009; Lin and Dutton, 2003).

Harnessing multiple contributions: various ICTs (e.g. wikis, forums) allow incremental and modular contributions to collaborative endeavors, which signal openness, trust, and capitalize on the power of integrating countless small-scale individual contributions to create value through collective action (Prasarnphanich and Wagner, 2011; Hara and Youngmin, 2007). Internet tools are also used to raise funds from a crowd of contributors. Notable examples are political campaigns in the United States, such as Howard Dean in 2004 and Barack Obama in 2008 (Kreiss, 2011, 2012).

Organizing costs: Inexpensive and fast ways of communicating allow for efficient sharing of resources, greater flexibility and adaptability, and hence significantly lower the costs of organizing collective action (Coopman, 2011; Earl and Kimport, 2011; Hampton, 2003).

The effects of ICTs on the organization of collective action might be better perceived in international contexts. Coordination, for example, is particular valuable for transnational collective actions because the global reach of ICTs is what ultimately renders these collective actions viable, given that the incorporation of information technology enables the construction of networks that compress both spatial and temporal limitations of interpersonal interaction (Pickerill, 2009; Sandoval, 2005).

As to the negative impact of ICTs on the organization of collective action, the following effects have been reported in the literature:

Accountability: the use of ICTs, as for example email, for mobilization is often contested in terms of effectiveness because it can be easily dismissed and erased by

recipients; in general, the intangibility of computer mediated communication brings out reduced accountability (Lombardo et al., 2002).

Commitment: the use of ICTs reduces the individual costs of participating in collective action and allows for greater flexibility on how individuals become involved, but this also means that it is not costly or difficult for individuals to opt-out and therefore the intensity of interaction and involvement of members through ICT means is weaker (Flanagin et al., 2006).

Control: although some ICTs, such as websites, allow for the existence of control mechanisms for content published, groups that seek maximum intervention and impact by using more participative ICTs, such as social media, often have to sacrifice control over the results (Pickerill, 2009).

Global communication costs: the reduced upfront costs of computer mediated communication encourage extensive communication, and the abundance of easy to use, free or very cheap ICTs (e.g. social media, websites, blogs, wikis) allow for ICT use *in combination*; taken these two factors together, the result is an increase in the volume of communication, often escalating to an overwhelming level and leading to problems of over-communication, miscommunication, and communicative overload. Hence, the global costs of ICT based communication can in reality be so high that they negatively impact the progress of collective action (Nielsen, 2009).

2.6 Frameworks on ICTs and Collective Action

Recently, there has been more interest in theorizing about how do ICTs impact the organizational structure and processes of collective action groups and organizations (e.g. Bimber et al. (2012); Bennett and Segerberg (2012)). Impact, in this context, refers to the outcome of the interplay between existing practices and institutions of collective

action and the characteristics of ICTs (Donk et al., 2004). This section aims to capture the frameworks that, to my knowledge, better serve as conceptual toolkits on this matter and therefore help generate research questions and delimit the boundaries of this research domain.

The first framework distinguishes the roles of ICTs in contemporary contentious politics and suggests that, alongside the classical theory of collective action, the connective action logic, and the hybrid connective and collective action logic complement and extend explanation of this phenomenon. The following sub-section examines the production of collective goods through internet-based collaboration and identifies the necessary conditions for the viability of collective action in an ICT mediated environment. The last sub-section reviews the collective action space framework, which takes in consideration the way citizens participate in collective action and the opportunities for engagement provided to them by organizations, and situates members of collective action groups in a two dimensional model of collective action space.

2.6.1 Connective Action Logic

The prominence of digital communication media and ICTs in contemporary collective action, especially in contentious politics, changes the underlying organizational dynamics of this kind of action. Recognizing the role of ICTs as organizing agents of collective action, Bennett and Segerberg (2012, 2013) offer a framework in which they identify different patterns of action in large scale networks focused on event-centered contention, such as Los Indignados, The Occupy, and Put People First campaigns. The existence of these different patterns challenges the conventional wisdom of collective action theory because the central issues of how to get individuals to contribute rather than free-ride and the need for organizations to coordinate individual's contribution lose importance in some patterns of action. The different patterns of group action involving ICTs are:

Collective action

ICTs assume a supporting role in brokering and bridging coalitions between various organizations in order to develop common action frames, and also support the forging of collective identities and relations of trust and solidarity between organizations and its members. ICTs are primarily used to reduce communication and coordination costs and do not change the logic of participation in this kind of action.

Connective action

In this pattern, ICTs take the role of organizing agents and the networks they support become organizational structures in themselves. Participation becomes self-motivating given that it involves the production and distribution of personalized ideas and resources in different networks, and thus reveals a logic that is distinct from traditional collective action theory.

Hybrid connective and collective action

Organizations are at the background and use ICTs to engage the public in easy-to-personalize action themes, stepping back from developing collective action frames and relaxing collective identification requirements (membership) in favour of personalized social networking among followers or affiliates.

Each pattern exhibits a different logic of organization and hence entails different organizational processes. Figure 2.3 illustrates the fundamental tenets of the connective action framework.

Bennett et al. (2014) investigate the organizational processes of connective action networks and question how do they achieve coherent organization and particularly what mechanisms create and support that organization. They note that, as these action networks emerge, they very much resemble peer-production communities and open collaboration in that at their onset we often see the cooperative development of websites,

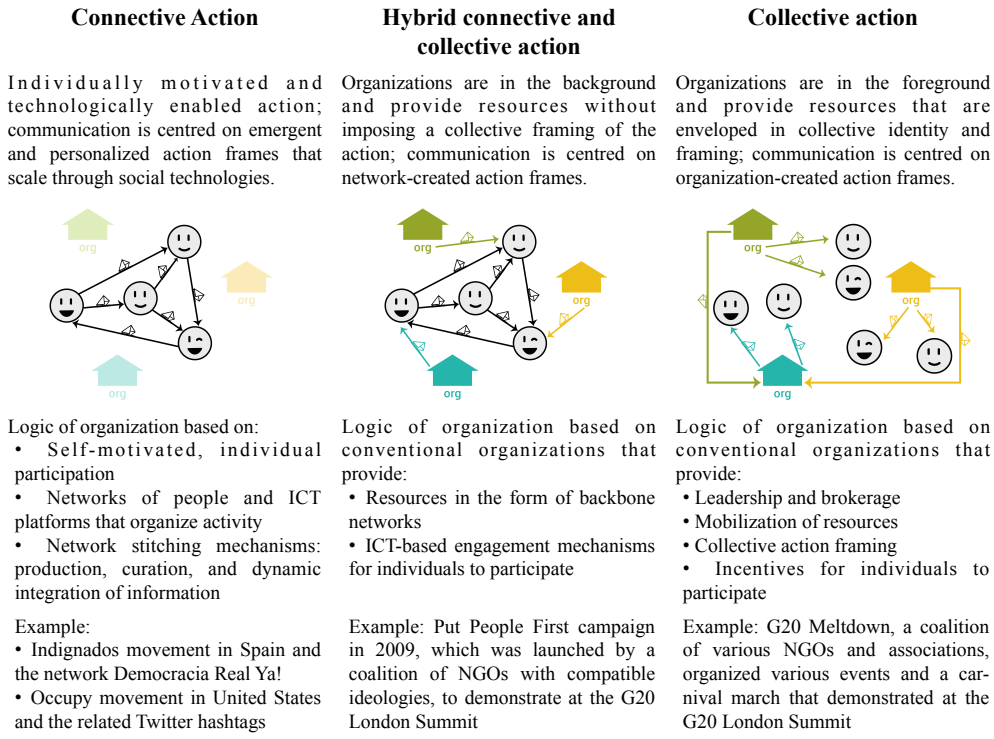

Figure 2.3: Basic tenets of connective action framework

the customization of social media platforms, and the creation and sharing of content through these and other media, including email and mobile phones.

In addition, these networks build on self-motivated participation and self-organization (rather than on the need of selective incentives to overcome free riding and the existence of organizations to coordinate contributions), and usually we see the coming together of diversely engaged individuals that contribute, in modular ways and in a decentralized manner, to the creation of a common good.

Even though connective action networks (CAN) operate through continuous peer production, they exhibit the following organizational capacities:

- Ability to mobilize resources: CAN are able to produce, allocate and utilize material and symbolic goods that enable patterns of collective action to occur;

- Responsiveness to external conditions: CAN are able to react to threats and opportunities, to forge varied repertoires of action, and assess their results;

- Long term adaptation or decline: CAN are able to develop new patters of organization as the context changes.

Therefore, Bennett et al. (2014) argue that, similarly to peer-production communities, communication technologies and practices serve as stitching mechanisms that link CAN into coherent organization and illuminate the role of communication as organization in connective action. Moreover, they posit that the network stitching is achieved by the following peer production processes:

- Production of information and content: involves the creation and publicizing of various kinds of resources within an action network;

- Curation of information: preserving, maintaining, and sorting of digital resources already created;

- Dynamic integration of various types of content: refers to the contacting, transmitting and switching among different actors, networks, and technologies in order to circulate the digital resources created.

There is a hierarchical nesting logic in these processes: production may occur without curation and dynamic integration; but curation implies previous production; and dynamic integration implies the occurrence of both production and curation (Bennett et al., 2014). Moreover, deficiencies in the implementation of any of these processes compromise the organizational capacities of connective action networks (that is their ability to mobilize resources, responsiveness, and ability to adapt), and thus threaten their viability.

This framework fundamentally identifies analytically distinct patterns of action in contemporary contentious politics, and examines the different organizational processes at

stake. Bennett and Segerberg (2012) note that the underlying organizational dynamic of connective action is not well established and point the need to investigate what sustains and shapes organization in this kind of action, including how different resources circulate, how stitching mechanisms evolve over time, and how particular stitching technologies, such as email, mobile phone messages, and social media, condition the nature of large scale connective action networks.

2.6.2 Mechanisms of Internet-based Collaboration

The internet forms an infrastructure for large scale collaboration and is becoming a viable organizing principle for the production of a variety of public goods. However, the success of numerous internet-based large scale collaborations that rely on small contributions by many participants is surprising when taken in the light of rational choice theory. Indeed, a large number of these collaborations succeed despite being unable to tackle the underlying collective action problem. For example, many of these collaborations display high percentages of free ridership, highly unequal division of labor, and lack the features that support self-governance, such as a bounded set of participants tightly embedded in a network or in a community with expectations of continuing relations (Lev-On and Hardin, 2007).

Internet-based collaborations have been studied in their many forms, as for example the peer production of information goods and content-based projects (open source software and online encyclopedias), the activity of grassroots movements and other latent groups (social movements, interest groups, political parties), and the interaction of people in virtual communities. Nonetheless, Lev-On and Hardin (2007, p. 6) note that "few efforts have been made to generalize from cases and to analyze why and where such projects are viable". For that reason, these authors offer a theoretical framework for analyzing the logic of internet-based collective action, in which they identify the

mechanisms of collective action in an ICT mediated environment.

Internet-based collective action is arranged by different agents, for varied reasons, and has different degrees of involvement over the internet. So, before proceeding to the presentation of the framework, I first clarify the instances of internet-based collective action to which it applies and its essential features. Lev-On and Hardin (2007) focus on the following features: one, the use of internet as a platform for collaboration and coordination; two, the reliance on small contributions by a large number of interested; and three, the final product of the collaboration is a collective good. They contend that instances of internet-based collective action that incorporate these features include: entrepreneurs that organize flash mobs and other types of events; virtual communities; social movements; civil society organizations; political parties; and interest groups.

Lev-On and Hardin (2007) argue that the key question about the viability of internet-based collective action is not how to overcome free ridership, but how to find enough people interested in collaborating and how to find ways of engaging them and combining their abilities with the needs of the projects. For that reason, they contend that the mechanisms of internet-based collective action are four-fold: one, the provision of a collaborative site; two, attraction of potential contributors; three, encouraging of contributions; and four, regulation and governance. Figure 2.4 shows the mechanisms of internet-based collective action, based on Lev-On and Hardin (2007). Next, each mechanism is analyzed in detail.

Provision of a collaborative site

Collective action projects require a 'focal space' in which contributors with matching interests can organize and where contributions can be collected and integrated. The global infrastructure of internet forms an organizational hub with low entry costs and limited gate-keeping possibilities, which makes it an ideal platform for organizers to deploy such focal sites. Moreover, organizers can capitalize on the

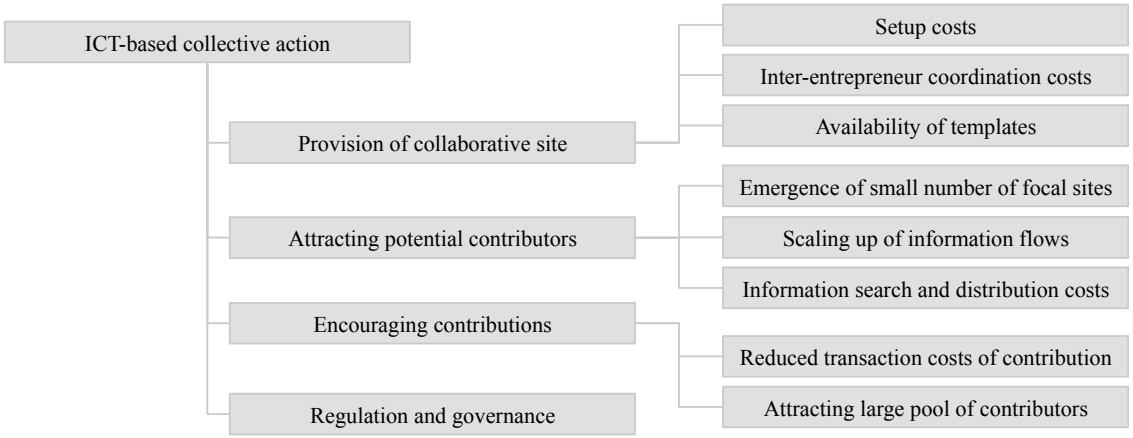

Figure 2.4: Mechanisms of internet-based collective action

availability of inexpensive templates and ready-to-use software to setup the projects, as for example mailing lists, wiki applications, blogs, photo galleries, calendars, and social networking applications. In addition, the combination of low setup and low entry costs reduces the need for a large number of organizers to establish an efficacious collective action group, and therefore the costs of communication and organization among entrepreneurs also decrease.

Attracting potential contributors

The provision of an adequate platform is usually not enough for the target audience to become involved. Collective action projects must attract and retain contributors for collaboration to unfold. However, given the global scale of internet and the power-law distribution of internet links' structure, it is more efficacious if only a small number of focal sites are provided for each collective interest because contributors can easily locate and converge to relevant initiatives[3]. Besides, the use of an ICT-based platform allows for individually-tailored information to be fed to contributors, for example by setting up a mailing list, and hence reduces both the organizers' costs of distributing information and the contributors' costs of searching

[3]This has been explained as a phenomenon of power-law intellectual matchmaking in open source literature (Schweik and English, 2013)

information. The dissemination of information to internet users, with its power-law distribution of connections, also facilitates the scaling up of the information flows and the reaching out to a much larger number of potential contributors.

Encouraging contributions

Providing focal sites and reaching out to a large number of potential contributors may not ensure that contributions will actually happen. For collaboration to unfold according to the needs of the projects, it is critical to find the right people with the right expertise and to remove any obstacles to their participation. Participation is less costly over the internet because of low communication costs. Such costs are lower because the common obstacles to communication, such as distance and group size, are removed in online communication. Although many collective action projects also involve offline contributions, which are typically more costly, the total transaction costs of contributions tend to be lower when compared to their completely offline counterparts because of the reduced costs of searching information. Also, focal sites for collective action on the internet tend to attract a large pool of potential contributors, which is beneficial even if only a small number actually contribute because it is more likely that the project may then find the people with the necessary skills and expertise.

Regulation and governance

Governance and regulation are concerned with the management of practical aspects of collaboration, such as division of labor, integration of contributions, and quality control mechanisms. Failures on the management of these aspects can endanger the production of the collective good. Besides conventional methods of regulation, internet-based collective actions are well poised for self-regulation through second-order collaborations. In these collaborations, participants come to contribute indirectly to the production of the collective good, as for example by providing

keywords to describe content or by producing ratings and reviews of products.

This framework examines the mechanisms in place for internet-based collective action to function and succeed in the production of collective goods. Lev-On and Hardin (2007) posit that these mechanisms are concerned with creating the conditions for collaboration to unfold in useful ways rather than with finding ways to control free ridership. An obvious limitation of this framework is that it lacks empirical depth, and consequently there is space for improvement in the theorization and better definition of its major components.

Despite its simplicity and limitations, the fundamental contribution of this framework is that it provides a theoretical layer that is analytically prior to other frameworks discussed in this section. Specifically, what Lev-On and Hardin (2007) describe is the generic structure of ICT-based collective action, irrespective of what organizational logic – collective or connective – emerges from the interactions of agents involved in the production of the collective good.

2.6.3 Collective Action Space

The collective action space framework (Flanagin et al., 2006; Bimber et al., 2012) is concerned with collective action that takes place within organizational contexts. It encapsulates collective action as a communicative phenomenon consisting of communication practices where individuals transcend the private/public boundary by expressing a private interest in a way that is public (observable) to others (Bimber et al., 2012).

The framework accounts for the expanding communicative affordances of technology, yet avoids technological deterministic premises. Nowadays' technological rich context provides more opportunities for collective action because people use technology to share ideas, connections, and interests, and technology-based tools for organizing are available to individuals and informal groups at low (or no) cost and without the traditional

organizational apparatus required for acting collectively. Therefore, organizing collective action no longer requires formal organizations with structures and incentives as there are many "possibilities of organizing without organization" (Bimber et al., 2012, p.4) in the present technology imbued context.

However, these changes in context have not rendered traditional organizations useless or obsolete. On the one hand, the increased agency of activist entrepreneurs and informal groups supplements formal organizations' activity and brings complexity in which "all sorts of organizational structures and processes are implicated in the new technological landscape for collective action" (Bimber et al., 2012, p.6). On the other hand, formal organizations use technology for doing things in a way that redefines membership, the reasons for participating in groups, and the drivers of collective action within formal organizations (Bimber et al., 2012).

In short, the collective action space framework looks at these changes from the perspective of people experiencing collective action within formal organizations. The end-to-end structure of technology and its ubiquity makes organizational boundaries less firm because members are freer to interact with one another in their own terms rather than on the terms defined by the organization. Hence, within any collective action organization today, one can find members that interact directly, others with a less personal interaction, and even some who do not interact with other members at all. Likewise, there is variability in the degree to which members of a collective action organization can participate in agenda setting and decision making because information about the organization is available from various sources (website, social media) and members are often able to provide feedback directly to leaders (often by using ICTs), and even to organize collectively within the organization (Bimber et al., 2012).

Bimber et al. (2012) combine the dimensions of mode of interaction among members (from personal to indirect interaction) and mode of engagement with the organization

(ranging from entrepreneurial to institutional engagement) in an orthogonal space to form the collective action space. Whereas personal interaction involves direct relationships with others over time, impersonal interaction involves very little to no direct personal contact with known others, despite individuals sharing affiliation and interest. Engagement is different from degree of centralization in an organization; it actually relates to the opportunities to shape the direction of the organization offered to members. Thus, engagement is entrepreneurial when members have autonomy to enact collective action efforts that are not sanctioned by the organization; on the contrary, institutional engagement involves members with a controlled system of opportunities, which are influenced by organizational hierarchy (Bimber et al., 2012). Figure 2.5 is adapted from Bimber et al. (2012) and depicts the collective action space with the archetypes of members' participatory styles found in each quadrant.

This conceptualization accounts for organizational fluidity and heterogeneous memberships found nowadays in relation to collective action in organizations. Members of collective action organizations are sparsely distributed along the axes, depending on their participatory style. Participatory styles are theoretical categories that encapsulate the distinct clusters of characteristics found in each quadrant. The characteristics of each participatory style, according to Bimber et al. (2012), are as follows:

- Enthusiasts (quadrant I): members with this style are considered the 'civic heroes' of collective action space because they are sociable and connected to the direction and goals of their organization;

- Traditionalists (quadrant II): although these members are social, they tend to be civic followers rather than civic activists. Their membership is not strategic or instrumental because they show independence on their goals and are happy to let their organization go its own way, experiencing it as institutional;

- Minimalists (quadrant III): these are less engaged members, who are not motivated

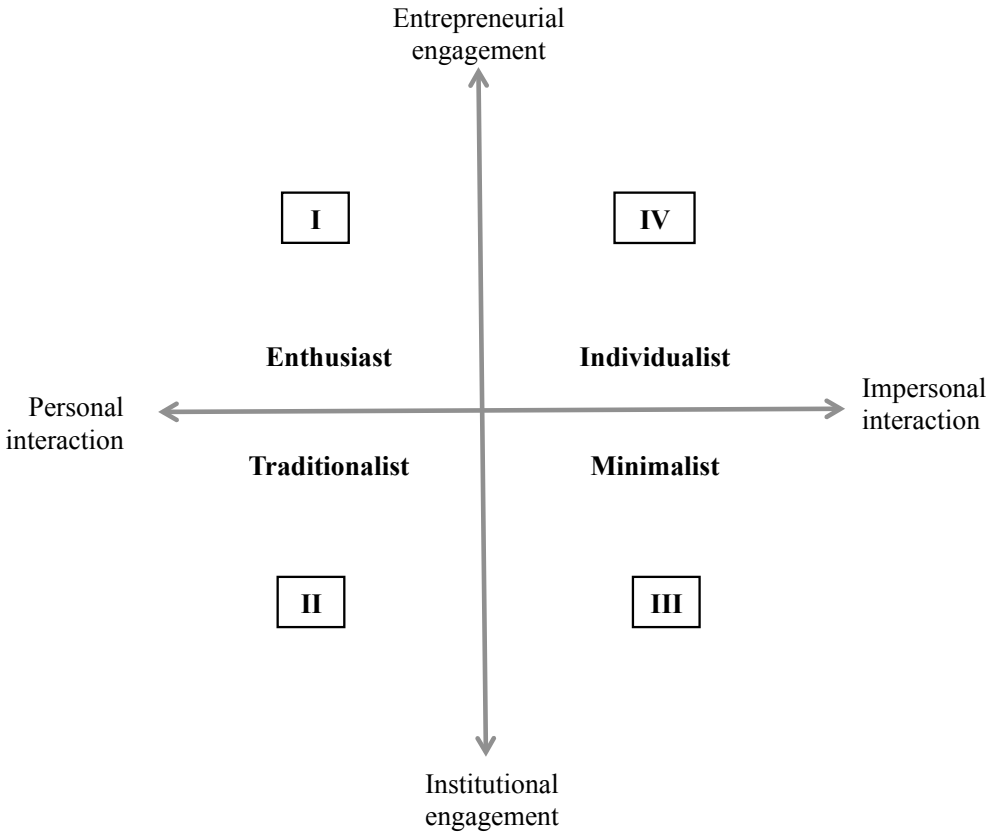

Figure 2.5: Collective action space

by social opportunities, contribute little to the organization's goals, and are not very concerned with the organization's ability to influence issues important to them;

- Individualists (quadrant IV): despite having relatively few friends who are also members of the organization, individualists are positive about their organization's goals and are in general aligned with the organization's purposes.

Despite the different characteristics of participatory styles, technologies have similar presence in members' experience of their organizations. Thus, interacting more or less personally, or engaging in institutional or entrepreneurial terms is not associated with how members use technologies. In other words, the participatory style of any member is not contingent on his use of technology. Specifically, the technological context contributes to the enactment of different participatory styles, as Bimber et al. (2012, p.169) explain:

"By breaking down boundaries of all kinds and expanding individual agency, it [the technological environment] accelerates the trend toward more heterogeneous approaches to collective behavior". This heterogeneity is enacted in the form of different participatory styles across the membership of any single organization. The membership of an organization can therefore be represented by an area in the collective action space, that Bimber et al. (2012) denominate the 'collective action space footprint' of an organization.

In summary, according to this framework, technology is important as the contextual influence for involvement in collective action, rather than as the explanation of why some people are more involved than others. Further, technology enhances agency and people can approach collective action in ways they see fit, that is, enacting different participatory styles and establishing relationships of choice according to their motivations. Nevertheless, Bimber et al. (2012, p.171) contend that "technology use facilitates contributions to collective goals for people whose membership is impersonal and entrepreneurial", (i.e. individualists).

Although technology does not seem particularly important for entrepreneurial collective action (located in quadrants I and IV), there is strong evidence that technological innovations contribute to an increased density in these quadrants, as Flanagin et al. (2006) have noted. Specifically, they claim that the use of ICTs lowers coordination costs, minimizes the need for hierarchies and centralized leadership, and reduces the cost of individual participation in collective action. However, it remains to be explained how exactly does technology cause these effects, as for example: what does technology afford that makes coordination costs lower? or, how does the use of technology affect leadership and hierarchy in collective action groups and organizations?

Still, there are other open questions related to this framework. Specifically, do these different participatory styles also exist in collective action within informal groups or in collective action networks? Do different participatory styles result in different patterns

of action (connective, hybrid, or collective)? How about the role of organizers in the collective action space? What can be said about different organizers' styles?

2.7 Research Opportunities

There is already a significant body of knowledge about collective action. Nevertheless, the entwinement of collective action with ICTs is a relatively recent phenomenon and there are still opportunities for investigation. Some of the literature examined in this synthesis suggests avenues for further research, which are summarized and listed next:

- Identification of the configurations of information infrastructure that can best serve the needs of democratic activists (Hussain and Howard, 2013);
- Identification of the specific conditions that lead to concrete social change and when certain strategies involving the use of ICTs are most useful (Sandoval, 2005; Garrett, 2006);
- Investigation of the ways in which ICTs are symbolically used by groups in their representational strategies, how these strategies are bounded up with identity construction, and the reasons why activists choose to use ICTs in certain ways (Pickerill, 2009);
- Studies that provide international comparison of ICT use for political purposes (Hara and Youngmin, 2007), empirical studies on the negative impacts of ICTs on collective action (Garrett, 2006), and studies on failure attempts of collective action (Ostrom, 1998);
- Better understanding of the nature of connective action networks and, in particular, how stitching technologies condition the organizational dynamics of connective and collective patterns of action (Bennett et al., 2014).

Aside these opportunities already identified in the literature, this review has helped me ascertain other issues that require more investigation. Specifically, I found that some research studies can be extended, and research about more specific topics is still lacking. These additional research possibilities are itemized next:

- Lev-On and Hardin (2007) have only touched upon the task of identifying the major components necessary for viable internet-based collective action, whereas the dependencies among these components and the possibility of sub-components have not been thoroughly examined;

- Bimber et al. (2012) have concerned only with membership within formal collective action organizations, whereas much of collective action nowadays is in the hands of individual entrepreneurs and informal groups; moreover, the role of organizers in collective action space has not been discussed;

- Recent scholarship about the impact of ICTs in collective action has examined changes in action dynamics (Bennett and Segerberg, 2013; Chadwick, 2007), changes in how individuals participate in collective action organizations (Bimber et al., 2012; Flanagin et al., 2006), and changes in the organizing processes of collective action (Pickerill, 2009; Nielsen, 2009; Earl and Kimport, 2011); however, the existing studies have not explicitly explored how do ICTs have a facilitator or detrimental role in the organizing of collective action.

In summary, we still do not fully understand how the technological context shapes collective action. Particularly, the ways in which ICTs have a facilitator or detrimental role in the organizing of collective action have only been surfaced in the existing literature. Hence, the following research questions (RQ) will be the focus of the research discussed in this thesis:

RQ 1: How does the use of ICTs facilitate the organizing of collective action?

RQ 2: How does the use of ICTs hinder the organizing of collective action?

This thesis investigates a particular instance of collective action phenomena: the consensus movement. In this kind of civic movement, collective action does not take a conflictual element as in the more well studied kind of civic movement: the social movement. Collective goods are produced through cooperative efforts that do not imply the identification of specific adversaries, do not require alterations in social structure, and focus instead on community empowerment (Della Porta and Diani, 2006). The focus on this particular kind of collective action phenomenon is beneficial for understanding the role of ICTs in collective action because we can set aside the issues of power distribution, collective identity and grievances, and societal transformation that are at the core of conflictual collective action, and focus instead on the "building together" that is the mantra of consensual collective action.

2.8 Summary

Collective action can happen anywhere. When people collaborate in their joint welfare, they are engaging in collective action (Ostrom, 1990). Individual action may also have a collective nature as long as it serves a collective purpose. For example, writing a letter in order to achieve a collective goal, as for example lobbying, is, in its essence, as collective as participating in a public demonstration (Brunsting and Postmes, 2002). In general, when individual or group action generates a collective good (or a collective bad[4]), it is said that a collective action dilemma or problem exists.

Scholars have been studying collective action for a long time. For example, collective action phenomena such as the management of common pool resources and cooperation between agents have received plenty of attention in economics and in political science

[4]The term *collective bad* is used for example by Hardin (1982) with respect to the situations in which individual or group action produces undesired consequences to others. An example of collective bad is pollution.

areas. The understanding of collective action has increased, thanks to different theoretical approaches originating mostly in economics, political science, and sociology.

As in other domains of human life, the use of ICTs is nowadays pervasive in collective action organizations and groups. The fact that collective action takes place in a technological context is consequential. Some research has focused on the effects of ICTs on collective action's organizational structures and processes, and has theorized about the implications at the individual, organizational, and societal levels of analysis. Other studies have looked into the structural characteristics of collective action enabled by ICTs and have attempted to explain different aspects, namely: the mechanisms that make this type of collective action viable (Lev-On and Hardin, 2007); how the technological context affects membership of collective action organizations (Bimber et al., 2012); and the effects of technology on the action dynamics of collective action groups and networks (Bennett and Segerberg, 2013).

In result of the literature review completed in this chapter, various research opportunities have been identified. Further, a particular opportunity has been operationalized in two research questions that the remainder of this thesis aims to resolve. The next chapter will explain the methodological issues considered in the design of a study that addresses these questions.

Chapter 3

Research Design

The previous chapter explained that collective action is about human action undertaken by one or more individuals in the pursuit of a shared, collective objective. The diversity of phenomena that can be encapsulated under the umbrella of collective action has resulted in a vast body of scholarship. The latest thrust of research about collective action has focused on theorizing the implications of ICT mediated context for the structure of collective action groups and the organization of collective action. Key findings point to implications at the individual, organizational, and societal levels of analysis. Yet, the understanding of the entwinement of ICTs with collective action is not comprehensive. For this reason, in the previous chapter I argued that the clarification of the specific role of ICTs (as facilitators and/or as hindrances) in collective action organizing presents itself as a research gap worth investigating.

This chapter explains the strategy of inquiry adopted in this thesis, and its sections are organized as follows: the first section lays out the research questions addressed in this thesis; section 3.2 explains the research approach, including the epistemological and ontological stand of this study; this is followed by the description of the context of research sites (section 3.3), data collection techniques used (section 3.4), and strategies for data analysis (section 3.5); a summary of the key points covered in the chapter is

provided as wrap-up in section 3.6.

3.1 Research Questions

The phenomenon investigated in this thesis is *the entwinement of ICTs with collective action*, and the main goal of this research is to explain the role of ICTs in the organizing of collection action. In other words, this research is concerned with instances of collective action that are supported by ICTs and the objective is to explain how the use of ICTs facilitates or hinders the organizing of such kinds of collective action.

Despite the tradition and diversity of collective action scholarship, instances of collective action supported by ICTs are contemporary incidents, occurring sparingly, and which have hitherto received little attention. The instance of collective action examined in this thesis is consensual collective action, particularly in the form of a consensus civic movement. The selection of this instance was opportunistic and based on the existing possibilities of examining the phenomenon of interest at the time and location where this research project started.

I recall the research questions this study aims to answer, which were articulated in result of the research opportunity identified lastly in the section 2.7 of the previous chapter:

RQ 1: How does the use of ICTs facilitate the organizing of collective action?

RQ 2: How does the use of ICTs hinder the organizing of collective action?

These research questions seek to advance our understanding of the entwinement of ICTs with collective action. Anyone unfamiliar with collective action scholarship might ask: why should one care about answering these questions? An obvious and straightforward reason could be the belief that answers to these questions can be helpful for collective action organizations or informal groups involved in the provision of collective

goods. But other reasons can be pointed, as explained next.

First, starting from the observation that contemporary instances of collective action unfold in our nowadays' technological context, it seems reasonable and logic to make sense of the role of ICTs in collective action in order to better understand collective action phenomena. Second, there is a growing body of literature studying the role of ICTs in collective action, including Wright (2015); Chadwick (2007); Bennett and Segerberg (2012); Bimber et al. (2012); Earl and Kimport (2011); Wolfsfeld et al. (2013), but none of this developing literature originates in the information systems field and hence there is potential to bring a different perspective to the literature. And third, addressing these research questions with empirical evidence may help establish design patterns for social computing systems that support collective action (Shaw et al., 2014) or even for a newer generation of social media tools.

There has been some theorizing about the effects of ICTs on collective action, but these studies do not explicitly address the aforementioned research questions. For example, Bennett and Segerberg (2013) investigated digitally networked action, that is, "what happens when citizens engage in collective action through digital media and social networks", and found that digital media played different roles in different patterns of action and that the organizational logic of each pattern of action was different. Also, Bimber et al. (2012) investigated the effects of the contemporary media environment on the membership of collective action organizations, and found that the digital media environment is conducive to increasing heterogeneity in collective behavior, which is enacted through different participatory styles.

At the outset of this investigation, the research questions were not yet formulated in these terms but there was a broad interest in explaining "what was going on" in a particular instance of collective action I came to know and later identify as a case of consensual collective action. Considering this particular goal of explaining this phe-

nomenon, I found the case study method suitable for my purpose, especially as I realized that qualitative data collection techniques allowed the flexibility I needed for collecting empirical materials retrospectively, as I will explain in section 3.4. Next, I elaborate on the rationale for the research approach and stance here embraced.

3.2 Generic Approach and Rationale

The primary objective of this study is to obtain a better understanding of a phenomenon occurring in social settings. Quantitative or qualitative research methods can be used, depending on the nature of the problem under investigation and the specific objectives of the research. While quantitative studies are usually concerned with the testing of variance theories (Markus and Robey, 1988), the goal of a qualitative study is to explain, describe, explore, or provide a critical view of the phenomenon under study (Marshall and Rossman, 2006; Creswell, 2003).

Notwithstanding the research studies examined in the previous chapter (section 2.6), which have identified or created new constructs to explain certain aspects related to the phenomenon of interest (e.g. connective action, organizational hybridity, participatory styles), there is limited knowledge of which theories and variables to examine in order to address the research problem at hand. In addition, there are limited possibilities for collecting empirical data about collective action supported by ICTs because the phenomenon is not reproducible in laboratory and can only be observed in its naturalistic setting, when (and if) it occurs.

Also, the goal of this research is not to test a variance theory nor to assess or measure any kind of variable of numerical magnitude and, therefore, quantitative approaches such as experimental designs are not a viable option (Creswell, 2003). Research methods that involve understanding the context where a phenomenon happens and the participant's views on their experiences, such as ethnography, case study, and grounded theory are

thus a better choice, given the goal of this research.

The research approach used in this study is depicted in figure 3.1. To a certain extent, the research approach was iterative and adaptive. It was iterative because the examination of the phenomenon of interest is based on multiple, sequential case studies that engage the literature in a dialogical manner in order to build a thorough understanding of the issues this thesis aims to elucidate. It was adaptive because, in my decisions about research methods and techniques, I had to contemplate the goals of the research, the characteristics of the phenomenon, and practical restrictions (e.g. costs of data collection, availability of data).

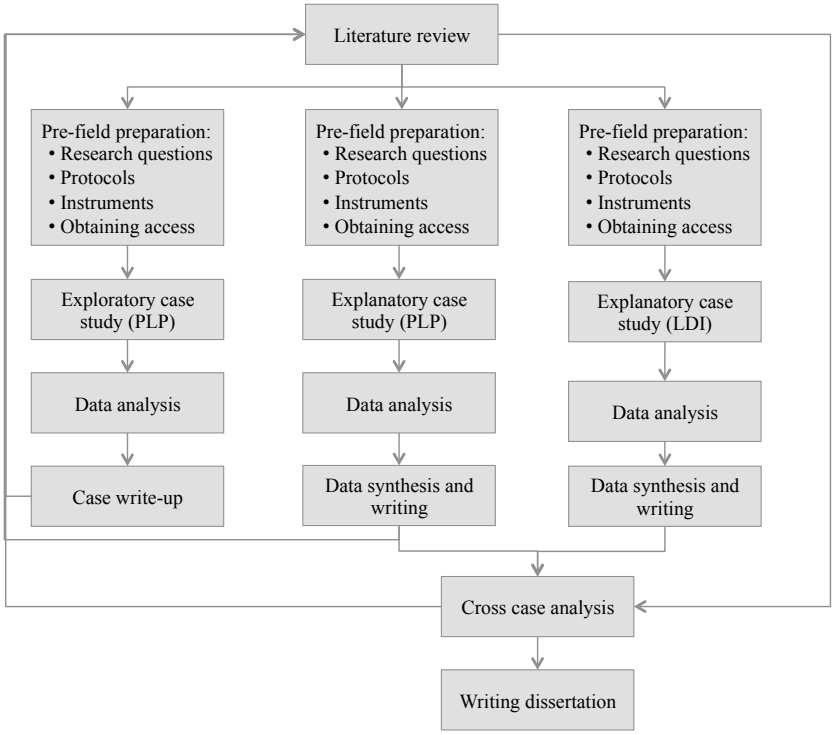

Figure 3.1: Research approach

Similarly to any other research project, this study departs from a study of the literature related to a topic that had interested me during the course work of the doctoral

program: how ICTs can support environmental sustainability. In order to extend my understanding about this topic, in 2011 I conducted a small exploratory case study about an instance of collective action that took place in Portugal, which I will call henceforth *Project Let's Cleanup Portugal* (PLP). PLP was a civic movement that organized a cleanup event of the Portuguese forests in 2010, for which they mobilized about 100,000 volunteers that removed 50,000 tons of waste illegally deposited in the forests. The objective of this exploratory study was to make sense of "what was going on" with this project in relation to the use of ICTs in a project with environmental sustainability goals.

Nonetheless, after the exploratory study I reframed my research interest as "the role of ICTs in grassroots initiatives with collective goals" and, after another round of literature study, I prepared for an in-depth case study about PLP, which I conducted in 2012. It was in the course of conducting this case study that I started to explore the possibility of doing a second in-depth study about the same phenomenon. Hence, in 2013, I conducted an in-depth case study about a civic movement from Estonia named *Let's Do It!* (LDI). Let's Do It, dubbed a project of "open sourcing government" in the book "Macrowikinomics" of Tapscott and Williams (2010), was the civic movement that pioneered the idea of organizing one-day events to cleanup littered forests. LDI organized a cleanup event in 2008 that mobilized 40,000 volunteers to collect and remove 10,000 tons of waste from the Estonian forests.

Epistemological and Ontological Stance

In this investigation I adopt a relativist stance in terms of how the knowledge of the world is obtained. In other words, it is assumed that there is no objective and single reality to be discovered because reality is subjective and hence the knowledge about the world is construed through the analysis of the meanings that humans ascribe to their experiences of the world (Orlikowski and Baroudi, 1991). Consequently, the objective of this line of inquiry is the understanding of the individual and collective reconstructions

of the social world (Guba and Lincoln, 2005).

A well designed study ought to exhibit congruence between the research methods used to create valid knowledge about the world and the philosophical view of the reality. There are a limited number of appropriate methods to build knowledge under the interpretive tradition, as for example case study, ethnography, or grounded theory (Orlikowski and Baroudi, 1991). The overarching research methodology for this study is multiple in-depth interpretive case study (Walsham, 1995; Klein and Myers, 1999). The case study method was chosen because of its appropriateness for answering “how" questions, as the research questions this investigation aims to answer.

Comparing to positivist case studies, there are relatively less established guidelines on how to conduct a case study under the interpretive tradition. Interpretive studies do not intent to test theory and typically do not start with a pre-defined set of hypotheses (Trauth and Jessup, 2000). Rather, the goal is to explain the phenomenon under study by taking in consideration the social context where it is inscribed and, at the same time, accounting for the multiple perspectives conveyed by the informants (Klein and Myers, 1999). Moreover, interpretive studies use theory as a lens to examine the problem being investigated and thus the incorporation of theory depends on its explanatory capacity.

Data collection techniques that facilitate the examination of a phenomenon in its naturalistic setting and the interpretation of the world from a subjective perspective are preferred in the interpretive tradition. Hence, semi-structured and unstructured interviews are more adequate than a questionnaire because the later does not allow interviewees to use their own words and concepts to discuss a phenomenon as they have to provide answers that are contained in externally defined categories.

Unit of Analysis

In this research, I compare the use of ICTs by different consensus civic movements and expect to build theory that explains how the use of ICTs facilitates or hinders

the organizing of consensual collective action. To my present knowledge, there are no previous studies about consensus movements that focus on the use of ICTs. The unit of analysis that operationalizes the relation between ICTs and consensus movements is *the use of ICTs by consensus movements*. Given that a consensus movement is a collective (a group of individuals), and that *use of technology* is a two-party relationship between technology and human, I need to interview participants in the consensus movement to learn about their uses of technology in that particular context.

Use of Theory

When I started this investigation, I searched the literature for existing theories that could help explaining it, based on what I understood of the phenomenon. First, I situated the phenomenon of interest in the area of green information systems and persuasive technology because I was mostly puzzled with the fact that the use of ICTs aimed at marshaling people to actively participate in a civic action tackling an environmental problem. However, as data collection progressed it became more clear that anchoring this study in that area of research was not helpful and, because I had no preconceived ideas or restrictions in terms of theory at the outset of field work, I kept looking for theories and constructs that could help building an understanding of "what was going on".

Later, I came across collective action theory and the body of research on digitally enabled activism, which seemed appropriate to the context of this investigation, and decided to drop the literature on persuasive technology and green information systems. Hence, in this study, theories have been used as a scaffold in the iterative process of data collection and analysis (Walsham, 1995), which means that theoretical constructs have been incorporated, revised, or dropped throughout the course of investigation insofar as they were useful to understand the meanings and intentions of participants and contribute to the elicitation of findings (Myers, 2013).

Role of Researcher

In this study, my role as a researcher was to understand the phenomenon under investigation through accessing the multiple perspectives of those who have experienced it. Because the cases I investigated were, to a certain extent, retrospective, the possibility of a more involved role as a participant observer was limited. However, I was also not positioned as an objective reporter since my own background and prejudices influenced the collection and analysis of data. Hence, this study reflects an intersubjective construction of meaning derived from my own interaction with the informants that contributed to this research.

Prior to collecting interview data I had access to documentation from different media sources and established some assumptions about the phenomenon under investigation. The main beliefs I had about the cases were the following: for PLP case, I expected to find an independent, decentralized structure with shared leadership, high committed members and rooted in strong environmental values; whereas for LDI case, I anticipated an institutionally-supported structure, centralized in the leadership of a few visionaries, and supported on a professional team of software developers and public relations personnel.

My role, for the most part, has been that of an outside observer – which has both positive and negative consequences (Walsham, 2006). On the positive side, being an outside observer has allowed me to preserve some distance from internal organization issues which, in my point of view, has been fruitful in terms of establishing rapport with informants and resulted in having more open conversations with them. On the negative side, I had few opportunities to get a glimpse of the internal working of the consensus movements organizations examined in this thesis because I had only mediated access to internal emails and documentation, and have not been invited to their meetings.

Generalizability of Results

Generalization of interpretive case study findings does not mean extrapolating the findings from a sample to a population, or generalizing a theory across different settings (Walsham, 2006). Unlike survey research, case study results are contextual and do not afford statistical generalization (Lee and Baskerville, 2003). However, four different types of generalizations are possible in interpretive research: development of concepts; drawing of specific implications; generation of theory; and contribution of rich insight (Walsham, 1995). These different types of generalizations imply that the researcher has to move from first-order data (the interviewee's construction of reality) to second-order concepts (the researcher's reconstruction). In other words, the interpretive researcher builds second-order concepts through the explanation of the patterns found in first-order data and the theorizing of possible relationships between them (Lee and Baskerville, 2003).

3.3 Research Sites

The research sites are the naturalistic setting where the phenomenon of interest unfolds. In this section I report on how I came to examine the research sites that constitute the cases investigated in this thesis.

Project Let's Do It Portugal

I initiated contact with the coordinators of Project Let's Do It Portugal (PLP) in March 2011, shortly after finishing the course requirements for the doctoral program, and conducted short, exploratory interviews with four members of the national coordination team. As I mentioned in section 3.2, PLP was a grassroots civic movement that mobilized 100,000 volunteers for a countrywide one-day cleanup of littered forests in Portugal. The objective of this first contact was not to negotiate access for this study but rather to explore further a research interest that had arisen during the second semester of the

doctoral program. The overall goal of this exploration was to improve my understanding of how ICTs had been used in the organizing of PLP in 2010 and the second goal was to get a sense of the interestingness of the case for a future in-depth study.

A second contact followed in October 2011. By this time I had a structured plan for data collection and contacted AMO Portugal, the association that was created by the coordinators of PLP in the aftermath of the national cleaning event that took place in March 2010. I asked access to the archives of PLP's community website because I had learned from the previous interviews about the importance of this website for the success of the cleaning event and wanted to examine the forum posts, the groups that had formed within the website, and the events that were organized in preparation for the cleaning event and in its aftermath. I also asked about site statistics and its evolution over time, as for example: number of new members, number of site visits, number of active members, number of groups created, and number of forum messages. Finally, I asked if they could disclose the public information of the profiles of members of the community website as for example age, location, number of forum messages, and number of friends.

My request was discussed in a meeting of the Board of Directors of the association AMO Portugal and the result was later communicated by email. The Board of Directors decided that they could not disclose any data requested because it could compromise the right to privacy of individuals and organizations involved in the civic movement, a right that was enshrined in bylaws of AMO Portugal. Thus, I restructured my data collection approach and contact them again a few months later.

This time I asked only to have them endorsing the study and broadcasting a message to the participants informing about the study and inviting them to collaborate by answering questions in a face to face interview with me. This solicitation was well received by the Board of Directors and, weeks later, they published a newsletter with a piece about this

study (appendix D) and an exemplar of the informed consent letter (appendix E). In the following days, I received 52 emails and 4 phone calls from PLP participants having had different roles in the cleaning project. A mechanism of self selection of participants was then put in place as explained in the section 3.4.2.

Let's Do It

The idea of studying the civic movement Let's Do It (LDI) came later. When I started examining the documentation of PLP, I realized that this civic movement had drawn inspiration and guidance from the Estonian project Teeme Ara (translates to English as Let's Do It), which had happened in 2008. Let's Do It was a consensus civic movement that marshaled volunteer citizens and organizations in Estonia to realize the goal of cleaning, in a single day, the litter illegally dumped in the country's forests. It was the first organized clean up of an entire country in the European continent.

The first impression I had was that although LDI and PLP had achieved similar results, they shared some properties but also had distinct features. Hence, it seemed that both could help answer my research questions and that it was worthwhile to study the two cases. After discussing this issue with my supervisors, I came into contact with members of LDI in March 2012. After some time insisting with emails, I finally managed to arrange a meeting through Skype with a key person from the core team of LDI and, in May 2012, I got their agreement for conducting the study.

In December 2012 I had done most of the data collection for PLP case and it was a good timing to start collecting data about LDI. Moreover, I learned about the Clean World Conference, a three-day gathering for the countries involved in Clean Up the World 2012 action. The conference took place in Tallinn from 31 January to 3 February 2013 and had delegates from most of the 96 countries that had prepared an organized clean up in their countries in 2012. Therefore, it was a great opportunity to meet and

learn about different forms of organized clean ups that were going on in the world. I registered for the conference and relived the contact with a member of the core team of LDI to help me setting up a few interviews for the time I was in Tallinn, and thus it was possible to meet and interview five persons having different roles in LDI action in 2008 during my visit. At the conference, I met other persons and arranged with a few of them to interview over Skype after the Clean World Conference.

Ethical Considerations

Investigators must be aware and consider the ethical implications of conducting research that involves human subjects. An essential principle is that participants should be informed about the purpose of research and the kinds of activities at stake. Moreover, investigators are expected to consider the standpoint of participants and honor their privacy rights and any confidentiality requests about the information they disclose (Davison et al., 2015; Myers, 2013).

In terms of ethical issues, I prepared an information sheet about the study, covering a number of questions and answers about the kind of information collected from the respondents and its intended uses (see appendix E). This information sheet was distributed to every respondent, together with a consent letter. All respondents signed the consent letter for participating in the study. As to the data collected from online sources, I took measures to ensure the anonymity of the sources, and also the conformity of the uses of data collected to copyright requirements, as recommended by Whiteman (2012).

Entering the Field

Following the exploratory interviews with members of coordination team of PLP in the Spring of 2011, I entered the online field: I started collecting all sorts of news pieces and reportages about PLP from national television and radio websites; located many local blogs and websites of local groups and collected their accounts of the facts as

they unfolded; collected news pieces from local newspapers; collected the documentation publicly available in PLP website; and collected photos from online albums and amateur videos from YouTube. Moreover, I started to follow the Facebook pages of PLP and the Facebook pages of some local groups, and joined open and closed groups about PLP in Facebook.

I commenced data analysis with the coding of this data. This allowed me to retrospectively reconstruct the events of the case as they unfolded over time and also to have some intuition about the persons that I should not miss the opportunity to interview. Upon entering the physical, offline field, I had already coded most of this data and had developed a strategy of inquiry for delving into the issues that were of most importance and interest for helping answering the research questions.

Exiting the field

Field exit is defined as the moment where access to the field is no longer required because data collection is complete. This happens usually when theoretical saturation is achieved, meaning that the categories in the code book are well defined and there are no new facts or incidents arising from additional data collected (Birks and Mills, 2011).

The field exit is as much important as the field entry for planning purposes. Before exiting the field the researcher ought to conduct a good closure, which means that returning to the field is possible – in case it is necessary, and the informants are available for respondent validation to be conducted at a later date. For this reason, it is important to ask permission for contacting the informants in a later date, and specially because interpretive studies usually involve respondent validation of the findings because results are co-constructed by the participants and the researcher (Birks and Mills, 2011).

Saturation in PLP case occurred some time before I finished the interviews, but I decided to conduct a few more interviews for three reasons: one, the additional interviewees had a key role in the organizing of the civic movement and thus the interview

could potentially yield additional insights; two, I wanted to confirm some of the findings elicited in previous interviews; and three, the additional interviews were useful in terms of triangulation. As to LDI case, field exit ended up being inevitable because data collection was conditioned by difficulties in finding additional informants to strengthen triangulation. However, interviews were supplemented with archival data in order to build saturation and reinforce triangulation.

3.4 Data Collection

Data collection is the process of systematically seeking and acquiring empirical data related to the problem being investigated. Data for this study was gathered from interviews and documentation. These data collection techniques were chosen because of its suitability to help answer the research questions and also for practical reasons, as explained in the previous section. Other data collection techniques, such as participant observation, were not practical for this study because most of the facts being studied in this research occurred in the past, specifically in the 4 years prior to the start of this research.

Hence, the cases I examined are, to a certain extent, historical cases. The civic movement LDI initiated as an Estonian project in 2007, and evolved into a global project aiming at cleaning the garbage dumped in the forests of many countries in 2012. PLP was an organized, national-scale cleaning event that took place in Portugal in 2010, and evolved into a civic association that has organized other civic actions at national scale. This research commenced only in 2011 and, for that reason, the time frame 2007-2011 can only be studied under an historical perspective, based on the accounts of participants as they recall it and on documentation available. Documentation is in this case of significant importance because both cases had rich archival sources, given the role of information technology in enabling these civic movements. Although asking respondents to recall

events from a couple years ago may impact the quality of interview data, I am convinced that the timing of data collection is short enough for the respondents to be able to recollect the events fairly accurately.

After 2011, I was able to observe the unfolding of different civic actions by both cases, especially as a member of different online social platforms and online groups managed by LDI and PLP. Quite often, my interviews with PLP participants would terminate with respondents showing me binders with archived documentation, photos, and demonstrating the workings of their online repositories of documentation. Even though I did not participate in their meetings over Skype, I had a fair view of how PLP groups collaborated in practice through the auditing of their online interactions. Moreover, I also participated in the Clean World Conference 2013 in Tallinn, where groups from many countries involved in the Clean World 2012 action came together to share their experiences and learn from seminars and workshops, and hence had the opportunity to hear about the experiences of people from different countries and witness, first hand, the working of LDI as a global civic movement.

Data Handling

Although one can never say that the data in our custody is completely secure, there are practical measures that help maintaining confidentiality and security of data collected for this study. First, source files of this study are shared only with the supervisors and sharing avoided popular sharing services such as Dropbox. Second, data backups of source files are kept in both a personal hard disk and in a machine located in Department of Information Systems of University of Minho. Third, participants privacy and anonymity is ensured in quotations by not providing any pseudonym or identifier code and also by omitting their role in the organization.

Pseudonyms or identifier codes facilitate the compiling of quotations and therefore may provide more structured clues about the participants' identity. On the other hand, the

role of the participants in the organization could also be critical in terms of identification especially because in this study I use real case names instead of a pseudonym and the cases are quite unique in their context.

3.4.1 Archival Data

There was a rich collection of documentation available for both cases, but especially varied and vast for PLP case. Indeed, a vast quantity of data was collected from PLP website, including for example minutes of meetings, forms, written reports of events by bloggers, manuals and tutorials created by volunteers, posters, flyers and presentations used for promoting the cleaning event. I also collected the content of different pages of the website, namely the page of frequently asked questions, the "about" page, and the "news" page, among others.

Besides collecting data directly from the website of PLP, I also searched for content available in other Internet pages about the case PLP. Because this case was widely discussed online and in mass media, a rich digital trail was available. Hence, I was able to collect forum threads, blog entries, news clippings, interviews and reportages appearing in newspapers, national television and radio. The collection of archival data amounted to 150 files, in text, audio, and video formats.

The aforementioned strategy was also adopted for collecting documentation about LDI. I crawled the pages of LDI website and searched the Internet for content related to LDI, including social networking websites. Some contents were, naturally, written in Estonian and were unusable because of my lack of knowledge about the language. Moreover, upon negotiating access to LDI case, my key contact in the organization also provided support documentation, in English, about the case.

After collecting this varied data, I wanted to get acquainted with it before starting the coding phase because I felt that I needed a broad perspective of the case before

getting engrossed in coding at a low level. Thus, I made an inventory of data collected on a worksheet where I wrote a short description of the contents of each file. Although this task delayed the starting of open coding phase, I think it was fruitful because I had to peruse every piece of data collected before coding and thus became more aware of its centrality. Moreover, this strategy also proved useful in preparing the interviews because it broadened my understanding of the case and, I believe, facilitated the elicitation of questions for the interview guide.

The use of secondary data has the disadvantage of possible reporting bias because it was created for a specific audience and purpose, which are different from the audience and purpose of this study. Nevertheless, it is indeed a good complementary source of evidence to corroborate and augment primary data and also to acquire a broad perspective of the case, which can be particularly helpful in preparing the field entry (Myers, 2013). However, the researcher must be critical in two ways: first, by having a clear focus on the pertinent information; and, second, by keeping in mind the objectives and audience of each document in order to interpret it 'in cold' and not to be mislead to pursue false leads (Yin, 2009).

3.4.2 Interviews

Interviewing is procedure for collecting qualitative data that consists of the co-generation of data by the researcher and the interviewees participating in the study. The strength of this data collection technique results from its being focused on the objectives of the study.

I agree with Kvale and Brinkmann's (2009) conception of interviewing as a craft. In interview research the interviewer becomes the research instrument and hence craftsmanship and competence are determinant for the quality of data generated. Some of the best ways to learn a new craft include observing experienced practitioners and practicing

with detailed supervision.

Unfortunately, that is not always possible. Nevertheless, there are a few ways that a beginner interviewer can better prepare for embarking in a learning-by-doing journey, and avoid basic mistakes. For example, preparing an interview guide with clear open-ended questions; always explaining the purpose of the interview and the research it will contribute to; and asking permission to tape-recording the interview or, whenever that is not possible, taking notes during the interview and writing down a full account immediately afterwards (Myers, 2013). Looking back, I retain the following recommendations from my own experience as a beginner and solo interviewer for this research:

- *Do the 'homework' properly:* this includes preparing the interview guide and interview protocol, reviewing the underlying ethical issues, and learning in advance about the case from documentation;
- *Familiarize with different techniques and rules of thumb:* useful techniques are for example mirroring, using open questions, and following answers with probing questions; also, different interviewing methods and interviewing models can be used, as Myers and Newman (2007) and Schultze and Avital (2011) explain;
- *Rehearse in a friendly environment:* rehearses are learning opportunities that involve practicing the techniques and testing the interview guide with colleagues or friends, gathering their feedback, and listening and watching the recording of interview trials before doing a real interview;
- *Transcribe interviews:* it is often when listening to and transcribing our own interviews that we realize the problems and mistakes we made and then we can take steps to correct and improve our next performance; Kvale and Brinkmann (2009) contend that novices can learn important lessons just from the transcription of the interviews conducted by more experienced interviewers;
- *Ask for feedback:* if close supervision is not possible, the beginner interviewer can

share a few recordings with her supervisor and gather feedback; however, sharing with other researchers not acknowledged in the informed consent raises ethical issues and therefore is not recommended;

- *Allow yourself to fail (sometimes):* I found it reassuring when I heard from one of my supervisors that "being hard is part of the process" because I realized that I could not perform my best always; facing the possibility of fickle performance with equanimity and forgiveness allowed me to keep striving to improve my technique.

Sampling of Participants

I adopted a combination of methods to sample respondents for PLP case: first, a random sample of respondents that had emailed me in response to the call for participants published by AMO Portugal; second, a snowball sample that resulted from my asking to interviewees about other knowledgeable individuals for future interviews; and third, a number of theoretically sampled interviews that were useful in the enrichment of the findings and triangulation. The rationale for this combination of sampling methods is set out below.

As explained in section 3.3 about the research site PLP, access to respondents had to be mediated by the association AMO Portugal because of privacy of participant's personal data enshrined in the statutes of the association. Therefore, when access to the case was granted, AMO Portugal published a special issue of its electronic newsletter with information about the study, including researchers' contacts, and an exemplar of consent letter (appendixes D and E). It followed that interested participants contacted me directly by email or by telephone, and volunteered to interview. I followed up each contact with an email inquiring about how each of them had participated in PLP and informing about the issues I wanted to question in the interview. The purpose of this follow up email was two-fold: to make a triage of participants in order to select individuals having different roles in PLP; and to create a mechanism of self-selection in which participants

could opt out if they felt incompetent to report on the issues I wanted to inquire. Once a participant was identified as suitable, an exchange of emails followed to arrange a convenient date and place for the interview.

After this first set of interviews, I used a snowball mechanism to identify more respondents. At the end of each interview with volunteering participants, I asked their help to recommend me other knowledgeable PLP participants who could provide an in-depth account of their experience as a PLP volunteer. Most of them could easily refer to someone that had had an important role in PLP project and kindly sent emails to those individuals informing that they had interviewed with me and asking if them would like to do the same. In a few cases, I asked specifically if they could bridge me with an individual they had named during the interview, either because that person might augment their statement or might have a different, or perhaps contradictory, account. In general, interviewees were cooperative and helpful in the follow-up emails subsequent to the interview. In some cases their efforts on bridging me to another respondents unfortunately did not echo a response.

Theoretical sampling is usually driven by specific theoretical needs that emerge in result of the progress of data analysis. As the table 3.1 shows, I conducted most of interviews about PLP case in the second semester of 2012, and only four interviews in the first semester of 2013. These last four interviews and a few other ones conducted in 2012 were theoretically sampled. I selected these interviewees based on other participants' accounts about their role in the civic movement and also because of the particularities of some groups – for example, the circumstances of groups in mainland Portugal and in the islands were different in respect to the possibility of joining a national meeting of the civic movement.

For LDI case, a combination of snowballing and theoretically driven sampling was used. My key informant in the organization introduced me and referred me to persons involved

	LDI Case	PLP Case
Number of Interviewees	20	42
Period of Interviews	Feb. to May 2013: 17 Aug. to Sep. 2013: 3	Jun. to Oct. 2012: 38 Jan. to Jun. 2013: 4
Average length of interview	43 minutes Minimum: 29 minutes Maximum: 97 minutes	55 minutes Minimum: 22 minutes Maximum: 112 minutes
Language	English	Portuguese
Type of interview contact	5 in person 15 over Skype	40 in person 2 over Skype
Recording technique	Audio only: 11 Audio and video: 9	Audio only: 40 Audio and video: 2
Interview model	Semi-structured	Semi-structured
Participant's areas of intervention	Mapping, IT, coordination, partnerships, leadership, communication	Mapping, IT, coordination, partnerships, cleaning up, communication

Table 3.1: Overview of interviews dataset

in the development and deployment of software used in LDI and also to the project coordinators for different areas of intervention, as for example mapping, communication, partnerships, volunteers, and logistics. I also approached other participants I met at the Clean World Conference and invited them to an interview and/or asked them to introduce me to other informants.

It was more difficult to recruit participants for LDI case study because I had limited opportunities to get to know LDI participants in person. Snowballing, for example, was less effective because I was asking people who had never met me in person to an interview

over Skype and it turned out that people dismissed more easily this kind of Internet-based networking. Indeed, most of the contacts I got from this kind of snowballing did not materialize in interviews.

Interview Protocol

The latest version of the protocol used for interviewing is appended to this thesis (appendix F). The role of the protocol was to facilitate the emergence of good practices and routines from the side of the interviewer and to allow for a better interviewing experience for the respondent. The protocol was useful in structuring the interview time and in creating a less tense environment while maintaining the professionalism that such situation demands.

Interview Guide

An interview guide seemed more useful than a list of topics, especially for the first interviews, because I did not need to think about how to formulate a question in the "heat of the moment" and, if needed, could resort to the guide to situate myself. This was especially important in the first interviews when I was still worried about my inexperience as an interviewer, and wanted to establish good rapport with the respondent, which I believed could be facilitated through the establishment of a comfortable and well-founded environment for conversation.

Also, the interview guide sets boundaries on what data will be collected and helps maintain the focus on the research issues that are at stake. I noticed my interview guide becoming more sharpen as the data analysis progressed. In my late interviews I felt much more on control and practically did not concede on the interviewees' rambling about issues that were not relevant to the research. At this point, I felt sometimes difficulties to hold in more particular questions and to stick with the general first and the probes and specifying questions after.

After the first few interviews it became evident that I was familiar with the topics under question and I started using the interview guide with flexibility. Not seldom, the interesting story that the participant had to tell did not result from the direct questions I had prepared but from other questions that emerged during some wander about. Following the list of topics in the interview guide allowed me to concentrate on being a better listener. As a result, I was better prepared to pick up the more interesting aspects of the ongoing conversation and frame another question to dig further or, if that did not work, redirect the participant to another issue.

The interview guide for PLP was prepared in Portuguese, and it was later adapted to English for LDI interviews (appendix G). Before entering the field for the first batch of interviews, I tested the interview guide through two pilot interviews with friends and, in one of the cases, having a third friend observing. After each pilot interview, I asked them to comment and to make suggestions about the structure, content and order of questions and about my performance as interviewer, and we also talked about how they felt during the inquiry. This feedback was useful to revise the interview guide before entering the field. Three other revisions followed while already on the field.

Transcription Protocol

All interviews were audio recorded and transcribed. Some interviews were also video recorded. For the purpose of quality assurance and uniformity of the resulting text files, the transcriptions follow the rules defined in the transcription protocol appended hereto (see annex H). In general, each transcription is a text document with three sections: a header with some details about the interview; the body, that is the transcription in verbatim of the interview; and a remarks section with the field notes related with the interview.

After transcribing, the text was revised and edited for any typos and punctuation to improve its clarity. I also used bracketing to capture any interesting thoughts that

surfaced while I was doing the transcription, and used these "bracketed thoughts" for coding more efficiently.

Interview Conditions

The interview conditions for both PLP and LDI were demanding because both sites required extensive traveling. Hence, careful planning was necessary in order to control the costs of data collection. PLP interviewees were scattered through the country and thus I had to travel in the north, center, and upper-south parts of Portugal in order to meet them at convenient times and locations. Similarly, for LDI interviews I traveled to Estonia to meet a few of them and realized I had to arrange Skype interviews with others because of budget limitations. Next, I explain the circumstances and decisions I made related to the preparations of the interviews.

PLP interviews: Once a suitable interviewee agreed on interviewing, the arrangements for the interview followed. The date and place had to be convenient for the participant and, since PLP was a nationwide project, this implied that I had to travel extensively in the country. Therefore, I first tried to coordinate dates and places to meet the interviewees in order to minimize traveling and especially the costs associated. There were participants from different regions of the country and I decided to interview them in batches, according to the region they lived. In some cases, face-to-face interview was deemed impossible because the respondent was located in Azores islands or in Algarve and the costs associated with travel and lodging were high.

After settling a convenient date, the arrangements about the place followed. I usually suggested the interviewee's workplace but most of them preferred to meet somewhere else and thus I had to find an appropriate place. I wanted to avoid both meeting at their home, because of the likely discomfort that could emerge from such unfamiliar situation, and meeting at crowded and noisy places because it could interfere with the recording.

These restrictions demanded some creativity on my side to find practical solutions and also flexibility to deal with unexpected last minute changes that affected previously made arrangements.

Therefore, I contacted municipal libraries in different towns and asked to use one of their viewing rooms where library patrons can dialogue. Where such room was not available, I was offered other room – often in the juvenile area, and as a last resort I conducted interviews in the library cafe, which tends to be a quiet place. I also turned to my personal network of contacts and asked suggestions about appropriate places for a quiet conversation. The input I received from local friends and acquaintances was especially useful because I had never visited most of the villages and towns where I had to go.

Following these arrangements, other preparations ensued. My "interviewer toolkit" consisted of two recording devices, my paper notebook to jot down field notes, business cards, a folder with consent letters and other documentation, as for example the telephone contacts of the interviewees, location details of the meeting place, interview guide, and interview protocol.

No more that two interviews were conducted in the same day. Usually, the first interview occurred at lunch time and the second in the early evening. In-between, I had time to listen the morning interview and write a summary of what I had learned and, when driving home, I usually listened to the evening interview. Interviews were also arranged at other times when participants had a flexible schedule or expressed other preference.

LDI interviews: As to the interviews with LDI participants, I had planned to interview a few participants after the Clean World Conference in Tallinn and was able to conduct in-person interviews with five persons. These interviews took place in different settings: most were conducted at the lobby of a hotel nearby my lodging place and

one of them was conducted in the intimate setting of a private residence. While at the conference in Tallinn, my primary contact with LDI introduced me to a number of people that had been working in LDI since its inception and, after returning from Tallinn, I contacted them to arrange interviews over Skype. I asked these participants to bridge me to other LDI volunteers that I had not met in person, and I also interviewed those that accepted my invitation to interview.

The effect of Skype medium in the interviews was, in my opinion, negligible. It must be noted that these participants actually work most of the time online and they use email and Skype daily. Some of the interviews include the video recording, and it does not seem to bring artificiality to the conversation. The use of video actually improved the experience of interviewing because physical cues and body language help maintain the fluidity of conversation. However, in some cases the video had to be turned off because it was interfering with the quality of the sound recording, and in other cases interviewees reported not having video camera in their computers.

Moreover, Skype was the only viable possibility of reaching a larger number of participants due to the high costs associated with traveling and to the lack of opportunity to meet the participants in person. I must say that it actually helps if the interviewer can meet the participants in person first. While some of the participants I met only over Skype were overly easy-going and open persons, there were a couple of interviews where it was more difficult to establish rapport.

Also for LDI site, I did not conduct more than two interviews in the same day. Actually, only two interviews out of twenty were done in a single day. An advantage of interviewing over Skype is that it is easier to schedule a convenient time and all the other preparations about the place to meet are not necessary.

3.5 Data Analysis

This research employs qualitative analysis methods to make sense of the data gathered. In short, I used qualitative data analysis (QDA) software, wrote memos and case summaries, sketched diagrams, and produced tables. Looking retrospectively, I identify three stages of data analysis in my work, which I discuss in detail next.

Stage 1: Open-ended discovery

I started with descriptive or open coding to fragment the archival data and documentation I had gathered. My objective was to capture the main themes and patterns from this data in order to build a general understanding of the cases prior to collecting primary data. The main output from this stage are case summaries. These summaries encapsulated what I knew about the cases at a given point and were a useful starting point for developing interview guides, preparing case discussions, and writing academic documents. For example, PLP's case summary was revised and augmented for a research article (see Cardoso and Carvalho (2012)).

Coding facilitates the organization of data because it allowed for the grouping and linking of codes in categories of concepts. Sorting the data through coding was an iterative process that required constant evaluation of how 'the big picture' (that is, the code book) is looking. In order to find a stable structure that is fitted to the data, the code book was revised incrementally. In this process some codes were discarded or re-coded and new codes were created. I could sense the need to revise and re-code by looking at the following pointers: the code book was growing beyond the reasonable number of about 80 codes; some codes had similar meaning; the code frequency was low for a number of codes; and constant comparison was becoming more difficult and lengthy.

Coding was interwoven with memoing. Memos are written notes about the insights acquired from coding and from the identification of patterns or regularities in codes. In

the beginning I did not have a clear idea on what I should write about but I wanted to make memoing an habit. Therefore, I started by writing short annotations in QDA in which I summarized ideas I had about some aspect of the case that related to a specific code or I explained my coding decisions for a particular text segment. These annotations are alike the coding memos that Birks and Mills (2011) discuss.

Analytic memoing consists of writing about patterns found in the data or presupposed relations existing between codes. This kind of memoing was done in a separated text file, not directly in QDA. Analytic memoing facilitates the elicitation of findings because writing about patterns found in the data usually leads to reasoning about 'the whys' of such patterns occurring. Besides analytic memos I also wrote operational memos in my text file. Operational memos were helpful to track and audit the processes of analysis and coding. An example of a memo is appended hereto (appendix I).

Stage 2: Intermediate analysis

This stage involved grouping, ranking, and sorting codes, summarizing and ordering case data, and devising concept maps. My main goal for this stage was to examine the cases' process data. In other words, I wanted to understand how things evolved over time and why they happened in a certain way (Langley, 1999). Particularly, I wanted to make sense of the stories I had heard about national scale cleaning events and the people and ICTs involved in these activities.

Hence, this stage analysis builds on the preceding work and incorporates interview data. I worked on the initial code book and created groups of codes by clustering similar or related codes under a common banner, that is, a category. In order to better understand the flow of events over time, I drew on an exemplary critical incident chart found in Miles and Huberman (1994). The resulting time ordered matrices of events are discussed in the next chapter, together with a narrative of each case's details. To build these matrices, I sorted case data chronologically, listed events, and identified the events

that were critical in organizing the civic movement's collective action and in scaling it up to a national, or global, level.

Clustering codes made constant comparison easier and facilitated the identification of themes and sketching of concept maps. I used concept maps to represent the knowledge I had about activities specific to organizing collective action in LDI and PLP, as for example communication, waste mapping, and logistics. Concept maps are concept-ordered displays that represent the knowledge about a particular domain (Miles and Huberman, 1994). A conceptual map combines concepts and linking words or linking phrases. The linking phrases, together with the concepts, form propositions. Specifically, linking phrases express the relationships that exist between concepts, and propositions are meaningful statements about a concept that can be understood independently (Cañas and Novak, 2009a).

Linking phrases (or words) usually consist of a verb or include a verb. Cañas and Novak (2009b) contend that "there are no predefined vocabularies of concepts and linking words, and therefore the resulting propositions are for the most part not "formal" or "precise" enough for computers to interpret and reason upon" (emphasis in original). Concept maps are useful to formalize relationships between codes or groups of codes and helped me realize the complexity of the different processes involved in organizing a collective action.

Stage 3: Focused analysis

The third stage of data analysis involved another round of coding and cross case comparison analysis. The objective of this stage was to generate meaning and draw conclusions from a selected subset of data, specifically from the data that 'speaks' about how ICTs were used in the organizing of PLP and LDI's collective action.

Hence, the coding in this stage was selective. First, I identified the different ICTs used in the cases and coded only the text segments that were specific about the use of

some ICT. I used the prefix *tool* to facilitate the sorting and grouping of codes later on. For example, text segments about email use were coded as *TOOL:email*. Next, I went through these text segments and coded selectively only the segments that were talking about 'something' that had been facilitated or constrained by the use of ICTs. I used the prefix *facilitated* and *hindered* in this second step. The full list of codes, that is, the code book, is shown in appendix J.

Subsequently, I focused on finding patterns on these codes. I sorted the codes with prefixes facilitated and constrained and clustered them into themes. In other words, I tried to identify a more abstractly defined class that would allow me to group codes based on their affinity. The categories I used for clustering emerged from the interplay of theory and data (Miles and Huberman, 1994). In order to realize the empirical traction of data I evaluated the recurrence of codes through frequency code counts. This kind of quantitative analysis is a quick way of checking for possible bias and realizing the robustness of findings (Miles and Huberman, 1994).

3.6 Summary

In this chapter I reported on the design of the research reported in this thesis. The research design is critical for any research project because it entails the logic of the inquiry leading to the improved understanding of a phenomenon of interest. In short, the research design outlines the process of investigation and identifies the methods and techniques that will be used to collect and analyze the data necessary to answer the research questions and obtain the results that will lead to the drawing of conclusions (White, 2009).

Considering the phenomenon under investigation, the research questions, and the goal of the research, I elected the case study method to investigate how do ICTs facilitate or constrain the organizing of collective action. Further, the interpretive stance is aligned

with the goals of the research and with the methodology that was chosen. In terms of data collection, this research draws on archival data and interviews. The strategy for data collection involved first a wide casting of the web of interest of topics under investigation and was followed by a refining and consequent narrowing of such interests. This involved re-focusing the interview questions on the issues of interest, and consequently revising the interview guide, until theoretical saturation was reached.

As to the data analysis methods, I commenced with open and descriptive coding of the cases' documentation, which was useful for preparing the field work because it allowed me to identify key events and to get a broad understanding of the issues requiring further investigation. Open coding was done iteratively, through cycles of revision and re-coding until the goal of a stable code book was achieved. Following open coding, I grouped code in categories, taking in consideration the degree of relatedness, and examined the organizing processes of PLP and LDI's collective action. In the more advanced stage of data analysis, I coded selectively the interview segments about what was facilitated and what was constrained by the use of different ICTs in both cases. In the following chapters I leverage the data analysis techniques outlined hereto in the production of case narratives (chapter 4) and in the presentation of findings of this research (chapter 5).

Chapter 4

Case Reports

The previous chapter discussed the research methods selected to address the research questions this thesis aims to answer. I explained the rationale behind the methodological options, introduced the research cases, provided details about access to these cases, and reported on the data collection and data analysis techniques used. This chapter proceeds with the description of research cases, offering a narrative of cases' facts in chronological sequence. These case reports lay the ground for the subsequent work of deeper description and interpretation of findings, which will be discussed in the following chapters.

The research cases are the civic movements Let's Do It (LDI), based in Estonia, and Project Let's Cleanup Portugal (PLP), based in Portugal. As I explained in the previous chapter, my first contact with PLP occurred in 2011, when I interviewed four members of the national coordination team of PLP. Following this exploratory work, I conducted an in-depth case study of PLP. Upon learning that PLP had drawn inspiration and guidance from LDI, I investigated further their similarities and differences and realized that both cases could help answer my research questions. Subsequently, in 2012, I contacted LDI core team and got their agreement for studying their case. The case reports herewith cover the periods of 2007-2013 for LDI, and 2009-2013 for PLP.

4.1 Let's Do It

Let's Do It (LDI) started as a civic movement that gathered a group of 40,000 volunteer citizens in Estonia to realize the goal of cleaning up, in a single day, the litter lying in the country's forests. In the Summer of 2007, a group of Estonian friends got together and incidentally discussed the problem of littered forests in their country. As one of them was an elected parliament member, there was the possibility of bringing this issue into the political agenda and to enact appropriate environmental policies to address the problem. However, the group decided instead to tackle the problem through a hands-on approach and started to brainstorm ideas for organizing a massive cleanup of the forests. Soon, this founding group of people and a few more of their friends were working on a project they named Teeme Ära[1], which envisioning slogan was: "Let's clean up the whole country in one day!"

Teeme Ära: 2007 - 2009

How can a small group of people clean up the littered forests of an entire country in a single day? This does not seem like a small feat, and indeed it required months of preparatory work. In short, this problem was approached as a set of interdependent tasks, as I will explain next.

The first task the group agreed as necessary was to get a rough estimate of how much garbage existed in the forests, in order to assess how many persons and machinery would be needed to dispose of it. Garbage estimation was done through the systematic *in loco* mapping of the country's territory, using GPS devices to obtain the coordinates of the dumping sites, and subsequently uploading the location data into an online map of 'garbage points', together with the estimation of the volume of garbage in existence.

To realize the goals of the mapping exercise, LDI established partnerships with

[1] 'Teeme Ära' translation to English is Let's Do It

telecommunications companies and with an IT company that provided equipment (mobile phones), mobile Internet connection, and mobile phone software to facilitate the mapping process. Through the mapping of dump sites, each pinpointed garbage location in the map was given an identification code, a locally captured photo, and a short text describing the composition of the dump site. This information was later fed into a software product, specifically programmed to handle the logistics of the cleanup, in order to efficiently assign material resources to the various dump sites.

Mapping is a time-consuming task and, in a country like Estonia, which is usually covered with snow from October to April, it poses the additional challenge of combining this outdoor activity with favorable weather conditions. After some mapping trials, LDI team quickly realized that much help was needed in order to get the mapping done, and hence they set up a plan to involve volunteers in mapping, which consisted of the following: first, they recruited volunteers from outdoor sports and hobby communities who maneuvered GPS devices in the forests, such as bikers, geocachers, and trekkers; second, they established a partnership with the Estonian Army in which the Army integrated a mapping exercise in their training activities; and third, they organized weekend mapping events in various counties and municipalities, in which more than 500 volunteers took part.

The garbage estimation exercise pointed to the need of a workforce of around 50,000 persons to clean up the litter locations mapped, and hence a communication campaign was put in place in order to inform and engage citizens in the project. Back in 2007, social media was not as popular as it is nowadays and therefore they explored more traditional communication media, including press releases, leaflets, outdoor posters, and partnerships with media channels that provided gratuitous advertising time and space in national television, radios, and newspapers. In addition, online communication was used, especially broadcasting of emails, engagement of bloggers who could endorse the

campaign through the incorporation of a web-banner in their websites, and posting in bulletin boards and online forums of various online communities.

Another strategy related to communication and public relations was the involvement of public personalities from different spheres of life, including arts, drama, and sports. The government also endorsed the project and provided a grant for the payment of garbage disposal fees, and there were numerous partnerships with private companies that provided transportation and cleaning supplies. Moreover, the Estonian Army also provided transportation and volunteer workforce. The project was framed as a movement of citizens, apolitical, and informal. There was no formal organization behind but, instead, a group of friends and a network of volunteers acting as interface contacts at the local level of counties and parishes of Estonia. Moreover, the cleanup event was associated with the tradition of 'bee' events[2] that exists in Estonia (Pikner and Jauhiainen, 2014). Organizers drew on this tradition of collective working days to operationalize the idea of the cleanup day because these 'bee' events are a familiar concept to many Estonians.

The registration for the event was done via an online form and required that at least three people enlisted as a group. This was an intentional criterion that aimed at reinforcing the commitment of participants because whereas a single person might easily disregard the appointment for the cleaning event, a group of persons provides additional stimulus and peer pressure for participation. Behind the registration process, there was a team of volunteers answering all sorts of questions coming from the registrants and making sure that the registration form was working properly. They issued a personal email for every group with all the information deemed necessary for them to participate: the location of the gathering place, safety instructions, working manual, and useful phone numbers. Moreover, mobile phone messages were automatically sent to the participants on the morning of the cleaning event to remind them about the safety instructions and

[2]Bee events combine work and leisure and typically consist of a half-day of intensive group work followed by the offering of a meal and entertainment program to participants.

the location of gathering place.

The logistics of the cleaning event were supported by software especially programmed and developed for that end. This logistics system was built on the idea that the task of cleaning up garbage basically involved moving the garbage lying in thousands of places in the forest into a reduced number of places, so-called flag stations, where large scale sorting and processing could be done. Hence, the software revolved around the calculation of the optimal number and location of flag stations around Estonia, which was done through a clustering algorithm and a vector map of the roads' network. Each garbage point had been previously pinpointed in this map, during the garbage mapping exercise, and was later assigned to the nearest flag station.

The logistics software also calculated the optimal number of persons for each flag station. These calculations were integrated with the registration form and consequently new registrations were not allowed for the flag stations that had exceeded the number of optimal volunteers. Every group of volunteers received a map showing the specific garbage points that had been assigned to them and was tasked with sending a message with their mobile phones reporting after the garbage had been cleaned up. This reporting from the field allowed for real time monitoring of the progress on the field by the center of operations of LDI project.

On the cleanup day (May 2008), volunteers met at their previously assigned locations where they collected cleaning supplies (trash bags, gloves) and tools. Next, they went to the garbage points nearby to collect the garbage in bags, and dropped the bags at the flag stations where it was later collected by trucks from partnering transportation companies. Forty thousand persons participated in the cleaning event (3% of Estonia's population) and more than 10,000 tons of garbage were removed from the forests in just five hours.

The outcome of this event was a huge success, especially considering the unprece-

dented number of citizens mobilized for voluntary work, the volume of garbage collected, and the actual cost of removal of that garbage. The majority of costs were garbage disposal fees and transportation costs amounting to 500,000 Euros. The funding for LDI came from partnerships with private, public, and non-profit sectors, especially the Estonian Ministry of Environment, The State Forest Management Centre, and the Environmental Investment Centre. It was estimated that under normal circumstances, it would have taken three years and about 22,5 million Euros for local governments and garbage collection companies to cleanup the same dump sites. Table 4.1 is a time-ordered list of events related to LDI case, including the events that followed the cleanup day, which I will report on the next sub-section. In this table, times goes vertically and the events are sorted horizontally, in chronological order.

Let's Do It! World: 2009 - 2013

After the cleaning event, the founding team of LDI engaged in organizing other large-scale events in Estonia. Since the cleanup day of Teeme Ära, they have been constantly looking for ways in which they can contribute to civil society by involving citizens in solving collective problems. For example, in 2009, it organized the event My Estonia, depicted as an one-day think tank in which 10,000 persons came together, in different cities, to brainstorm ideas and dream about the future of Estonia; later, in 2011, they partnered with Food Bank in Estonia and organized a fund raising campaign in order to collect Estonian Kroon coins that were going to be substituted by Euro coins in consequence of Estonia's joining the economic and monetary union of European Union.

Nowadays, on the first Saturday of May every year "The Day of Civil Actions" takes place. It consists of collective actions that can be organized by any citizen, group of citizens, organization, or community in order to benefit the community and contribute to common good. Examples of civil actions that have been organized include repairing and upgrading a playground, and painting a local public school. In 2013, "The Day of

August 2007	Friends meet and discuss littering problem in Estonian forests			
September 2007	LDI core team is assembled	Trash mapping software is ready and working	Garbage estimation and mapping starts	
November 2007	First press conference about LDI	Public relations campaign launched	Establishing contacts with local media (press, radio)	
February 2008	Mapping events are organized across country			
March 2008	Mass media campaign launched	Registration for the cleaning event starts (in LDI website)	Mapping events are organized across country	Partnership with Estonian Army, to collaborate in mapping and cleaning
April 2008	Estonian Army cleans up a major dump site near Tallinn	Mapping events are organized across country		
May 2008	Logistics software is ready and tested	Cleanup Day: 40k persons remove 10k tons of garbage	Thank you concerts for volunteers in 3 major cities of Estonia	Thank you event for partners and LDI team members
June 2008	1st Summer camp of LDI core team			
2009	5-minute video about the cleaning event is posted in YouTube	Promotion of the idea of organized country wide cleaning events at different conferences	My Estonia event: brainstorming session about future Estonia gathers 11k persons	Summer camp of LDI core team
2010	Let's Do It! World Cleanup international conference	Day of Civil Actions: 31k persons participate	Summer camp of LDI core team	
2011	Food Bank partnership project in Estonia	Day of Civil Actions: 20k persons participate	Summer camp of LDI core team	Let's Do It Foundation is founded in Estonia
2012	Let's Do It! World Cleanup international conference	Day of Civil Actions: 30k persons participate	Regional conferences in Asia, Africa, South America, and Russia	Summer camp of LDI core team
2013	Let's Do It! World Cleanup international conference	Day of Civil Actions: 40k persons participate		

Table 4.1: Time-ordered list of events in LDI case

Civil Actions" involved 40,000 volunteers in 1,522 different civic actions that took place all over Estonia.

The core team of LDI has also been promoting the idea of organized one-day country cleanups across the globe, and has been building a network of like-minded teams from different countries. This network forms the global civic movement *Let's Do It! World*, which, as of 2013, includes 110 countries. The global movement has grown from the diffusion of the idea of organized country cleanup throughout the world, mostly thanks to the Internet.

In 2009 the core team of LDI released a 5-minute video in YouTube about the Estonian cleaning event, and they started receiving emails from people around the world asking questions about how to organize a cleaning event. After some time answering these emails and giving advice to various countries, the core team of LDI agreed that it would be useful to convene the interested countries to a conference where they could share their experience. Hence, in January 2010, the first international conference of LDI took place in Tallinn. Soon, the countries that attended the conference successfully organized a cleaning event and the LDI global movement was born. The network of countries is continuously expanding, as more and more countries succeed in organizing a massive cleanup of illegal dump sites.

The organizational structure of Let's Do It! World consists of a network of country teams that have done an organized cleanup of dump sites in their countries and a core team based in Estonia. The core team acts in a supportive role, in the following ways: handling communication and public relations at the global level; providing technical support (troubleshooting and practical advice) to country teams through a group of regional coordinators overseeing the activities of country teams; organizing regional and international conferences to encourage knowledge sharing; and maintaining the world waste map.

4.2 Project Let's Cleanup Portugal

The success of Teeme Ära in Estonia galvanized a group of friends in Portugal to organize a similar cleaning event in Portugal. Project Let's Cleanup Portugal (PLP) marshaled a total of 100,000 persons (about 1% of Portuguese population) to remove garbage illegally dumped in the forests of the country. PLP presented itself as an independent civic movement of volunteer citizens mobilized to cleanup the whole country on a single day. They specifically requested for monetary donations not to be made as they wanted to preserve their autonomy and transparency out of accepting only in-kind donations of goods and services and voluntary workforce.

Let's Cleanup Portugal: 2009 - 2010

In July 2009 a group of friends, inspired by an YouTube video about the Estonian cleaning event, founded *Projecto Limpar Portugal*[3] (PLP). The goal of PLP was to rally the Portuguese population to a countrywide cleaning event that was named "Day L". The group used their email contacts to share the video about LDI and to entice friends and acquaintances to join a community website they had created on the Ning web platform[4]. This community website was the informational hub of PLP and worked as the gathering place for participants and organizers of the cleaning event to update and discuss the progress of the preparations of the Day L.

The email invitations triggered an impressive number of 4,000 registrations after only two weeks of the community website being launched, and that number eventually grew to more than 35,000 persons registered in this community website in the eve of the cleaning event. Upon registering in the community website, everyone received a welcoming email and was invited to join the group page of their municipality in the community website,

[3]'Projecto Limpar Portugal' translation to English is Project Let's Cleanup Portugal

[4]Ning is a software as a service (SaaS) platform that hosts micro social networking websites for deploying social communities and socially engaged websites. See more in www.ning.com

or to create a new group page for their municipality in case the community website did not have one yet.

The organizational structure of the project was decentralized across districts and municipalities. PLP functioned as an adhocracy and was completely managed by volunteers. The coordination of the project at the national level was overseen by the national coordination team, and registrants from the community website were invited to build local teams, in their municipality, to organize the cleaning event locally. The national coordination team included the founders, the coordinators of district areas, and experts for the environmental, legal and technological issues. Whereas district coordinators were responsible for leading the project locally together with teams of volunteers from different municipalities, technical coordinators offered their expertise and advice for handling issues that were critical for the smooth progress of the preparations.

The national coordination team devised broad guidelines about how to organize the cleaning event and published these in the official website and the community website of the project. However, the municipal teams of volunteers could decide how to enact those guidelines, and worked autonomously on the tasks necessary for the organization of the local cleaning event. This involved locating and characterizing the illegal dump sites in each municipality, finding partners to provide the necessary material resources (transportation, cleaning supplies), engaging volunteers, and establishing partnerships with environmental service companies that collected garbage.

One of the guidelines of the project mandated that it had to operate with zero funds, that is no grants or any other form of subsidies, and hence monetary donations could not be accepted; however, in-kind donations of goods and services were welcomed. As a result, the cleaning event in Portugal was completely supported by donations and partnerships. Donations included tools, bags and gloves for collecting trash, gratuitous use of technical equipment, trucks and tractors, gratuitous transportation services for

volunteers, and volunteer workforce. PLP partnered with public and private schools, Scouts groups, civil associations, and established partnerships with the military, the civil protection, private companies, municipalities, and parishes.

In addition, they sought the collaboration and involvement of various communities related to outdoors activities in forests, namely the online forums of all-terrain vehicle owners, cycling forums, and the growing online community of geocachers. Local mass media, such as radio and newspapers, helped promoting the project locally and, in the 4 weeks preceding the cleaning event, it also drew attention of national mass media, especially when the president of Portuguese republic endorsed the project and became its honorary sponsor.

For the discovery and characterization of dump sites, there was some improvisation in the choice of ICTs to support the mapping exercise. At that time, using the same software that Teeme Ära had used was not possible because the interface language was Estonian. So, shortly after the project's kick-off, volunteers explored software services that allowed them to pinpoint places in Internet-based maps, such as Wikimapia or Wikiloc. However, after some time experimenting with these tools, it was becoming clear that neither addressed the project's needs in terms of mapping and they were quickly abandoned when the developers of 3rdBlock[5], a web-based geo-mapping software based on Bing Maps API, approached the national coordination team and offered to collaborate.

The developers of 3rdBlock had registered in the community website of PLP and were following the forum threads about the mapping exercise when they realized that PLP was having difficulties with this process. They already had developed web-based software that allowed users to pinpoint places of interest in an Internet map and were eager to test their prototype. Thus, the context of PLP provided great opportunity for a real life implementation of 3rdBlock while, at the same time, the software showed promise of

[5]3rdBlock offers the possibility to pinpoint in a map the location of a point of interest and to add information about that place, including photographs. More in www.3rdblock.net.

being an appropriate tool for the mapping exercise.

The software 3rdBlock facilitates crowd-generation of geographic information because anyone can create a user account and upload data. The information necessary about a dump site included its GPS coordinates, a textual description of the type of trash found and, wherever possible, photographs of the place. Hence, to be able to completely characterize a garbage location volunteer mappers needed a GPS device, a digital camera, and access to 3rdBlock over the Internet. However, back in 2009, not many people in Portugal had GPS devices and many people wanted to contribute to the mapping exercise but did not want to go online. This was a handicap that PLP had to maneuver and the workaround, in many cases, was to use paper maps in the field and afterwards to pinpoint the exact same location in 3rdBlock map. Moreover, many volunteers did not enter data directly into 3rdBlock and instead they emailed the location of dump sites to the municipal team or to the national coordination team of PLP.

The mapping exercise itself was organized at the local level. The municipal teams of PLP were responsible for the mapping of their territory and had much freedom into deciding how to do it: some teams organized mapping events with the collaboration of local hobby and sports groups; other teams recruited a small group of volunteers and tasked them with mapping; and some had no organized strategy at all and mapping ended up being done by ad hoc contributors that either entered data directly in 3rdBlock or emailed it to the local project team. Nevertheless, all the data inserted in 3rdBlock was later confirmed on the spot by a member of the municipal team to ensure the quality and reliability of data.

Registration for the cleanup event was done in the community website of PLP, throughout the whole preparatory phase. There was also some paper-based registration occurring in local in-person meetings, and in the cleanup day itself. Groups of people and organizations, such as Scouts or civil associations, could register; however, the bulk the

registration was done at the individual level. In the eve of the cleanup event all registered members of the community website were emailed remainders about the cleaning event, including the gathering place and safety issues.

For the cleaning event in Portugal there were no sophisticated information technology tools and applications to support the logistics of the event. Some municipal teams used spreadsheets in Google Docs to help them combine and optimize the distribution of the human and material resources they had gathered for the cleanup, others reported about using mobile phones to communicate with volunteers doing the cleanup in the field and to transmit reports on the progress of work. Despite the bad weather conditions on 20th March 2010 (day L), more than 100,000 persons participated in the cleaning event and, by the end of the day, more than 50,000 tons of illegally dumped garbage were removed from the forests. Table 4.2 is a time-ordered list of events related to PLP case, including the events that unfolded after the cleaning event, which I will report on the next sub-section. In this table, times goes vertically and the events are sorted horizontally, in chronological order.

Association AMO Portugal: 2010 - 2013

Following the cleaning event in March 2010, municipal teams dissolved because they had formed with the single objective of organizing the cleaning event. Some discussion about what to do next ensued, in the community website. It did not seem reasonable to squander the social and organizational capital that had been built throughout the organizing of the cleaning event and, in July 2010, some members of the national coordination team founded a non-governmental organization named AMO Portugal that works under the same principles that guided the organization of the cleaning event.

AMO Portugal is not a typical non-governmental organization. Some aspects of AMO Portugal's bylaws indeed depict its singularity, as for example: AMO Portugal aims at promoting national scale events through the mobilization of volunteers and partnering

July 2009	YouTube video about LDI becomes viral	Community website for PLP is created in Ning platform	The official website of PLP is created and goes online	Consulting by email with LDI about how to organize a cleaning event	First national meeting of PLP collaborators is held and the date for Day L is decided
August 2009	Minute of first national meeting is published in PLP's official website and community website	Second national meeting of PLP collaborators is held and the organizational structure is defined			
September 2009	Interview piece about PLP is shown in prime time in national TV	Minute of second national meeting is published in PLP's official website and community website	A dissent group organizes a meeting of the project in Lisbon	An association under the name *Limpar Portugal* is founded by the dissent group	Third national meeting of PLP collaborators is held and the informal structure of civic movement is cemented
November 2009	PLP partners with the developers of the geo-mapping tool 3rdBlock	Mapping events are organized by local groups to locate and identify dump sites in 3rdblock			
December 2009	The project is endorsed by the Portuguese Episcopal Conference				
January 2010	Launching of a mobile app for mapping dump sites in articulation with 3rdblock	Three collaborators of PLP participate in LDI World Cleanup international conference in Estonia	The government endorses PLP through the Ministry of Environment		
February 2010	A reportage about PLP is shown in Biosfera, a popular environmental news program	PLP is invited to morning talk shows in national television channels and to radio programs	The President of Republic endorses PLP and becomes an honorary sponsor		
March 2010	The Army and Civil Protection partner with PLP to collaborate on the cleaning event	PLP is exempted from the payment of garbage disposal fees, by governmental decree	Televisions and radios broadcast very short advertising spots about the cleaning event	Day L: 100.000 persons collaborate in the removal of 50.000 tons of garbage from the forests	
July to December 2010	A non-governmental association named AMO Portugal is founded by some collaborators of PLP	AMO Portugal partners with Centenary of Portuguese Republic in the project Centennial Woods	PLP is awarded a Green Project Award for its communication campaign		
2011	Commemoration of the first anniversary of Day L. Local cleaning events are organized in some municipalities	AMO Portugal partners with National Park of Gerês in a project of prevention of forest fires			
2012	AMO Portugal participates in LDI World Cleanup international conference in Estonia	AMO Portugal organizes a cleaning event in the context of World Cleanup project. 8300 persons participated	AMO Portugal partners with National Park of Gerês in a project of prevention of forest fires	AMO Portugal partners with various NGOs in the project Common Forest for the reforestation of some areas of the country	
2013	AMO Portugal participates in LDI World Cleanup international conference in Estonia	Mapping events are organized across the country to celebrate the third anniversary of Day L.			

Table 4.2: Time-ordered list of events in PLP case

with public, private, and non-profit organizations, at no pecuniary advantage; it cannot own financial assets or any kind of patrimony; its only declared assets are the creativity, know-how, and the ability to mobilize volunteers when necessary; it has no employees and operates only with volunteer staff.

From 2010 onwards, AMO Portugal has organized other civic actions to mobilize citizens for environmental causes and, although these sequel events did not sustain the bequeathed volunteer base from PLP, they succeeded, to a certain extent, in keeping the spirit of entrepreneurial citizenship alive.

In March 2011, volunteers in certain municipalities independently organized local events to celebrate the anniversary of Day L. Most of these events were again cleanups, but there were also hikes in the forests to revisit the 'old' dump sites, and educational activities in schools. Some municipal groups in fact continued involved in forest protection activities throughout the Summer and developed partnerships with Firefighters and Civil Protection. In these partnerships volunteers pared down vegetation in forest trails to maintain forest trails accessible to firefighter's trucks and also guarded over forest fires in national parks.

AMO Portugal organized another national cleanup event in March 2012 as part of the World Cleanup 2012 campaign. This event was less participated: only 8,300 persons, as opposed to 100,000 persons in 2010. The economic downturn in the country together with the lower enthusiasm of mass media created a less favorable environment for organizers attempting to mobilizing donations from partners and volunteering participants. Nevertheless, the engagement of some municipal teams did not wither in face of this outcome and they continued with local projects such as prevention of forest fires and reforestation of burned areas.

4.3 ICTs in Use

The previous sections provided a thorough account of PLP and LDI's facts for the period 2007-2013. This section aims to provide the reader with a global perspective with respect to the use of ICTs in both cases. Both PLP and LDI appropriated a variety of ICTs, including ready-to-use software, custom developed software, and devices such as computers, mobile phones, GPS, and digital cameras. Table 4.3 lists the number of text segments from the interviews dataset that discuss use of software and other ICTs. The table is sorted from highest to lowest number of text segments. Custom developed software is highlighted in bold font type and followed by an asterisk.

A salient aspect from the table is the diversity of computer programs used by both cases. Unsurprisingly, more participants reported about ready-to-use software in the interviews. This kind of software are computer programs packaged as a product or service to be used "as is", that is with minor customization. Examples include productivity suites, internet browsers, and various computer programs offered as software as a service (SaaS) such as the range of apps offered by Google (docs, email, groups, forms), emailing marketing software (e.g. mailchimp), videoconferencing software (Skype), social media sites (e.g. Facebook, Twitter, YouTube, Flickr, Picasa), and software for designing, managing, and publishing content in the internet (e.g. Drupal, WordPress).

Conversely, custom developed software are the remainder computer programs that have been built to address specific requirements of customers and projects, either because available ready-to-use software does not address the needs of a certain project or business or because they are not compatible with the software systems already in use. The banking industry, for example, is known for having in-house teams that build software programs for own use. In LDI case, the waste map and the logistics system were built from scratch for Teeme Ära. In PLP case, the waste map software evolved from a previous version of custom made software that had the basic functionality of pin-pointing points of interest

Table 4.3: Number of interview segments about the use of ICTs

	Number of text segments		
ICTs used	LDI	PLP	Total
Community website	0	211	211
Email	51	138	189
Waste map*	28	80	108
Social networking sites	37	68	105
Website	16	46	62
VoIP (Skype)	33	5	38
Mailing list	11	19	30
File sharing	7	20	27
Electronic newsletter	10	17	27
Intranet	21	0	21
Online form	5	17	21
Logistics system*	15	0	16
Blog	2	10	12
Internet forum	0	11	11
GPS device	2	8	10
Web banner	2	3	5
Mobile phone app*	3	1	4
Waste explorer*	4	0	4

in Bing maps platform[6].

These ICTs were used in complement (Klein, 1999) and in combination. Use of ICTs *in complement* means that use of ICTs (online activity) is followed or preceded by a significant amount of offline activity, such as in person meetings, and varied legwork; Conversely, use of ICTs *in combination* indicates that different ICTs are combined in their use for a single purpose, which means that ICTs are in practice used as ensembles (Lamb and Davidson, 2005).

[6]Bing maps is a web mapping service that is part of Microsoft suite of search engines.

The following examples are illustrative of such practices. The activity of mapping dump sites in PLP case combined the use of the waste mapping app, digital camera and GPS device, and also in many cases email and community website. For instance, a PLP interviewee explained that: *I had a paper map from my parish and I went into the forest with my camera and marked the dump sites in the map. I checked the location in internet and sent the coordinates through email, and I know we could also upload the photos in the community website. Of course it was not as precise as with GPS but it worked.* Another also reported that: *I have been writing a blog about environmental issues for a long time and I replicated there the news and announcements from Ning [community website] because I know that many people in the municipality follow the blog.*

For LDI case, ICTs supplement the usual in-person team meetings by integrating with Skype (for distant team members) and following up on the issues through email. An LDI interviewee explained that: *we need all the tools to coordinate the team work. Sometimes we have meetings where people participate over skype, and we also use email and internet... but if you want to keep the team working and build team spirit, then you actually need to see each other from time to time.*

Moreover, for both cases, ICTs are part of the repertoire of communication tools available to organizers. In general, for any mass-oriented event, it is advantageous to exploit the superior range of an hybrid media system (Chadwick, 2013) that combines traditional communication media, such as leaflets and posters, newspaper pieces, airtime in television and radio, with social media, mailing lists, blogs, and websites. As an LDI interviewee put it: *you know, to make the people feel that this campaign is everywhere and that everyone is part of it we have to make sure that they get the same information from every channel: from tv, email box, from internet, from radio, and etc.*

In protest movements, contentious activity usually brings in more use of social media and mailing lists because protesters cannot access traditional media and do not trust it as

a source of information, given that media corporations are often controlled by governing elites. Hence, activists in protest movements resort to create alternative channels of communication (a kind of 'do-it-yourself' media) that they feel can be trusted. As such, use of ICTs in conflictual collective action seems to be tied to the issue of tactics of contention (McAdam, 1983). However, in consensus movements like PLP and LDI there is no evidence of an identical need on the side of organizers or participants. Rather, both civic movements exploited an hybrid media system to communicate with their audience in which they combined traditional media (newspapers, radio, television) and internet-based media, such as mailing lists and social media. As I will discuss in the next chapter, it seems that this specific way of using ICTs by PLP and LDI is grounded in issues of utility and efficiency.

4.4 Summary

This chapter provided a thorough description of the cases studied in this thesis. The time frames examined hereto are the periods of 2007-2013 for LDI case, and 2009-2013 for PLP case. During this period, LDI organized a countrywide cleanup event of the Estonian forests (2008) and other events at the country scale, namely My Estonia (2009), the Day of Civil Actions (annual event from 2010 onwards), and Food Bank (2011). In addition, LDI nurtured the growing of an international network of countries that endorse LDI values and organize their own cleaning events. PLP is part of this network of countries (LDI global movement) and, likewise, has organized a number of countrywide events in Portugal, including a cleanup event of the Portuguese forests (2010, 2012), and a forestation event (annual event from 2012 onwards).

Both cases have seen a significant transformation in their organizing structures during this period: LDI evolved from an informal group of friends into a foundation (2012), and PLP evolved from a grassroots civic movement into a civic association (2010). The use

of ICTs has remained integral to both cases, despite being more expressive in certain periods (e.g. preparation of a country scale event) and in association with some activities (e.g. mapping, communication).

Next chapter details the findings of longitudinal cross-case analysis. Specifically, I look at the cases from three perspectives: organizational structure, organizing process of collective action events, and use of ICTs throughout. The presentation of results is interspersed with remarks in connection to the background literature, and the interpretation of findings is provided in chapter 6.

Chapter 5

Cross-case Analysis

The previous chapter presented the two cases studied in this thesis: Project Let's Cleanup Portugal (PLP) and Let's Do It (LDI). The case narratives detailed, among other things, how the movements emerged, their main achievements, and how they evolved over the timespan considered in this study: from 2007 to 2013 for LDI, and from 2009 to 2013 for PLP. In this chapter I present the results of my study of PLP and LDI cases. First, I examine how the organizational structure of PLP and LDI evolved over time. This is followed by an inspection of each case's organizing of a large scale collective action event (the cleaning events), in which I pay particular attention to communication practices within the group of organizers and between organizers and the public at large (including volunteers and partners). The rest of the chapter revolves around the study of use of ICTs in collective action organizing.

5.1 Organizational Structure

The cases PLP and LDI are instances of consensus movements, that is, a collective of individuals and/or organizations in which participants share a certain interpretation of the world (similarly to social movements), but the movement's collective action does not take

a conflictual element, as in the case of social movements (Della Porta and Diani, 2006). A distinctive aspect of PLP and LDI organizational structure is the degree of central organization. Centralized organizations are hierarchical, with a conspicuous leadership that makes decisions enforced through rules. Conversely, decentralized organizations have little to no hierarchy: they distribute knowledge and power across its units and members, and often have a meritocratic leadership that leads by example (Brafman and Beckstrom, 2006). Organizations with a strong internet base tend to be more decentralized. Oftentimes, organizations combine characteristics of centralized and decentralized structures.

In both cases, the dynamics and the structure of the civic movement changed after the first countrywide cleaning event: PLP first unfolded as a decentralized structure and later became more centralized; conversely, LDI was fairly centrally planned in the beginning and became decentralized with the internationalization of the civic movement. After the success of their first organized cleaning event, both PLP and LDI evolved towards institutionalization: PLP became the civic association AMO Portugal, and LDI grew an international network of civic movements that affiliated with LDI global movement and founded the Let's Do It Foundation. Nowadays, PLP and LDI operate much like hybrid centralized and decentralized organizations: they do have some hierarchy that creates the vision and consistently holds the core and edges together (the core team of LDI global movement and the national coordination of AMO Portugal), but they decentralize the process of organizing collective action across districts and municipalities (AMO Portugal), or across countries (LDI global movement).

Next, I examine the organizational structure of both cases before and after institutionalization. In LDI case, we will see how the more centralized structure of Teeme Ära became more decentralized with the growing of international civic movement Let's Do It! World; as to the PLP case, we will see the opposite effect as we examine how the flat

structure of Project Let's Cleanup Portugal became more hierarchical with the founding of the association AMO Portugal.

Teeme Ära

Before the international civic movement Let's Do It! World took off, the organizational structure of LDI tended more towards centralization. The first organized cleaning event was fairly centrally planned but its organizers also sought to grow grassroots' participation as we will soon see. As an LDI interviewee puts it: *I think it worked like small organizations or maybe small companies. You know, some of us have an entrepreneurial background and so we certainly realized that this would not be a top-down directed thing... so there was no CEO or something like that... but we realized that we would need some sort of organization, some sort of core group of people who takes decisions; other people were less involved and... what can I say? let's say that the hard decisions were done by a group of about five people.*

Figure 5.1 is a depiction of the organizational structure of LDI, at the time they were organizing the countrywide cleaning event (2007/2008). The core team is formed

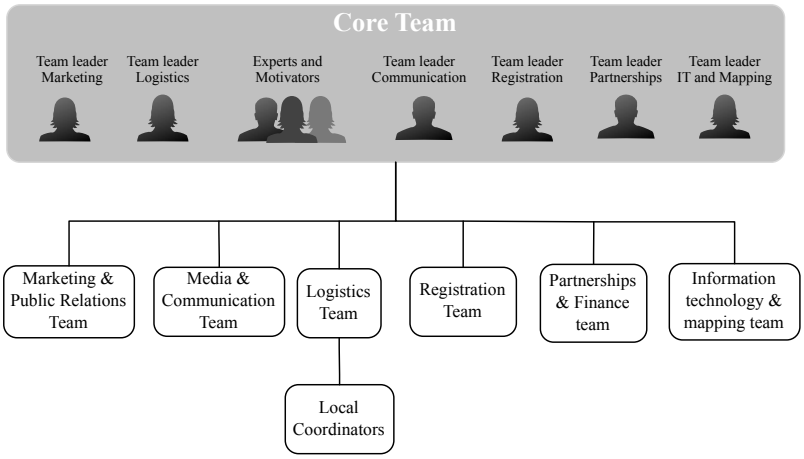

Figure 5.1: Organizational structure of Teeme Ära

by the leaders of the different teams involved in some aspect of organizing the cleaning

event together with other members having the role of experts or motivators. An LDI interviewee explained that the different teams had much freedom into deciding how to translate the core team decisions into action: *Every team had like a head of the team, and we made meetings with the heads of teams... But actually every team had big possibility of deciding by themselves how they wanted to manage, they were autonomous.*

The activities of mapping the dump sites and the actual removing the litter from the forests happened at a local level and therefore the cooperation with local level institutions, such as counties, municipalities and parishes, was of utmost importance. Teeme Ära engaged a large number of regional coordinators to act as the interface between the core team and the various counties and municipalities. The following quote explains how this has worked in practice: *Every municipality had a coordinator on behalf of LDI team. Logistics and registration process were coordinated centrally, but local coordinators hand in hand with the local governments were responsible for organizing the food and also some of the necessary materials for the cleanup... Local community leaders were extremely important in logistics planning and geomapping, because they knew about the local circumstances and could help LDI team with local data and knowledge.*

Combining central level decisions with local level implementation was not without tensions. An LDI interviewee explained that *for a municipality or parish cleaning seems like a good idea but then it's like other people coming and telling them what to do, and they are not particularly interested in that. I guess we were a bit naive about those things and should have started by generating more good will on a local level in the beginning... Our understanding was different from their understanding: we thought that people would go somewhere to clean, and on a local level people saw that they would go nowhere because they already were where they wanted to clean. So, we thought that we would like centrally plan everything and then it would happen, but in reality people at the local level generally wanted to do a lot of things by themselves.*

Even though Teeme Ära was not a formal organization, its logic of action is akin to organizationally brokered collective action (Bennett and Segerberg, 2013) because there is evidence of Teeme Ära providing leadership, mobilization of resources, and collective action framing. Moreover, communication was centered in organization-created action frames that offered limited possibilities of personalization and interaction between participants. The following quote of an LDI interviewee depicts an example of this: *We used marketing possibilities through the internet and made web banners that we invited people to use and to put up to their blogs and their homepages... so that people would not be passive receivers of the campaign, but actually active parts of the campaign. They did not just read the texts and see the posters and see the web-banners, but instead they could download all of those elements of the campaign and be themselves part of the marketing and part of the campaign.*

Centralized organizations can be successful and effective at organizing consensual collective action, as this Estonian example shows. Also, it is more straightforward for this kind of organizational structure and action logic to secure recognition and credits for the results of collective action than it is for crowd-enabled or organizationally-enabled connective action (Bennett and Segerberg, 2013), as we will see with PLP case. However, such recognition is not without surprising consequences, as this LDI interviewee put it: *What happened [after the cleaning event] that we couldn't predict so well was the fact that suddenly we were responsible for all the waste in Estonia. We started to get some emails and even the local authorities started to talk like we were some kind of... hum I guess we were seen like some kind of institution that had been created to permanently take care of the waste problem. People kind of assumed that we would take care of any kind of unauthorized waste that is lying on the grounds of Estonia and also that we would fix any other big problems that we are having in the country... In a way it was flattering but also surprising because we got a lot of other people involved and it was kind of OUR*

project, and not just one group's project. So we felt in our own skin that, although we had done something that demanded a lot of energy from us, people immediately started to expect more and more and more!... And this was a very confusing position to be.

Let's Do It! World

The internationalization of the civic movement induced changes in the organizational structure of Teeme Ära. In response to the growing requests for advice on how to replicate the success of Teeme Ära in many parts of the world, the core team soon realized that they could have a catalyst role in getting other countries to organize their own cleaning events.

After helping Slovenia, Portugal, Lithuania, Romania, and Latvia organizing their own cleaning events in 2010, the idea of taking the movement to a global level starts to grow, as this LDI interviewee explains: *Our only goal was to clean up Estonia but during the cleanup day there were some people here from other countries and also some journalists, and so the news went out. And then in the beginning of 2009 a 5-minute video about the Estonian cleanup was produced, and this went really quite viral. So emails kept coming to info@teema.ee saying that: well it's a great idea and we want to do it in our country and how should we do it? can we ask you some questions? can you help us and give us some advice and so on. And so we were answering and linking people – for example there were maybe two requests from India, so we told them that maybe you could talk to each other... and it was growing, more requests coming in and more people getting interested in it. So, we had a small get together in 2011 and we dared to dream: it's our movement that is spreading... what if we propose a global format to the whole thing? and thus the campaign World Cleanup 2012 was born.*

The core team quickly adapted the structure to the needs of the nascent global civic movement, as the following quote of an LDI interviewee illustrates: *In 2011 we could do*

more intensive work and so we produced some manuals, and we got some money from the Estonian government to hire some people to work on it, especially the regional team. They did a huge work of systematically approaching all the countries in the world, finding people there who could start the cleanups, sending emails, and all that. The communications and marketing teams provided all the media and the framework to support it [the global movement], the press releases in different languages, and created the media databases.

A global civic movement, such as Let's Do It! World, is too complex to operate in a centralized way – it is virtually impossible to organize or to control how cleaning events are organized in countries throughout the world. Nonetheless, to hold it all together, in a consistent way, it does need a unified message and an embracing vision. An LDI interviewee described the organizational structure of Let's Do It! World in the following terms: *It's not a hierarchical structure, it's a network of teams all over the world... In order to build up a team and to keep the team together you always need some kind of mission, some kind of common goal, and to create this common goal and to bring this team together around that goal, you need a team of people who, you know, starts with it. So, this is why we have this global team, and that's how it's a two-way structure: you have the networks of the teams – the local teams who are totally responsible and capable of carrying out the actions in their own location, and then you have the global team who is in a supporting role in the sense that it brings the network of the teams together under a certain goal or mission, helps them to connect with each other and to benefit from each others' experience, and coordinates the larger message and the communication about the whole network to the public.*

The organizational structure of LDI global movement is depicted in figure 5.2. In this figure the global team and the network of country teams are linked through the regional coordinators team, who acts in a supporting role and enacts the vision of the global team. This structure is akin to an adhocracy (Mintzberg and McHugh, 1985) in that

leadership (the global team) has an influential role but does not rely on traditional formal controls. A critical aspect is the creation of an ideology that embodies the purpose of the organization, which is understood and subscribed by movement followers.

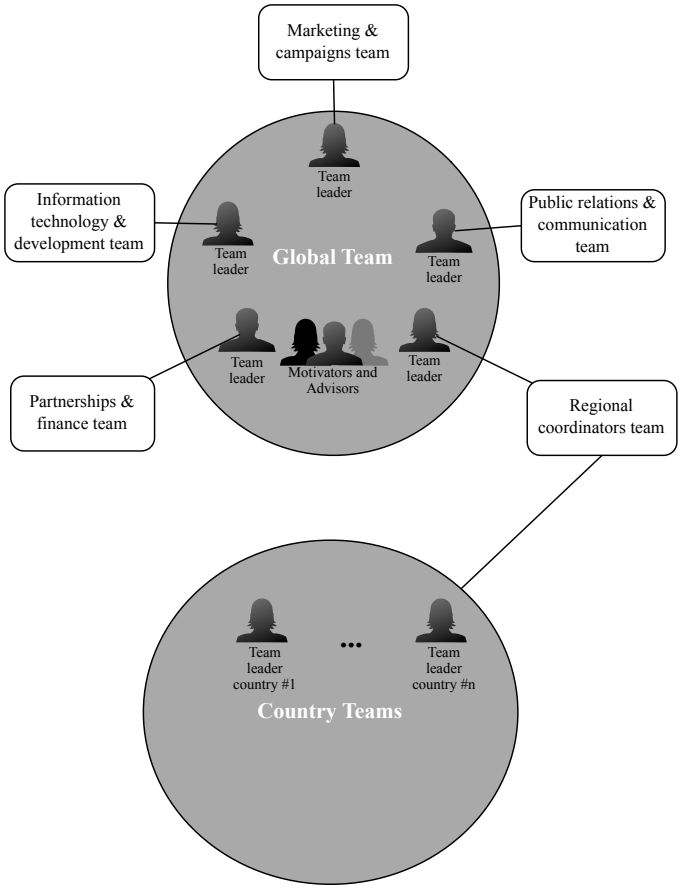

Figure 5.2: Organizational structure of LDI global movement

This kind of hybrid (centralized and decentralized) organizational structure is flexible because it can accommodate a small or large network of value-based country teams. Besides, it's a permeable structure that thrives on the talents of those that naturally gravitate towards it, as an LDI interviewee explained: *it's a meritocracy, you know? anyone who wants to work is immediately sucked in and given something to do, and there is actually no real structure or structure in a chain of command way. I mean, there is a structure: ok, there is the regional team, there is a regional coordinator, the*

communication team, and so on. But in a chain of command sense, there's not – it's flat.

However, the drawback of this kind of structure is that it may be less reactive than structures with a well-defined chain of command. An LDI interviewee reported that: *Sometimes this flatness can be really annoying because it is hard to get a final answer. Maybe the communication team won't agree or others won't agree and so on, and then if you are dealing with businesses, you don't have time to wiggle out so much. I need a final decision, I need to sign the papers!... But it's an evolving process, you know? We're only a few years-old project, so we are still learning.*

The logic of action of LDI global movement resembles what Bennett and Segerberg (2013, p.13) categorize as organizationally enabled connective action or hybrid connective and collective action. That is, "loosely tied networks of organizations sponsoring multiple actions (...) around a general set of issues in which followers are invited to personalize their engagement (more or less) on their own terms." The country teams, acting as followers of the global movement, have complete autonomy in deciding how to enact the vision of the movement. For example, teams may decide to organize smaller cleaning events (cleaning a city instead of the whole country), or they may decide to organize other types of events, such as reforestation projects or recycling awareness campaigns.

Furthermore, the global movement's communication is centered in network-created action frames, much as Bennett and Segerberg (2013) describe as typical of hybrid connective and collective action. For example, the communication team weaves together the stories of different countries organizing collective action events throughout the world to deliver coherent and integral messages, in the form of press releases, to international media agents. These messages embody the values of the global civic movement, as a network of countries that value active citizenship, are capable of organizing collective action in order to live in a world without garbage, and conspicuously reflect back on the

origins and previous successes of the global civic movement.

Project Let's Cleanup Portugal

Organically, PLP was organized in a way much similar to internet-based decentralized organizations. Figure 5.3 shows the organizational structure of PLP, at the time they organized the first national scale cleaning event (2009/2010). The figure attempts to depict a network kind of structure in which the national coordination team is at the core of the network, and the district coordinators (also part of national coordination team) are acting in a bridging role between the core and the different branches of the network. Most district coordinators were also part of a municipal team. Their role, in the words of a PLP interviewee, was: *... to explain, especially to the municipal groups that started to take form in the community website, how we were going to do it [the cleaning event] and to motivate them to do it. First, we had explain them what was the method we had devised to reach our goals, and then we had to help them to form a team and start working.*

The municipal teams were autonomous in the sense they were fully responsible for organizing the cleaning event at the local level. The decision to decentralize and to logistically operate at the local level was made early on because national coordinators realized that people, at the local level, are more aware of their needs in terms of cleaning supplies and heavy machinery (dump trucks, excavators) depending of which dump sites they intend to cleanup and what kind of garbage is lying there. Moreover, local companies and organizations are more eager to collaborate with municipal teams because, as a PLP interviewee emphasized: *For the cleaning supplies, we preferred to contact local companies because people collaborate more easily if it's for an event in the area where they live or work, given that they will get to see the result of their support.*

The national coordination team also worked on finding supporters and partners for the

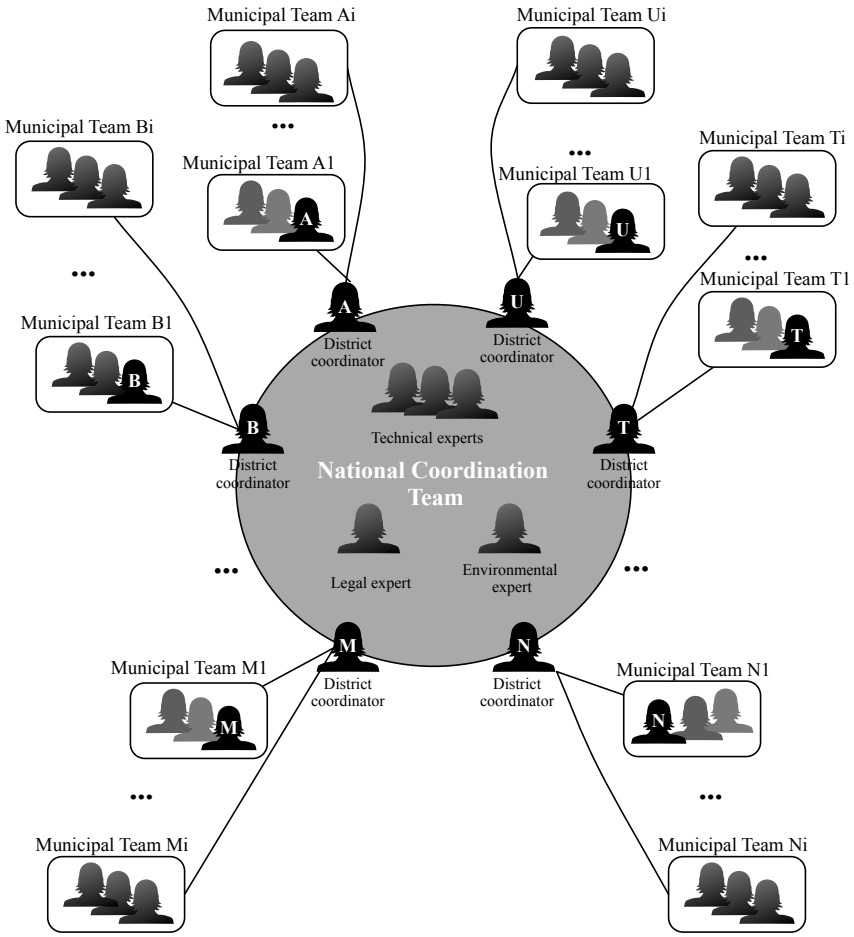

Figure 5.3: Organizational structure of Project Let's Cleanup Portugal

cleaning event, and especially on the communication with national mass media and on the liaison with central government. The key, strategic decisions about the civic movement were taken within the small founding group of district coordinators. The following quote illustrates one of such decisions: *There was a major disagreement right in the first national meeting of volunteers. Fundamentally, the opinions were polarized between two groups: one group wanted to create an NGO and raise funding from governmental subsidies to organize the cleanup; the other group wanted to organize the cleanup without raising funds – by finding partners to donate the necessary materials and services... After discussion and voting, a majority group decided to proceed with the partnerships idea. Then, we exchanged contacts and decided to create a discussion group in Yahoo for working on documentation so we could continue building on this idea of working with 'no money'.*

Further decision making resulted from a process of pragmatic discussion that happened in the community website and in the aforementioned discussion group of national coordination team. A PLP interviewee explained this aspect as follows: *There was no hierarchy, no board of directors, none of that... The online forum [in the community website] was the trustee of the different opinions about any matter: it was there that we listened to others and determined the final opinion or what would then be the decision. The bottom line is that the forum [in the community website] was 'the heart, the kidneys, the stomach, and the everything-else' of the project. It was like a meeting place were people opinionated and incrementally corrected those opinions until a final decision was reached.*

Another important aspect was that leadership was meritocratic. This means that leadership floated among the group, with leaders emerging according to their ability and commitment to work on some matter. A PLP volunteer explains: *So, actually we can't say that we had a leadership, although we felt that there were two or three people that were like 'the godparents of this child' [in figurative sense - meaning: the founders of*

the movement]. We recognize them so not because they started the whole thing or posted more often in the forum, but because the quality of their opinions was widely recognized. Leadership was pretty much the outcome of posting and discussion, and a curious aspect is that leadership was kind of sectorial. For example, from a certain point we realized that we needed to define some rules so that we could ensure the safety of volunteers handling the garbage, and there were two or three persons that were more dynamic on this aspect – who had nothing to do with those 'godparents'. So, they led the whole thing about creating these regulations... In reality, everything happened according to one's ability to decide and to work on some matter.

The decentralized structure of PLP and the centrality of internet platforms, such as the community website and the various discussion groups set up in Yahoo and Google, as organizational hubs are evidence of PLP engaging in what Bennett and Segerberg (2013, p.13) call crowd-enabled connective action. In this type of action, internet platforms are the "most visible and integrative organizational mechanisms", and often the platforms are equated with the action itself. Indeed, when asked about the community website PLP interviewees remarked things such as:

- *The face of PLP was the community website*;
- *Everything pointed to the community website*;
- *I became involved through the community website*;
- *It was the place where you could find the groups working on PLP*
- *The community website organized individual participation*
- *The community website was a down-to-Earth tool and a facilitator*

Connective action resembles collective action but operates with a different logic: one that downplays the importance of formal organizations and the need for exclusive, collective action framing. The personalized communication that is paramount to connective action is facilitated by rather inclusive action framing, such as the memes that PLP

adopted from its beginning (emphasis added): ‘*“On the 20th of March of 2010* ***we*** *are going to cleanup Portugal! And* ***you****? Are* ***you*** *going to stay at home?!”*; and *“****Let’s all*** *cleanup the Portuguese forest in a single day!”*. The development of large scale connective action leverages on the symbolic inclusiveness of this kind of memes – that is, the framing of the action in a way that invites people to bridge their differences about a common problem, and also on the use of technological platforms that make possible to share these memes across networks (Bennett and Segerberg, 2013).

Despite the importance of ICT platforms, organizing a cleanup of the forests at the country scale required a lot of offline work. A close examination of PLP data showed that the organizers of the local cleanups (municipal teams) did not get stuck in this initial phase of dominant crowd-enabled connective action. As such, Cardoso et al. (2013) identify four developmental phases in PLP case, each with a particular dominant logic of action:

Phase 1 - building structure: evidence of a dominant connective logic of action where ICTs facilitated bridging and grouping like-minded citizens that organized themselves into groups, first within the community website and later in their actual communities;

Phase 2 - building support: evidence of a dominant hybrid connective and collective logic of action that involved gathering resources through partnerships with public and private organizations and collecting information (mapping of dump sites) that contributed to legitimizing and stitching PLP’s municipal teams as a civic movement;

Phase 3 - scaling: evidence of a dominant hybrid logic of action with a strong emphasis on the connective capacity. The focus of this phase is the promotion of the cleaning event using ICTs and leveraging the resources of the network of partners (especially mass media) to mobilize the crowds to collaborate with municipal teams in the

removal of garbage from previously identified locations;

Phase 4 - formalizing: this is a phase of dominant collective logic of action in which a substantial part of the connective capacity of PLP faded away as municipal teams disbanded and the community website was closed. The founding of the association AMO Portugal transitioned the civic movement into a formal organization that preserved the existing ideology and quelled the draining of organizational capital that the civic movement had built.

Decentralized organizations often have difficulties in securing recognition for success. Indeed, there were pressures for politicization of the civic movement's success. These pressures were easily noticed and surmounted in the community website, thanks to regular monitoring by users with administrative privileges. However, they also existed in the offline work of municipal teams, as this PLP interviewee remarked: *When the project reached a certain level of notoriety and respect there were many people, placed in certain political positions, that tried to stand out in the success of a local event for which they did nearly nothing to deserve it. I did not want to draw attention to myself because I don't need it... But I think that politicians shouldn't get it either because it's the work of the community that deserves to be emphasized.*

Because the civic movement had diffuse boundaries and open membership, it was difficult to contain political pressures especially at the local level. Not seldom, people that live out of exploring their image in relation to community achievements seize the chance to take credits for themselves by associating with collective action successes[1]. The following quote illustrates some spillovers of this popular event to local politics: *We were contacted by a deputy, from the opposition party, who wanted to form a group with his friends to cleanup a dump site. We acceded to his request because he was lobbying for*

[1] A good example of this is the abolitionist movement in England: most books on the matter have failed to acknowledge its rightful initiators – a London attorney that worked on the cause together with Quaker groups, to give credit to a politician for the outlawing of slavery, as Brafman and Beckstrom (2006) explain.

PLP and was acting out as a volunteer... well, like all of us. But then in the cleanup day he came and brought the journalists with him... and in the next day there was an entire news piece about him and his group, as he wanted... so he got away with his reward.

The cleaning event organized by PLP in 2010 was quite exceptional in terms of mobilization of citizens around a cause. In the history of contemporary Portugal, a comparable mobilization of civil society happened only a couple of times, of which the most recent was the pro-East Timor independence movement in 1999[2]. Hence, the sheer success of the cleaning event was promptly recognized in the community website and in many internet forums, and was readily documented with numerous pictures of citizens working together, on a rainy day, to improve their communities. The emotional outbursts of PLP participants in these outlets bear witness of the extenuating efforts of a large number of citizens that worked in the organization of the cleaning event as if it was their full time job, often accumulating this work with a real daytime job.

Eventually, the environmental value of PLP's communication was recognized by a Green Project Award in 2010. However, the utmost recognition of the work of thousands of anonymous citizens – that is, the preservation of the outcome of the cleanup – fell short of the high expectations participants had for the aftermath of the event. On the one hand, despite dumping of domestic garbage in the forests ceased, dumping of construction debris and other materials with little to no transaction value in the waste business resumed shortly after the cleaning event. On the other hand, the environmental policies and regulations in place did not work to prevent this kind of dumping and the existing legal framework has not been revised to accommodate the alterations that could curb these illegal depositions.

[2]The pro-East Timor independence movement was an informal coalition of Portuguese citizens, civic associations, NGOs, and East Timor refugees and associations geared towards the defense of human rights in the territory of East Timor (a former Portuguese colony). This territory was occupied by Indonesia in 1975, but in 1999 its native people voted for independence in a referendum. However, the poll results were not accepted by Indonesia militias and a wave of violence against native people emerged, in which thousands were killed. The movement sought to mobilize the international community to quell the violence and to help in the territory's transition to independence (Cardoso and Neto, 2004).

In general, PLP interviewees manifest disappointment about the aftermath of the cleaning event in 2010. Reflecting upon the results of this civic initiative, a PLP interviewee noted that: *Most of all, people wanted to see their work respected. We wanted to see the mindset of Portuguese people changing. We had 1% of population, and actually there was some change because some dumping sites remained clean, but we didn't have the ultimate outcome that we wished to have. There was some improvement but we, as citizens, have a lot to learn because 99% was not there. Probably, if some from those 99% see an illegal deposition of garbage they will do nothing. If only we could have attentive and active citizens that will take action if they see others doing wrong... And the local and central government, as well as all the others involved in the issue of waste, they too have a lot to learn and change.*

Association AMO Portugal

AMO Portugal is a virtual organization. Although an official address exists for its headquarters, in reality its collaborators very rarely use that office. Collaborators work remotely and communicate via email. Regular meetings are done with video-conferencing software, such as Skype, and in-person meetings are extremely rare (if they exist at all). Because of restrictive by-laws, AMO Portugal can be funded only by in-kind donations from partners and hence its ability to operate fundamentally reckons on the resources of its volunteer staff. These are challenging restrictions that limit the agency of AMO Portugal, which is especially aggravated in times of economic downturn due to the increasing difficulty in mobilizing support from volunteers and partners.

As the legatee of a successful grassroots civic movement, AMO Portugal has been creating its own identity and defining more clear boundaries. These boundaries grow out of a logic process of rationalization in consideration of the resource constrains explained in the preceding paragraph. Consequently, there has been a tendency to centralize

the structure. The following quote explains the current structure of AMO Portugal: *We created an association to motivate citizens to participate in actions at the national scale but we couldn't, because it is impossible, locally coordinate actions on the 308 municipalities of Portugal. So, in terms of structure, we have the national coordination that consists of the board of directors of the association and a few other people that are specialists in some particular area. Then, we divided the country in seven regions, having each member of the board of directors taking responsibility for one region. Each region has different districts and the districts have local teams in the municipalities.*

Figure 5.4 depicts the organizational structure of AMO Portugal. This figure shows the national coordination overseeing a territorial-stratified structure nested in regions, districts, and municipalities.

In PLP case, changes in the organizational structure have been followed by changes in how the organization communicates. Nowadays, AMO Portugal uses pages and groups in social networking sites and encourages municipal teams to use whatever communication channels they elect. The online forum of the association, which is integrated in its website, is apparently the tool that can offer more possibilities of interaction with the association's constituency. The decision to discontinue the community website was mostly economical but was also in line with the reformatting of the civic movement as an association, as PLP interviewees have noted: *We didn't want to continue with Ning in the way he was used for PLP, and we agreed it no longer made sense because it was going in a direction completely off-topic, with people making use of the network to publicize other initiatives that had nothing to do with the association.*

The rationale and workings of the online forum, which mirrors the controls of the existing organizational structure, are explained next: *The website of AMO Portugal has a forum, where anyone can register, but it has areas: it has an area for the board of directors, a public area for everyone, and areas for the various municipalities and districts.*

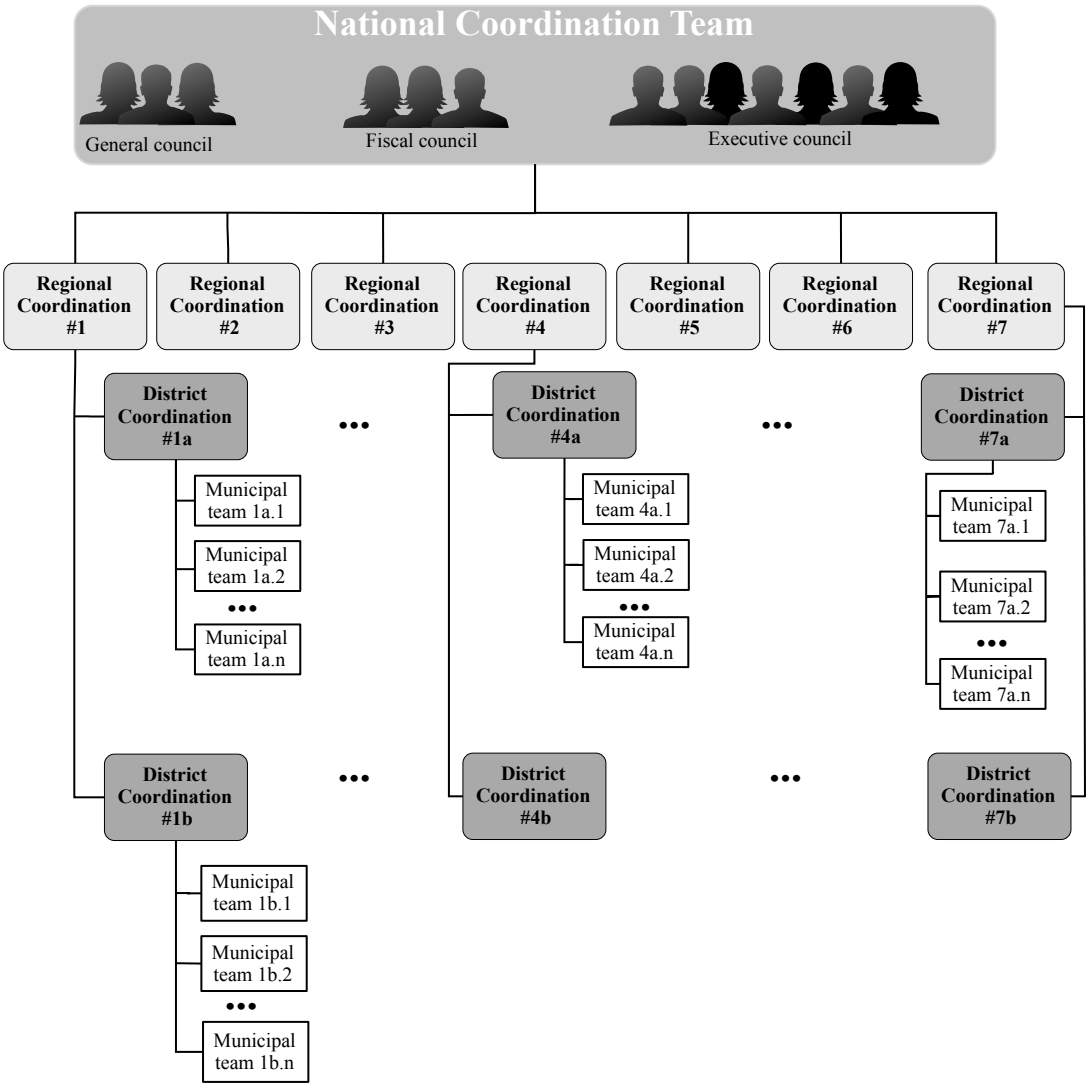

Figure 5.4: Organizational structure of AMO Portugal

We are perfectly ok with people who want to come in and comment, no problem at all with that. But our opinion is that only district coordinators and municipal coordinators should be able to talk directly to the national coordination. We want to avoid situations where two people from the same municipality had a question and each asks it to a different national coordinator. Then why not asking directly to their municipal coordinator? And if the same doubt about an issue exists in different municipalities, then they must rise the issue to the district coordinator. And if the doubt exists in the whole country, then we can issue a newsletter to clarify it. Now, we can't have like 500 emails from 500 persons across the country! 500 emails or 500 posts in a forum! That is what we tried to do, by not using a community website like Ning.

It is not clear from the data how changes in the organizational structure have affected the relationship of AMO Portugal with the municipal teams in terms of their autonomy. For example, some municipal teams have remained autonomous and continue to work independently, as the following quote illustrates: *What we did after 2010 was driven by the municipal team only, regardless of whatever was happening in the rest of the country. We said: we are going to do this event and we can do it under the name of AMO Portugal – and the association can enjoy the laurels befitting our action, or we can step down from AMO and do it anyway. We were pretty much determined to organize the event locally, even if AMO decided to do nothing.* Also in this respect, another interviewee remarked: *Sometimes, we learn about events organized by people who say they are related to AMO Portugal not because they reported that to the association but because we read it in the newspaper or someone finds the news piece somewhere and sends us.*

However, not all municipal teams enact this kind of relationship with AMO Portugal. An interviewee noted that *the events are themselves pretty much organized and do not require anyone to come in with a structure, like an NGO, to participate in them... We even received many things from the district coordination, for example cleaning supplies*

and drinking water. And another interviewee further added that: *The national coordination helped us with supplies: they gave us trash bags and drinking water; and then we found a company that donated the gloves. They also shared contacts and gave us useful advice... and then we had support from the website: the manuals that were available, and the volunteers that registered through the website. Most of our volunteers actually came to us primarily through the registration in the website of AMO Portugal.*

I expected to find more evidence of a collective action logic in an organization like AMO Portugal, especially because of its structure. In practice, the hybrid collective and connective logic tends to dominate in the collective action events they organized. Traces of this hybrid logic are for example the leverage of municipal teams, who contribute in their own terms to the collective action frames created by AMO Portugal, and the relatively limited role of ICTs as the organizational infrastructure for collective action events.

However, an important point to emphasize is the heterogeneity of municipal teams: whereas some teams act independently and do not submit to formalized relations within the organizational structure, others act as followers and enact formalized, resource-based relationships that are typically found in organizations operating with a collective action logic. Finally, I suspect that an important obstacle to the development of a collective identity could be the distant, at times broken, relationship of the organization with its grassroots constituency.

5.2 Organizing Collective Action

In the previous section I discussed the organizational structures of LDI and PLP cases and identified two different arrangements with respect to the organizing of cleaning events: for LDI case, the cleaning event was fairly centrally planned, with a relatively small share of responsibilities delegated to local level institutions; in PLP case there was

a large delegation of responsibilities in municipal teams, and the national coordination was mostly 'the glue' that held the civic movement together, keeping responsibilities in terms of communication, partnerships, and public relations at national scale. This section examines the activities involved in the organizing of country-scale cleaning events with a particular focus on communication practices. Figure 5.5 depicts the sequence of activities involved in the organizing of cleaning events for both cases and also shows the dependencies between different activities.

In this representation the activities are numbered in sequence and the dependencies between activities are illustrated by arrows. In PLP case, the activities performed at the local (municipal) level are shaded in gray color. The activities are also sectioned in four groups, which are delineated by the wider rectangles with rounded edges. The four groups of activities are, from left to right: mapping; communication; recruitment and partnerships; and logistics. The kick-off activities, labeled in the figure with the number one, are different: for LDI case, *mapping* precedes other activities – that being so because it was necessary to assess a priori how much garbage existed in order to plan and design an event scaled accordingly to the 'problem size'; whereas for PLP it is *communication* that paves the way for the preparations that follow, wherein part of the activities take place at local and national level (communication, recruitment, and partnerships) and some activities are assigned to local level structures (mapping and logistics).

The remainder of this section examines in more detail the communication of PLP and LDI cases. Whereas communication has remained a central activity in both cases (before and after institutionalization), activities such as mapping and logistics have declined in importance, even to the point that these activities are not done anymore. Moreover, the use of ICTs is implicated in communication in both cases, and collective action scholarship emphasizes the importance of communication for successful collective action.

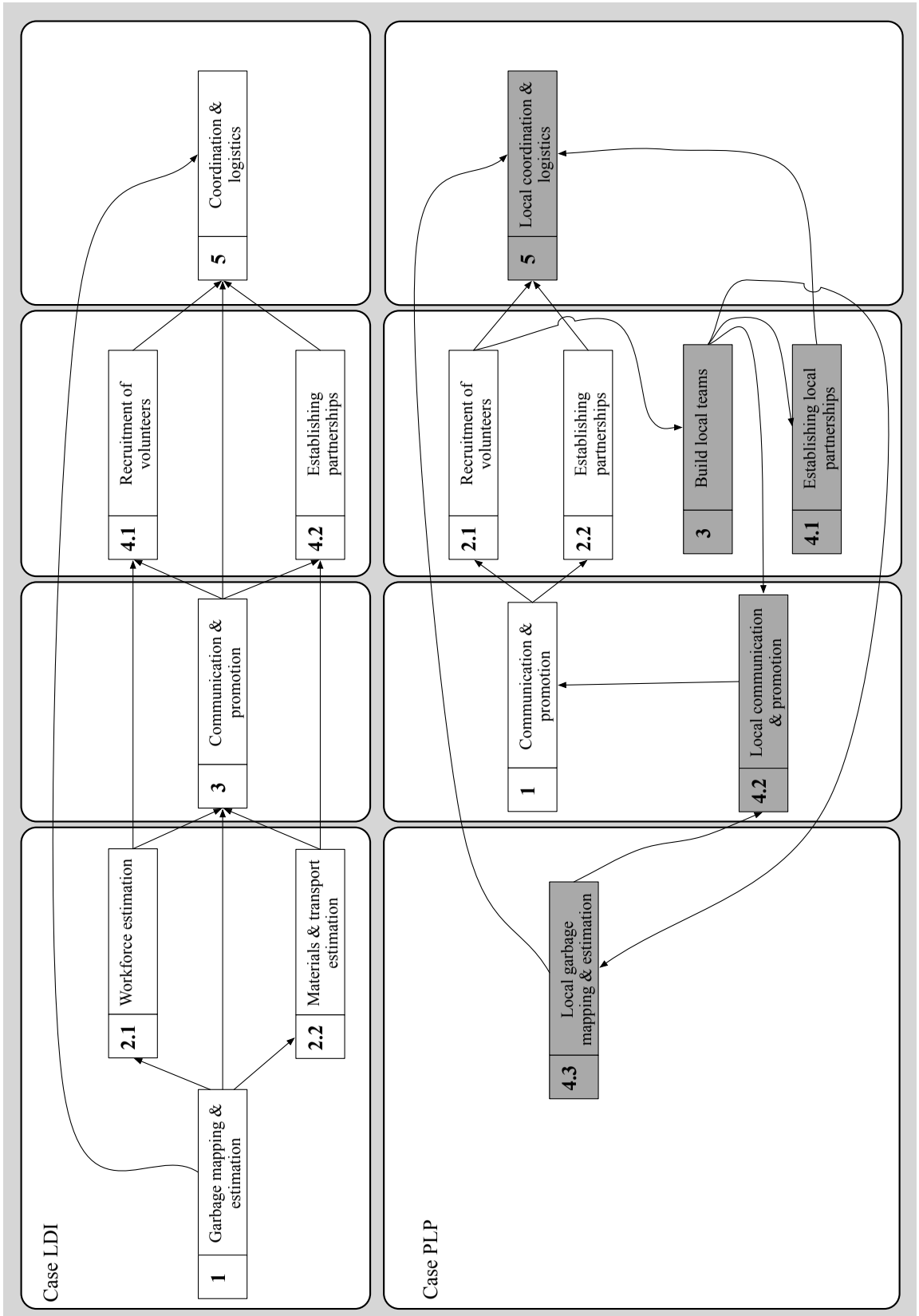

Figure 5.5: Cross case analysis: sequence of activities in organized cleaning events

Communication

Communication is essential in the coordination of groups of people working towards a common objective (Fulk et al., 1996). The preparations of LDI and PLP cleaning events showed that communication is also fundamental for mobilizing financial and human resources to support and participate in collective action. The following quote of an LDI interviewee illustrates this point: *I think communication in this kind of organizations like NGOs is very important because NGOs are communication, they cannot survive without explaining what they are doing and why it's important. It's actually through communication that they 'sell' what they are doing. Take for example the cleanups: we are doing something for the world, but for that to be understood and to be supported we have to explain why we are doing it and how people can help us.*

Communication, public relations, and marketing are a core organizing activity in LDI's events. In fact, the cleanup project Teeme Ära and the other projects that followed thereof were seen as big and whole communication projects in their own right. The communication team of LDI has striven to align strategy and vision with communication and marketing, as they explain. *We have had other big events after the cleanup action, and these have been very big communication campaigns, everywhere in Estonia, so of course all of them are big communication projects. And I think that what has worked is that everybody in Estonia knew Teeme Ära, this is a very well-known brand, and all our subsequent events were branded under this name.*

Comparing to LDI, the communication strategy of PLP was more improvised and emergent. Communication originated first in the broadcasting of emails and sharing of content from the community website, and followed with partnerships with local media, such as local newspapers and regional radio. As a PLP participant conveyed: *It was actually this communication platform that we had with Ning [community website] and the constant emails we were receiving and forwarding, over and over, to our entire personal*

mailing lists that, in my opinion, accounts for the success we had in mobilizing people for the cleanup event.

Later, the civic movement also drew attention of national mass media partially because famous personalities endorsed and supported the organization of the cleaning event. *The social networks and internet have a lot of power, but heavy media such as television channels have even more. Hence, it was when we got the endorsement of the President of Republic that the television 'fell over us' and sudenly we were everywhere and everyone knew about us. Probably this is what causes that, on a raining day, we had 100,000 persons out there in the forests collecting garbage.*

Communication, in both cases, combined 'new' and 'old' (traditional) media, thereby showing that mobilization builds on a hybrid media system that encompasses online and offline media (Chadwick, 2013). Both PLP and LDI had two levels of communication in their organizing of cleaning events: the internal communication among the organizers of the cleaning events, and the external communication between the organizers and their audience of potential supporters and participants. Next, I discuss these different levels of communication from the particular angle of the ICTs used.

Internal Communication

The use of computer mediated communication for internal communication purposes was significant in both cases. Email, mailing lists, and discussion groups were fundamental for the articulation of national and municipal teams. Within the municipal teams of PLP the use of mailing lists and one-to-many kind of communication was the norm. The national coordination team and many municipal teams used discussion groups created in Google and Yahoo platforms as their main internal communication tool. The communication between national coordination and municipal teams was mostly based on the community website and on direct email. *We used Google groups to create mailing lists for local coordination groups. This was something for which I did a bit of forcing into getting*

people to use it because with the list there were no forgotten emails and you send the email to the list and it reaches everyone. And indeed there were many local groups using it throughout the country.

The municipal teams in PLP case kept in-person meetings to a strict minimum given that collaborators were volunteers that accumulated volunteer work with their professional duties. Hence, computer mediated communication was especially valuable for them because they needed an effective way of reporting the progresses and difficulties they were experiencing in the preparation of the cleaning event. The following quote is illustrative of internal communication in a municipal team: *Our meetings were basically to discuss the tasks that we had to do. For example: someone had to speak to the media, someone had too meet with this potential partner, and so on. So we divided the tasks and each of us took responsibility for a few, and after the meeting we moved on into actually doing the work. After a couple of days there was feedback by email, something like: 'this task is done', or 'I couldn't do this task', or 'I need help for this task because I am going to be away for the rest of week'. So, we had a mailing list to do this kind of reporting because there was always this preoccupation of giving feedback to the rest of the team and email was a very cheap way of doing that.*

In contrast, in person meetings were the norm for LDI case, and whoever could not join had the possibility of connecting through Skype. Emails were also used, but mostly on an one-to-one basis between team leaders and collaborators. Internal communication in LDI case was centralized by the communication team, in articulation with public relations (external communication) and marketing team. Hence, the pattern of communication and the ICTs used were different.

For example, when the cleaning event Teeme Ära was in preparation, the different teams had internal meetings and the decisions were registered in minutes that were prepared by a person who was part of communication team and had been specifically

hired to do that work. The objective was to align internal communication with the vision and strategy of the movement in order to deliver effective internal communication to all the teams involved and also to create meaningful content for public relations and marketing.

In the words of an LDI volunteer, internal communication is *something that holds everything together, it just helps to get information and to give information. It actually means that if you have the IT team, the marketing team, or partnerships discussions then there is almost always someone from communication team there too because... what should the one who is doing communication write about? So these people [from communication team] usually have to know everything that is happening in the organization because they need to have something to write about.*

Table 5.1 compares the internal communication of PLP and LDI before and after the cleaning event. Unsurprisingly, email is a consensual, generic tool for internal communication. In addition, we can discern other patterns: one is the centrality of in person meetings in LDI case, in sharp contrast with the minimized importance of contact in PLP case; and the other one is the significance of ICTs for electronic discussion in PLP case.

After the cleaning event, internal communication adjusted slightly to the changes in the organizational structure of PLP and LDI. For PLP case, in person contact remained secondary for the work of national coordination team. For example, before the founding of the association, the founding members had to agree on the by-laws of the association and this discussion was held in the community website of PLP. Moreover, in person meetings happened only in circumstances required by law, such as the constituent assembly of the association.

A PLP interviewee explained that *nowadays we use Skype to virtually meet every two weeks. Once, we met in person for an assembly of associates – it was the constituent*

Table 5.1: Cross-case analysis: internal communication

Internal Communication		
	LDI case	**PLP case**
Before cleaning event	▪ Centralized in communication and public relations team ▪ Mostly in person meetings ▪ ICTs used: email and Skype	▪ Decentralized in municipal teams ▪ In person meetings are minimized ▪ ICTs used: email, mailing lists, discussion groups, community website
After cleaning event	▪ Mostly in person meetings ▪ ICTs used by global team: intranet, email, and Skype ▪ ICTs used by country teams: mailing lists and social media	▪ In person meetings are minimized ▪ ICTs used by national coordination: email, Skype and Internet forum ▪ ICTs used by municipal teams: email, mailing lists

assembly – but that was all. It's true, we actually don't get together. I happened to meet the president a few times, but the others I know only their voice from the Skype calls and indeed there are persons with whom I speak a lot but I've never actually seen or shaken hands with them.

At the local level, the municipal teams that remained active after the cleaning event maintain closer interpersonal contact, yet they also have sparse meetings. The internal communication of municipal teams works like in most small organizations: there are email exchanges, phone calls, and meetings among the members of team. Among these means of communication, the use of email is more prevalent because a significant number of team members are volunteers who have their own professional duties. As an interviewee reported: *in-person meetings were rare because we found them unworthy... everyone had their job, so we had no spare time. So, yeah it was email and this kind of working within the internet that sustained our team.*

For LDI case, the internationalization of the movement was accompanied by a few changes in the internal communication. Most importantly, a global team with collabo-

rators from various countries was created, and they started using an intranet. Overall, the intranet has been useful for the reporting about the contacts initiated and developed by the regional coordinators team. However, internal communication has not leveraged fully the potential of an intranet tool.

In this respect an LDI interviewee reported: *the intranet site is for the global team and nowadays it is mostly used by the regional coordinators team for the management of contacts. But for the internal communication it wasn't used so much. Maybe lists or emails work better, I don't know... the other teams were not using it so much, so perhaps there were other tools or they didn't need it. But this in fact diminishes the quality of internal communication because the advantage of having all the meetings, and meetings minutes on the website, even in the intranet side, is that it gives really everyone the possibility to have an overview. I mean if you are new to the team you can see what has happened before. So, for the continuity of the work it's really important.*

Mailing lists are used especially for communicating with the network of country teams, as the following quote explains: *We have a weekly newsletter that we send out to emails and they [country teams] get a lot of information: first of all they get the information from the countries that are actively sharing information like: what are their plans for the future, what are they doing currently; plus, if they don't check out our homepage then from this email they get the information about the upcoming cleanup dates, which might be interesting information for them, for example for doing communication together if they are cleaning in the same week or something like that. And also, we inform if we have established any new partnerships or anything related to that.*

Yet, the benefits of sharing information in these outlets have not been perceived by all the parts involved. In practice, the liaison between country teams and global team is hard to materialize through ICT mediated communication, as an LDI interviewee puts it: *We started out by just having a website, then having mailing lists, then having newsletters*

via emails, then we even created a forum for questions and sharing problems... and we also had social media like Twitter and Facebook and whatever. And what we saw as a problem was that I think we created a lot of channels, but people were really not using them, and it's very difficult to say why is it so. Where they unaware of this network really existing or providing these opportunities?... it's very hard to say why people didn't reach out to all of these channels... but what we figured out is that people don't realize how big the network is and how useful it could be if them were participating in the network.

External Communication

PLP and LDI have been using newsletters, social media (Facebook, Twitter, YouTube), email, and their official websites for their public communication outside the boundaries of organizing teams. Electronic newsletters have been used by LDI since the Teeme Ära project, and nowadays it is still very important for disseminating news about the global team and the network of country teams. As the following quote explains, this newsletter is not segregated and therefore any interested person can subscribe and receive news about LDI global civic movement: *For example, we have the weekly newsletter for anybody interested in the teams, also for partners, and for other people who just want to get it. We didn't really select them [the newsletter receivers], mostly everyone who wanted to get it into their mailbox was added to the list.*

Similarly to conventional (protest) social movements, consensus movements like PLP and LDI also use social media. In protest movements, activists often resort to media that allows them to bypass gatekeepers so that they are able to convey their message unfiltered by mass media and mobilize people for their cause. However, media access and gatekeeping issues are seldom a problem for consensus movements. For example, PLP and LDI partnered successfully with traditional mass media, both at the local and national level, during the preparations of the cleaning event.

Table 5.2 compares the external communication of LDI and PLP. Overall, the

choice of ICTs for external communication is identical in both cases and nowadays is based on ready-to-use software, such as mailing lists, social media, and website. During the preparations of the cleaning event, PLP explored more the possibilities of mass communication facilitated by social media. LDI used social media to a limited extent before the cleaning event because in 2008 and 2009 popular social media sites, such as Facebook and Twitter, were not established in Estonia yet.

Table 5.2: Cross-case analysis: external communication

External Communication		
	LDI case	**PLP case**
Before cleaning event	▪ Mostly traditional mass media: outdoors, television, radio, and newspapers ▪ ICTs most used: mailing lists	▪ Mostly local mass media: newspapers, radio, and television ▪ ICTs most used: mailing lists, social media, community website
After cleaning event	▪ ICT based communication in tandem with press releases ▪ ICTs most used: mailing lists, social media, official website	▪ Mostly ICT based communication ▪ ICTs most used: mailing list, social media, official website

Nonetheless, the sharing of user generated content, especially the 5-minute video about the cleaning event that was produced in 2009 and shared in Youtube, has had a large impact in terms of getting other countries involved in LDI global movement, as this LDI interviewee puts it: *what we have mostly is that somebody finds about us and is inspired by the 5-minute video. Then, getting a country team on board is easier.*

Aside the inspirational video, social media is not heavily used by the global team for mobilization purposes. In fact, LDI seems to have a relatively limited presence in social networking sites, as for example its Facebook page has only about 10,000 followers[3], which is a quite small number for a civic movement that has involved more than 100

[3]This number is from 2013, when most of the data about LDI was collected. As of June 2015, the number of followers amounted to 23,000.

countries throughout the world and more than 10 million of volunteers.

However, what is perhaps more important in terms of social media communication is the connection of LDI's Facebook page to the Facebook pages of many country teams, as an LDI interviewee explained: *When we started, back in 2008, social media was not very widespread, but nowadays Facebook is very popular and actually I think the way it is used reflects very well the structure and the build up of the movement: we have LDI World page, which is in English and has around 10.000 fans, and then there are tens of other countries' pages, in their own language, which often are larger than the English page.*

This kind of connection is valued by both parts: for LDI global team, the Facebook pages of country teams provide something like a "window" that allows them to observe what is happening in other countries and what kind of work they are doing; whereas for the network of country teams, it is perhaps where the connection of the country team to the global movement is more visible and this is important for their framing of the local movement in the larger context of a transnational civic movement. The following quote is illustrative: *Every country has a closed group or a page for LDI movement in their own country, and because are members or fans of these pages or groups, we can ask questions or write some notes and get the information about their doings without bothering them with emails. We use this information in the global communication, and we share it in our channels, like in a press release or in the short news we send to the media contacts we have.*

Another LDI interviewee added that: *I've joined the Facebook groups of 30 countries at least, from different continents, to show that I am supporting them. I know from my experience that for some countries it's very important if you click like on their photo or their news because they feel supported. So it's a way of being connected to them, to show appreciation for what they share in social media and it is also motivating for them. And*

I guess for some teams it's also important that Estonians show their support through social media because they are more formal in their organizational structure.

As to the PLP case, the community website was instrumental in keeping participants informed about the progress of municipal teams and in getting participants involved and engaged during the preparations of the cleaning event, as a PLP interviewee explained: *At the time we had Ning [community website] where each municipality had a page and this facilitated a lot the dialogue with participants, because they could write messages there and then we responded to these messages. It also allowed everyone to follow what the municipal groups were doing because everyone had access to all the pages and so everything was visible... So, basically Ning [the community website] facilitated a lot this kind of interaction.*

This issue of visibility of the activities done by municipal teams relates to the surveillance enacted by ICTs. Because municipal teams' areas in the community website were open, the activities of municipal teams lend themselves to such monitoring. A metaphor for this is a glass house, where participants could visit the pages of different municipal teams and see how they were doing. The use of community website in this way potentially allows for reversed surveillance (Garrett, 2006), wherein the many (participants) observe the few (organizers) and not the other way around. However, the flip side of this kind of surveillance is that the activity of municipal groups is more susceptible to disruptive interventions, as this PLP interviewee put it: *I do not recommend others to use Ning [the community website] the way we did it. The problem was that anyone could visit the page of any team (local or national) and immediately start to criticize what the team was doing just for the sake of causing disorder.*

After the foundation of AMO Portugal, the community website was terminated. Interaction with participants is now directed to the online forum in the website of AMO Portugal. This forum is segregated and is much less participated. Moreover,

there are periodical newsletters that are sent directly to a list of subscribing emails. Hence, nowadays more emphasis is put on documenting the activities organized by AMO Portugal and on "telling others about us", as opposed to the previous kind of circular communication that existed during the preparations of the cleaning event.

AMO Portugal has its own Facebook page and the municipalities that have an active local team also have their own Facebook pages. Some of these local teams also maintain their own blog. Because the various pages are not related or connected, except for the 'like' they exchange, it is difficult for participants to get a sense of how big the network of AMO Portugal currently is. Whereas the community website was focused, Facebook is a generalist social website that brings in the additional challenge of thousands of posts trying to attract 'likes'.

In this respect a PLP interviewee related that *Ning [the community website] was really important for us and it was a shame that it was terminated. Nowadays, it is more difficult to be in contact with participants... Ning was helpful because we all could get in contact with everyone, we could open a topic for discussion and we interacted with one another and today we cannot do that as easily. We have a Facebook page for our group but almost no comments... we have more than one hundred "likes" so it's funny that people like it, but they do not interact in there.*

In sum, communication is indeed an activity that mobilizes a variety of ICTs, in both cases. A pattern that seems to exist in the empirical cases here discussed is that ICTs are used in combination, in order to convey a well-defined message and with the goal of drawing attention to the events that are being organized at different times. Next, I examine more thoroughly the role of ICTs in collective action organizing. I take an integrated perspective of organizing, beyond the activity level that was the focus of this section, and look specifically at what was facilitated or constrained by the use of ICTs in collective action organizing.

5.3 Use of ICTs

The previous section portrayed the collective organizing of cleaning events as a sequence of interdependent activities. In particular, I looked at the communication activity from the angle of ICTs used because it has remained a central activity in both cases over time: it was important during the preparations of the cleaning events and it is important nowadays for Let's Do It! World and Association AMO Portugal to fulfill their missions.

This section considers the role of ICTs in the organizing of collective action. In this study I take a stance of ICTs in use as "an extension of practice and also a part of structure – having dual effects and creating unintended outcomes", like Lamb and Kling (2003, p.201) argue. As such, the use of ICTs is entwined with collective action organizing, and therefore ICTs may not only facilitate but also hinder organizing.

The findings discussed here are in direct consequence of selective coding, as discussed in section in chapter 3. Hence, these findings are grounded in a close examination of interview segments that deal specifically with the use of ICTs, particularly those that express the different ways in which collective action organizing was facilitated or hindered by the use of ICTs. In retrospect, this focused analysis was done in two steps: first, I coded the text segments specific to the use of ICTs with the prefix *Tool* (e.g. code Tool:email); and second, I went through these text segments and coded again those that were referring to 'actions', 'practices', or 'capabilities' that had been facilitated or constrained by the use of those ICTs. I used the prefix *facilitated* or *hindered* in this second step (e.g. code Facilitated:Systematization, code Hindered:Mobilization). Next, I clustered conceptually similar codes into categories or themes, taking cues from the literature.

The resulting list of codes, sorted in categories, with respective code frequency is shown in appendix K. I refer to this quantitative analysis here not as an end in itself, but as a means to capture the traction of each code in the dataset. After weighing in the

lack of sufficient text segments to support some codes, I decided to discard six codes from this initial list (the discarded codes are highlighted with an asterisk in the appendix). I considered the remainder codes more robust given the number of text segments that support them and the underlying triangulation of sources.

The clustering of codes resulted in the reclassification of data into seven higher level categories (or themes) that represent different dimensions of collective action organizing. These dimensions are: communication, connectivity, coordination, entry and exit capability, individual participation, legitimacy, and organizing costs. A graphical depiction of the relationships between codes and categories is shown in appendix L. For the purpose of easier interpretation of this figure, categories and their respective codes are alternatively displayed in gray color.

The next subsection is a focused discussion about the theoretical significance of these seven dimensions, provided together with the description of codes that define them and with illustrative quotes from interviewees. Subsequently, I take an integrated perspective of these dimensions to explain how ICTs facilitated or hindered the organizing of collective action in PLP and LDI cases.

5.3.1 Seven Dimensions

According to LDI and PLP empirical data, the dimensions of collective action organizing tightly entwined with the use of ICTs are: *1*) communication; *2*) connectivity; *3*) coordination; *4*) entry and exit capability; *5*) individual participation; *6*) legitimacy; and *7*) organizing costs. A close analysis of each of these dimensions follows in this section.

Communication

The centrality of communication in collective action has been explored in previous research. At the individual level, different experimental studies have examined the impact

of communication on participant's ability to cooperate in collective action dilemmas and consistently have found that communication, especially face-to-face mode, by itself leads to better outcomes in terms of cooperation (Poteete et al., 2010; Ostrom, 2003). Apparently, communication makes a difference because it allows for the voicing of commitments and development of group identity and norms (Shankar and Pavitt, 2002).

Pundits have reflected on different issues in relation to the importance of communication in collective action organizing. For example, Bennett et al. (2014) speak of "communication as organization" in their investigation of peer-production organizing processes in crowd-enabled networks.They argue that ICT platforms and communication practices serve as stitching mechanisms that ensure coherent organization of connective action networks. Moreover, Bimber et al. (2005, p. 367) reframe collective action as "a set of communicative processes involving the cross of boundaries between private and public life". Organizing collective action has evolved, Flanagin et al. (2006) argue, because the expanding communicative affordances of ICTs permit, among other things, viable coordination mechanisms beyond those that organizational theory typifies, as for example hierarchy.

Although some laud the technical infrastructure for facilitating the emergence of new forms of organization based on ICT mediated communication, the workings of these hybrid organizations (Chadwick, 2007) is not without problems. Specifically, the abundance of platforms coupled with the low cost of communicating and the agency of participants within the permeable boundaries of these organizations, may lead to problems of overcommunication, miscommunication, and communicative overload (Nielsen, 2009). Coordination, in these circumstances, becomes strenuous and often drives organizers to retract from technological platforms to regain control of communication via traditional communication media (phone calls and face-to-face meetings).

Overall, the literature about ICTs and collective action emphasizes the underlying

coordination mechanisms of ICT mediated communication. The empirical data examined in this study points to communication within collective action organizing, concerning, in practice, with:

- disclosing public information, for example about what organizers were doing and their future plans [code facilitated:dissemination of information]
- debating and contributing ideas about overcoming difficulties or creating something new together [code: facilitated:group brainstorming]
- giving personalized information about the status of ongoing activities and offline work [code facilitated:reporting]
- extensive debate that generates difficulties in retaining focus on the core issues [code hindered:focus]

Table 5.3 shows the definitions of codes related to communication along with illustrative quotations from PLP and LDI interviewees.

Connectivity

Connectivity is commonly understood as the ability to make links or to establish relations between entities (e.g. people, objects, content). In the literature, the concept of connectivity is explored in different ways. Some authors speak of connectivity as an affordance; for others connectivity is a type of communication-based public good; and even others speak of connectivity as culture. Moreover, there is the related concept of "connective action" that was discussed in chapter 2.

From an affordance perspective, Treem and Leonardi (2012, p.164) observe that "the connectivity afforded by CMC can create a bridge between individuals, supplement existing relationships, and help build a greater sense of community". Likewise, Bimber et al. (2012, p.3) emphasize that technologies of communication and information "fundamentally enhance connectivity among people" and that collective action organizations have redefined the ways of engaging and interacting with individuals in light of this

Table 5.3: Illustration of codes related to communication

Category: Communication	
Code and definition	Illustration
Facilitated: dissemination of information Spreading information widely (to participants, partners, and other public)	It's not just about the cleaning, but is also about spreading awareness and information about the choices people have to affect this outcome… so this is important when we talk about IT and the communication channels related to the internet.
Facilitated: group brainstorming Collective production of ideas and solutions to problems or difficulties	We tried to find the consensus between those different ideas in Ning [community website]. There was a lot of side discussion… so we had to remind people what our final goal was, to keep things going.
Facilitated: reporting To give an account about some action or event to others (e.g. progress of offline work)	I was in touch with skype and emails, at least every week. I was kind of reporting to LDI about the resources we could use… basically exchanges about how we can do it, what we need to do.
Hindered: focus Ability to concentrate attention on the issues that matter for a certain objective	I think Ning [community website] is not constructive, it's just an endless pouring of opinions… you write, then someone writes on top of that, and so on… then, the issue that is relevant is already gone, it is like invisible in the flood of comments

enhanced connectivity. In a similar vein, Turkle (2012) alludes to the affordance of "continuous connectivity" that brings about new ways of relating to our emotions and to other people through the use of ICTs, and Wellman et al. (2003) argue that being "always connected" puts physical proximity connectivity in a second plan while also making multiple communication simpler.

Fulk et al. (1996, p.67) conceptualize connectivity as a type of information and communication public good that "rests upon the creation of a jointly held system that provide all members of the public with the means to communicate with each other." The

public good is secured through the potential for direct contact that is created when users are connected to a communication system. Van den Hooff (2004) builds on this concept to explore the benefits of the use of electronic calendars in organizations. The findings of his study point to electronic calendars supporting connectivity when members of an organization use electronic calendars in a collective fashion.

Going further, Van Dijck (2012, p.168) speaks of "the culture of connectivity" regarding the current culture in most of developed world, in which social media mediates the norms for sociality and connectivity and blurs the public, private, and corporate spheres of life. She contends that "the novelty of social media platforms is not that they allow for *making connections* but lead to *engineering connections*. By virtue of their technological capabilities, social media sites connect data that users consciously or unconsciously provide, be it profiling data or metadata on search behavior" (emphasis in original).

In PLP and LDI cases, connectivity is important especially from the standpoint of eliciting support to collective action. Based on PLP and LDI data, the connectivity dimension in collective action organizing is related to the following concepts:

- the possibility of persons linked to a focal site (e.g. website, social media platform) banding together for a common purpose [code facilitated:assembly]
- the possibility of galvanizing individuals or groups associated to a focal site into action [code facilitated:mobilization], or failing to garner their interest despite best efforts [code hindered:mobilization]
- the possibility of observing the online actions of individuals or groups associated with a focal site [code facilitated:monitoring]
- the possibility of mingling with other individuals or groups in relation to common interests [code facilitated:networking]
- establishing frequent online contact with individuals or groups associated with

a focal site and in consequence developing close relationships with them [code facilitated:proximity], or failing to create relationships despite regular online contact [code hindered:proximity]

Table 5.4 illustrates these concepts with quotations from interviewees.

Participants are fundamental in collective action organizing because collective action cannot happen without the recruitment of participants. Thus, connecting organizers to participants is central and, therefore, ICT enabled connectivity is quite significant because organizers can plug into networks where they can tap on social and human capital for the collective action events they organize. Organizers often employ a combination of strategies to connect with potential contributors. Recruitment of participants is designed to pay heed both to reach and to selectivity of contributions (Marwell and Oliver, 1993). Reach is the total number of people who are contacted, whereas selectivity is the subgroup that is most likely to make substantial contributions due to their high level of interest and command over resources (Marwell and Oliver, 1993). The use of ICTs for connecting with participants is efficacious for recruitment not only because it is inexpensive (Earl and Kimport, 2011), but also because it combines attention to interest and resources (selectivity), and to numbers (reach).

On the one hand, the scope of internet enables vast numbers of potential participants to be reached, especially in the context of developed world where internet penetration is high. On the other hand, individuals' connections to focal sites or platforms, such as the community website or social media platforms, are in fact self-selected, that is, individuals' decision to connect is based on their interest and sympathy towards the organizers and the collective action events at stake. Therefore, these focal sites and platforms convene a selective subset of population that organizers want to be in contact with because these are the people most likely to become substantial contributors due to their level of interest.

Table 5.4: Illustration of codes related to connectivity

Category: Connectivity	
Code and definition	Illustration
Facilitated: assembly A company of persons collected together in one place for some common purpose	Ning [community website], for me was most interesting because it was our target audience, right? we had the performers in there. So, when we needed people to work with us, say collaborators for some related activity, we would get them from there.
Facilitated: mobilization Ability to stimulate people to act in a certain way in order to achieve a particular goal	I think it helped a lot, that video about the Estonian cleanup… First because it all started with people that got impressed with that video. Then, it was easier to mobilize people by revealing the video and adding that the same could be done in Portugal, even with more participants and collecting more garbage.
Facilitated: monitoring Keeping track of or maintain others / groups / events under observation	I collect information from their Facebook groups because not all countries report to their [regional] coordinators… I am always checking what is going on in there and in different countries webpages.
Facilitated: networking Interacting with others in order to develop contacts for furthering common interests	So actually we could grow the network and work with the network of volunteers much faster than it would be otherwise because we could create connections through our registration system.
Facilitated: proximity Making frequent contacts with others in order to become close in relationship with them	Whenever someone enrolled in our Ning [community website] group we sent a personal email to, like, create ties. And then we wrote them with news, approximately every week, like about partnerships we started… this was for them to see that there was work being done, and to keep in touch
Hindered: mobilization Ability to stimulate people to act in a certain way in order to achieve a particular goal	For me it was important to go to the meeting they organized because I wanted to understand better how things were going to work. I had read everything in the website, but I think that after hearing from them [municipal team] I got a better idea.
Hindered: proximity Making frequent contacts with others in order to become close in relationship with them	I think it's important to be close to volunteers... We mail the newsletter and post our news in Facebook... Yeah, I think we need other solution to handle their [volunteers] lack of involvement, I think the distance between the coordination team and the volunteers is a bit large and that affects motivation.

The following quotation of a PLP interviewee illustrates the selectivity concept well:

We were indeed lucky because in the panoply of people registered in Ning [community

website] we had journalists, politicians, and others that helped us. There was an adviser to the President of Republic that became interested in what we were doing, also because he saw our announcement of the partnership with a university he was affiliated to, and later he called us.

Coordination

The possibility of coordinating collective action through ICT infrastructure is often remarked in the literature (e.g. Castells (2007), Klein (1999), Hampton (2003), Flanagin et al. (2006)). The issue of coordination is especially critical for groups that face the challenge of geographical distance. Coopman (2011, 160) observes that digital networks can "overcome coordination and organizational issues for widely distributed (national or global) groups", allowing participants to share resources, as for example intellectual capital, irrespective of geographical distance. Moreover, Hampton (2003) notes that ICTs allow for asynchronous and synchronous communication and therefore bridge temporal constrains that may obstacle coordination.

Flanagin et al. (2006) argue that coordination costs are lower and less necessary with the use of digital technologies because collective action's organizational demands are met through loose networks with minimized hierarchy and reduced need for organizational infrastructures. In a similar vein, Bennett et al. (2014) contend that connective action networks achieve remarkable levels of coordination through stitching technologies, such as Twitter, and the underlying stitching mechanisms of production, curation, and dynamic integration of content.

Undeniably, coordination is facilitated by the use of ICTs. Even day-to-day activities attest this, as for example the use of mobile phones to coordinate a meeting place with other people is nowadays a commonplace. Moreover, smart mobs and other less perennial events have been nearly completely organized through mobile phone contact alone or in combination with other ICTs (Rheingold, 2008). Although this effect is widely known, it

is not clear how exactly coordination happens through the use of ICTs. The data from PLP and LDI cases points to coordination being predicated on the following concepts:

- the ability to segregate the exchanging of information into meaningful groups, instead of generalized distribution [code facilitated:assortment]
- the ability to manage informational resources at a collective level, allowing concurrent creation, browsing, and editing [code facilitated:collective information management]
- the ability to use accumulated information about past incidents to consolidate present and future actions [code facilitated:storing of information]
- establishing common understandings and procedures through the display of information organized in a structured manner, at a collective level [code facilitated:systematization]
- conceiving how an activity is going to be done based on information systematically collected and displayed at a collective level [code facilitated:visualization]
- decomposing complex tasks into sub-tasks and assigning them to individuals or groups [code facilitated:work breakdown]
- difficulty in perceiving different groups as being united in a common objective [code hindered:unification]
- limited ability to direct the course of actions leading to a common objective [code hindered:control]

Table 5.5 illustrates the concepts related to coordination with quotations from interviewees.

Entry and exit capability

The issue of entry and exit capability is discussed in the literature about governance of common pool resources (CPR). CPR theory postulates that group of people with common interests can create their own systems and institutions to achieve the complex

Table 5.5: Illustration of codes related to coordination

Category: Coordination	
Code and definition	Illustration
Facilitated: assortment Sorting the exchanging of information into groups of meaningful purpose	Personally, I think that from the moment there was a hierarchy of the process [national, district, municipal teams] it was easier for people to associate to different groups in Ning [community website], depending on what they thought they could collaborate on.
Facilitated: collective information management Possibility of viewing, generating or updating information distributed at a collective level	We used Google docs to have access to information in a collective way. You see, this file is the list of contacts, and here we can see that this company was contacted on this day by collaborator X… And the outcome is: we are waiting for response. So, you see, people could open these files and know what was going on.
Facilitated: storing of information Accumulate information about past and present facts	I joined quite late, in my municipality they had been working on it for quite a long time… But based on the records in Ning [community website], I could figure out what they had already done and what they needed now, so I could look for ways I could be of help.
Facilitated: systematization To collect and arrange information in a structured manner	All of us were working on a volunteering basis, so we wanted to avoid unnecessary emails with questions… we decided to publish the necessary information in an organized manner in the website, and although it was a lot, it had structure: we had a manual only about mapping dumpsites, other about how to participate…
Facilitated: visualization To envision an activity in advance of realization	We used the information in the map to help plan the project… so, when we started to talk about the logistics of moving the garbage, we realized we would need some concentration points… and the data we had from the mapping helped us pin-point these places
Facilitated: work breakdown Decomposition of work into smaller tasks in an articulated manner	After the trash map, we had another map that was from the logistics system… from this the cleaners got the points they had to clean, and there were the places where guys with trailers were concentrating big piles of trash, and there were also the roads where truck drivers were going and collecting.
Hindered: unification Being perceived as united or part of a whole	In Facebook, they could see information only about our group, if they wanted to see the national event they had to go to the website… if we had a platform dedicated only to the event it would concentrate all and it would be easier for them to see.
Hindered: control Power to guide or restrain the course of action related to a common objective	It took a long time for Ning [community website] to work as we wanted… At some point, if you would go in there it looked more a field battle than something like hum… work for some kind of common good.

objective of governing CPR (Ostrom, 1998). Effective groups combine a number of structural features that have been found to affect the level of trust and cooperation within the group including, among other factors, the capability to decide to enter or exit from the group (Poteete et al., 2010; Ostrom, 2010a).

At the individual level, the possibility of entering (and exiting) a collective action group at low cost is important because cooperators (or contributors) may leave groups that they perceive are not efficacious because their goodwill is not reciprocated and enter more efficacious ones. In a study about the mechanisms of cooperation at the individual level, Helbing et al. (2011, p.199) found that "cooperation tends to increase and to create a majority of co-operators if migration [between groups] is allowed, in contrast to the prevalence of defectors in the case of no mobility". The possibility of mobility between groups allows cooperators to form clusters and evade defectors, who then end up at the boundaries of groups.

Empirical data from PLP and LDI points to entry and exit capability in collective action organizing being related to the use of ICTs in the following ways:

- possibility of coming into contact with organizers of collective action easily, that is, good access facilities for participants [code facilitated:approachability]
- limited possibility of contributing to collective action due to limitations in terms of access or ability to use ICTs [code hindered:universality]

Table 5.6 illustrates these concepts with quotations from interviewees.

The data about PLP case points to the existence of defectors especially in the community website. For example, some municipalities did have a group in the community website but it was not an active one, at least in terms of doing the diligence necessary to organize the cleaning event in the municipality. When a group was trapped with defectors, what broke the gridlock was bringing in a new member or a cooperator from other group to help set up a new group with those members willing to cooperate in organizing

Table 5.6: Illustration of codes related to entry and exit capability

Category: Entry and exit capability	
Code and definition	Illustration
Facilitated: approachability Possibility of reaching out to a collective action group or organization without much effort	If you are open, you know, there - in the internet, people send you emails… yeah also strangers because people have a chance to approach you and if they are interested they will
Hindered: universality Possibility of becoming involved or contributing to a collective event or action regardless of using ICTs	We needed, to get involved, we needed to connect to the internet because there wasn't the possibility of becoming really involved just by seeing posters or advertisements. Because ads pointed to websites, right? And so we had to go online to register, to receive information…

the cleaning event. The capability of mobility within groups in the community website did not require the moderation of members with administration privileges because it was something that was coded in the preferences of the platform. This capability, coupled with the enabling platform and human intent, produced adaptive, self-stabilizing patterns of agglomeration.

The following quotation from a PLP interviewee is illustrative of this aspect: *I learned about the event quite late... I found the group of R. [name of municipality] in Ning and it had about 20 people. The group was there but it was doing nothing related to the cleanup, which is something that happens a lot in these social sites. People talk and talk, but when it comes to actually doing the work - forget it! So, I tried to get in touch with groups from neighboring municipalities and started to follow and learn a lot from the group of municipality S. I had no idea that I was going to one of the organizers of the cleanup in R. at this point... After their suggestions, I posted in the forum of R. group an invitation to a group meeting, exactly here where we are, and 5 people showed up... We then decided to create the real group of R. in Ning [community website], and I was the creator of that group, started afresh, together with the others that came to that meeting.*

Individual participation

Traditional research about the individual perspective in collective action is concerned with explaining the cooperative behavior of individuals, or the lack of cooperation. The traditional rationalist perspective posits that individuals, because they are rational, will tend to free ride rather than contribute to the production of collective goods. Therefore, it is necessary to implement sanctions or selective incentives in order to encourage individual contributions (Olson, 1965).

In terms of the effects of the use of ICTs in collective action at the individual level, the literature points to reduced participation costs (Klein, 1999; Coopman, 2011), and to the mutual visibility of individual participation that is afforded by interactions in ICT-mediated contexts (Hampton, 2003; Wasko et al., 2004). Moreover, ubiquitous ICT-mediated communication fosters the development of networked individualism, in which the individual, rather than places (workplace, home), becomes the center of connectivity. Consequenty, Wellman et al. (2003) speak of "personal communities" in which "each person operates a separate personal community network, and switches rapidly among multiple sub-networks".

Nowadays' technological context seems to have exacerbated the centrality of individual agency in collective action organizing, according to recent research. Bennett and Segerberg (2012) speak about personalized action frames channeled through dense social networks powered by social media platforms, which enable large-scale individualized collective action. Likewise, Castells (2007, p. 249) notes that mass self-communication (communication based on horizontal networks based on the internet) is a medium for "individuals to build their autonomy and confront the institutions of society in their own terms and around their own projects".

Beyond the creation and sharing of personalized action frames, the use of ICTs relates to individual participation in collective action in diverse other ways. Specifically,

in PLP and LDI data, I associate the theme "individual participation", with the following codes: *facilitated:accountability*, *facilitated:authentication*, *facilitated:empowerment*, *facilitated:engagement*, *facilitated:enrichment of content*, *facilitated:generativity*, *hindered:accountability*, *hindered:empowerment*, and *hindered:engagement*. These codes encapsulate concepts that express what the use of ICTs facilitated or hindered in relation to individual participation. Table 5.7 and table 5.8 show the definitions of these codes and respective illustration with quotations from interviewees.

Table 5.7: Illustration of codes related to individual participation (prefix hindered)

Category: Individual participation	
Code and definition	Illustration
Hindered: accountability Willingness to account for one's responsibilities in the role of team member, participant, or partner	So we write emails and we hope that these will be received by the people we want to receive them. They usually do, but it's not always so… It means that email is hum a great tool as long both parts are interested in this communication. And when one of them is not, then it's really easy to ignore it, press delete button and not to care.
Hindered: empowerment To give someone faculties or abilities to do something or to influence something	With some platforms we can publicize information, but they're not constructive in terms of sharing resources and building documents collaboratively… Facebook - it's funny actually, we can schedule a meeting and invite people but after that you can't do nothing because performing the real work demands that people collaborate
Hindered: engagement Cause someone to become involved or earnestly interested in doing something	It's funny that Facebook is so participated and almost no one comments on our page. We have more than 100 likes but I have no idea if people get the information I put there… But I see from afar that this page doesn't have the same impact that the forum [of community website] had.

Legitimacy

There is not much discussion about legitimacy of collective action in the literature. Legitimacy is mostly considered from the perspective of how it affects organizational

Table 5.8: Illustration of codes related to individual participation (prefix facilitated)

Category: Individual participation	
Code and definition	Illustration
Facilitated: accountability Willingness to account for one's responsibilities in the role of team member, participant, or partner	We realized that if we posted in the forum [of community website] that we needed volunteers for a certain task, it was useless because no one showed up… but, if we addressed a volunteer directly with a personal email and asked him to go to the forest, next to where he lives, and take pictures of a dumpsite, that worked wonders.
Facilitated: authentication Proving or attesting that someone is authorized as representative of a team or project or civic movement	The information about national and municipal teams and team members was centralized in Ning [community website]… We could identify ourselves easily like this, right? Let's say I need to send information to the district coordinator, I don't need to know his email, just send it through Ning and he will receive it… no problem…
Facilitated: empowerment To give someone faculties or abilities to do something or to influence something	I think this possibility [immediate registration] in Ning allowed for the boom we had, with the explosion of proactivity and goodwill that we saw… It was like this: upon registering our email, we could immediately gain access to nearly all groups, foruns, and postings…
Facilitated: engagement Cause someone to become involved or earnestly interested in doing something	Although I know others who think that Ning [community website] caused unnecessary discussions, but I think that sometimes that's what motivates people to go back and write something more… and this keeps people in there.
Facilitated: enrichment of content Possibility of incorporating rich content in different communication media	I didn't use Facebook that much more than email. Because with email I could also put a signature, which was more useful… the signature is important because we can put in there [links to] the website and the last newsletter, how we can be contacted, and this is important because in Facebook you can't really click on the link.
Facilitated: generativity Possibility of producing something novel from recombining existing content and original ideas	The forum in Ning [community website] was structured in a way that allow everyone to speak across the different municipalities, and so we could extract ideas from other teams… I recall seeing slide presentations that others used in public meetings, and we could build on top of that… I think it was in this way that the forum worked better, because there was a lot of noise there too.

capacity, namely how it interferes in the mobilization of resources and participants (McCarthy and Zald, 1977). Blumer (1971) studied the process by which social problems come into being and found that there is a process of collective definition wherein some problems come to be considered as legitimate, while others don't. This process of collective definition evolves through different stages, namely: emergence, legitimization, mobilization of action, formation of a plan of action, and empirical implementation of the plan of action. For society to take action upon social problems, legitimization is necessary. This selective process is complex and involves discussion in public arenas, such as the press, other communication media, and in various institutions as for example church, school, civic associations, and polity.

Legitimacy seems to be especially important in the early stages of collective action organizing. Trumbull (2012, p.2) observes that groups representing diffuse interests (e.g. environmentalists, feminists) typically have difficulty in organizing, and therefore when such groups are able to mobilize an activist membership, they enjoy a "heightened (but not unlimited) degree of policy legitimacy". Successful mobilization, he argues, signals that what is being advocated connects to real interests that are deeply held.

Whereas Blumer (1971) argues that legitimacy precedes mobilization, Trumbull (2012) claims that successful mobilization results in legitimizing what is being advocated. Whatever the direction of the link between legitimacy and mobilization, the dependency between the two is actually not contested in collective action organizing. What is not clear is what is the role of ICTs in this process.

In PLP and LDI cases, I relate legitimacy to the following concepts about the use of ICTs: being perceived as trustworthy and convincing [code facilitated:credibility]; being perceived as open and accountable [code facilitated:transparency]; being able to stand out as justifiable [code facilitated:visibility], or not standing out as justifiable [code hindered:visibility]. These concepts are illustrated with quotations from interviewees in

table 5.9.

Table 5.9: Illustration of codes related to legitimacy

Category: Legitimacy	
Code and definition	Illustration
Facilitated: credibility Quality of being convincing or worthy of trust	We only use the website and our personal email. Facebook we don't use because it is associated with banalities… in reality there has to be an official website that lends credibility to what we are doing, so that people can see that they are participating in a coordinated and trustworthy way.
Facilitated: transparency Quality of being open to public scrutiny	Everything we did in our meetings was in a report that was public… we wanted to be open, so that it wouldn't lead to conflicts due to misunderstandings. Conflict is always an easy thing. And that is why we tried to do something transparent, to which everyone could contribute, because our reports were public in Ning [community website]
Facilitated: visibility Ability to stand out or being prominent	… by virtually mapping your trash points inside the country, you are really able to show virtually what is the trash problem in the country… sometimes the tool can be problematic to use, for example in country X they wanted to make the civic action but didn't want to use it because it would make the problem public and cast a negative light…
Hindered: visibility Ability to stand out or being prominent	I post in Facebook… but you know, Facebook now looks like that whatever I do in there is eclipsed, that things [Facebook posts] actually don't have any life... but that is actually a problem of Facebook, it's not ours.

Organizing costs

The costs of organizing collective action have been studied mainly in relation to the traditional rationalist perspective of collective action phenomena. According to the literature, since organizing collective action results in the production of a collective good, it is difficult to mobilize the resources necessary to produce it (Olson, 1965). Thus,

aggregation of resources to pay for production costs requires selective incentives for individual participation and formal organizations to organize contributions.

In the case of social movements, these formal organizations are known as social movement organizations. According to resource mobilization theory (McCarthy and Zald, 1977), discontent or shared grievances are secondary to the emergence of collective action, command over resources is more important. Social movement organizations are the catalysts of collective action because they mobilize resources from mass and elite publics and organize individual participation. Given the emphasis in resources, the theory posits that centralized, formal movement organizations are more effective at bringing about social change than decentralized, informal structures (McCarthy and Zald, 1977).

Shifting the organization of collective action to the internet reduces the costs of traditional organizing practices, such as recruitment and fundraising (Lev-On and Hardin, 2007). In my view, costs are lower not just because internet based communication is inexpensive, but also because mobilization strategies based on the connectivity facilitated by the ICT infrastructure are sensitive to reach and selectivity. That is, through the use of ICTs it is nowadays possible to access a wide audience (reach) and to engage the most interested contributors (selectivity).

Earl and Kimport (2011) studied tactics of digital activism, such as e-petitions, and argue that organizing online is "inexpensive enough that is can begin to follow a power-law dynamics in some situations." In other words, for online collective action, costs are in fact so low that in reality few people (organizers) may bear the majority of costs of organizing. This means that in some cases a very small team, or in the limit one individual only, with little resources, may be able to organize collective action, and this is, apparently, in contradiction with resource mobilization theory (Wright, 2015).

According to the empirical data I examined, the connection between use of ICTs and costs of organizing collective action exists beyond inexpensive means of communication

and mobilization of resources. In PLP and LDI, the use of ICTs links to organizing costs via the concepts of *facilitated:efficiency*, *facilitated:immediacy*, and *facilitated:scalability*. Table 5.10 illustrates these concepts with quotations from interviewees.

Table 5.10: Illustration of codes related to organizing costs

Category: Organizing costs	
Code and definition	Illustration
Facilitated: Efficiency Capacity to produce the desired results with a minimum expenditure of resources	Email for this was fundamental. It was our way of contact because with a single message we could contact several people… I can, in 10 minutes, place my message in the mailbox of 500 persons, with half-a-dozen clicks only.
Facilitated: Immediacy Bringing parts into instant involvement	I can't imagine this happening without this tools and applications and websites like Skype and FB and whatever... Google docs, things like that. The internet as such. Yeah, because you can communicate instantly… I mean if there was no internet, it would be kind of slower, like it was 10 years ago or so.
Facilitated: Scalability Ability to expand the range of some action	I think the project wouldn't have been the same if they didn't create this [community website] from the start. Most likely it would have resulted in something with a minor scale… Locally, it [community website] is not that important, but it matters for scale purposes.

5.3.2 LDI Case

This sub-section examines LDI case with respect to the dimensions of collective action organizing previously discussed in 5.3.1. In particular, I look at how the use of ICTs facilitate or hindered collective action organizing before and after the institutionalization of LDI movement in Estonia.

Teeme Ära: systematization and efficiency

The cleaning event in Estonia was fairly centrally organized, as we've seen in section 5.1. ICTs were especially exploited in their capacity to amass and aggregate a large amount of data (e.g. mapping of dump sites, registration of participants), and in their capacity to compute this and other data into optimal orchestration of resources and constrains (e.g. logistics). Therefore, it is not surprising that the use of ICTs in Teeme Ära is mostly associated with the codes *facilitated:systematization* and *facilitated:efficiency*.

With respect to *systematization*, the waste map software allowed for the methodical acquisition of data about the location and characterization of dump sites, a kind of data that did not exist before but was extremely needed. Thanks to the use of this software it was possible to aggregate local level data and to make sense of this information at the country level in order to centrally organize a country scale event.

In what concerns *efficiency*, the use of ICTs to create connections with participants facilitated the growth of the network of volunteers "much faster than it would have been otherwise", as an interviewee said. Moreover, the registration system was key to "logistically manage [the registration] of so many people in such a short time", as another added. Efficiency is also perceived in emailing because one "can just send a message to many people with a few clicks, and they can do the same."

Overall, organizers "used what worked best" for internal communication and coordination, namely Skype chat, emails, and of course many in-person meetings. The engagement of public grew out of a large communication campaign amassed within the traditional media system (television, newspapers, radio), in tandem with the distribution of information in web 1.0 online channels, such as mailing lists and website of the event. At the time the cleaning event was organized, (2007 and 2008), social media did not have much importance in the Estonian context.

Perhaps because the organizational structure of Teeme Ära was more centralized,

the role of ICTs in collective action organizing is quite contained within the dimensions *coordination* and *organizing costs* only. The fact that the privileged form of communication among organizers was personal contact and that external communication rested mostly on traditional media also accounts for the relative insignificance of the dimensions communication, connectivity, and individual participation.

Let's Do It! World: informing, connecting, and observing

Towards the end of 2009, the international civic movement Let's Do It! World starts to take form. As explained in section 4.1, this global movement is a spillover of the event Teeme Ära in Estonia, but with an international scope. The global format of the movement did not dovetail well with the centralized structure of Teeme Ära, and hence Let's Do It! World adapted its structure in order to become more decentralized. Accordingly, the relative importance of some ICTs in the activities of the movement changed: for example, ICTs more geared more toward communication and connectivity aims, such as email and social media, became more useful, if not indispensable, in this international context.

For a transnational movement with a growing geographic spread, the infrastructure of internet is a valuable resource because of the underlying potential to mobilize, to organize, and to debate at a global level (Cammaerts, 2005). However, the empirical data from LDI case points to something else: the use of ICTs in Let's Do It! World is mostly associated with the codes *facilitated:dissemination of information*, *facilitated:monitoring*, *hindered:accountability*, and the ambivalence between *hindered:proximity* and *facilitated:proximity*.

From a superficial perspective, this finding is revealing of the communication and organizational practices in existence at the time the data was collected. On the one hand, ICTs are used more to disclose information than to debate it. I believe this is related to the organizational structure in place, wherein the communication between the

core team and the network of country teams is mediated by regional coordinators (a team of Estonian volunteers). In this respect, an interviewee reported that *we need the regional coordinators to get information about the country teams and to share it... it's this information that helps all the other countries to see what is happening [around the world]... but for them [country teams] to be a part of, and not only like somebody who can just see what the others are doing, I think it should be like really something that everybody could contribute to.*

On the other hand, the use of ICTs is also associated with the need to establish connections to country teams in order to grow the movement constituency. With respect to this kind of connectivity, the use of ICTs facilitated monitoring and to some extent proximity, but at the same time the development of relationships of proximity was also hindered. Although the country teams also had the possibility to observe the online behavior (posts, publications) of the core team, in the empirical data collected there is mostly evidence of monitoring the online activity of country teams, especially in social media platforms. For example, interviewees reported that *Facebook helps me get an overview of what is going on*, and that *I can get information about their [country teams] doings without sending emails.*

Proximity, in relation to the use of ICTs, refers to making efforts to become near in relationship to other people through ICT mediated interaction. Email interaction seems to facilitate a higher level of proximity than social media because people associate email exchanges with "serious business", whereas "banalities and entertainment" are attributed to social media. However, when the possibilities for real, live interaction are very limited or do not exist at all, it is important to maintain connections – even through social media. As an interviewee said: *... these channels [social media] don't substitute getting together but still... you know, they keep people closer. Without the internet it would be... I really don't know how it could work.*

Nevertheless, this kind of proximity is weak and cannot be sustained in long terms. An interviewee acknowledged that *if you meet somebody in person or if you hear something directly from a person, it has much larger effect than when you get an email or some kind of virtual message. So the connections are made faster now, through social media and internet, but they are also weaker.* And other added that *you can have emails and skype as much as you want, and you can even make them very effective . . . but nothing beats the actual opportunity to meet people face to face. It's the most effective thing, to really create long-lasting relationships and trust.*

Finally, there are also issues of accountability in relation to the use of ICTs. Poor accountability in ICT mediated interaction could be linked to the difficulty in establishing strong connections (creating proximity) with country teams, and consequently prompt a higher need for monitoring. An interviewee reported that *I would like very much like to see what's actually happening there because you cannot really have the whole overview if you are just exchanging emails and cannot really see them. They can write you anything, they can tell you anything – real or even absurd things. . .*

5.3.3 PLP Case

The preceding subsection discussed the dual role of ICTs (facilitator and detrimental) in the organizing of collective action in LDI case. I now progress to the same kind of discussion about PLP case. First, I examine how ICTs facilitated or hindered the organizing of the cleaning event that took place in 2010, in Portugal, and then I look at the use of ICTs in the operations of AMO Portugal.

Project Let's Cleanup Portugal: communicating, connecting, and coordinating

Comparing to the other organizational structures studied in this thesis (Teeme Ära, Let's Do It! World, and AMO Portugal), Project Let's Cleanup Portugal had the most

decentralized structure. As I've explained in sections 5.1 and 5.2, the organization behind the cleaning event in Portugal was truly a grassroots movement that grew out of a community website especially created to convene the people that wanted to participate in the cleanup event and the businesses that were willing to support it.

The centrality of ICT platforms in the organizing process and the decentralized leadership of the project renders certain dimensions of collective action organizing more important. Indeed, the use of ICTs in Project Let's Cleanup Portugal is mostly associated with the dimensions communication, connectivity, and coordination, in particular with the codes *facilitated:dissemination of information, facilitated:group brainstorming, facilitated:monitoring, facilitated:mobilization, facilitated:visualization*, and *facilitated:work breakdown*.

With respect to the dimension communication, the use of ICTs facilitated *dissemination of information* and *group brainstorming*. This means that communication had a circular pattern among organizers and participants, and was less based on the conventional one-way pattern of organizers disclosing information to participants and public. This kind of communication, with constant feedback from participants, grows a sense of empowerment and engagement in the public, and consequently reinforces *mobilization*.

In addition, the ongoing brainstorming of ideas to overcome difficulties that arose in the preparations was often conducive to solutions that involved division of labor. The *breakdown of work* into smaller tasks was done not only for online tasks (e.g. mapping dump sites), but also for offline tasks, such as the prospecting for partners. As an interviewee said, *many of them [participants] only appeared on the 20th of March, but a large number also pitched in to contact companies they knew or they sent us the photos and location of dump sites they had found in the forest.*

And another added that *Ning [community website] was more like our virtual office, where we were basically showing what we are doing... notice that there are lots of people*

intervening there [besides organizers]... if they can understand what is going on, they – not all, but some will offer to contribute to certain tasks, depending on their expertise, and of course that is good because then we have like the experts doing the things they know best... The bottom line is that when we combine this [people and tasks] well, things can really progress.

The enhanced possibilities of *monitoring* brought by the interaction in ICT platforms is also consequent in terms of mobilization. In Project Let's Cleanup Portugal there is evidence of generalized monitoring among organizers and participants, but especially monitoring among organizers, and participants monitoring organizers. For example, interviewees reported using the waste map to check on how municipal teams were doing their mapping exercise, which municipalities had more (or less) dump sites, and to what extent organizers were engaging participants to contribute in mapping tasks.

Moreover, mapping the waste makes the dump sites visible and creates the "whole picture" of the problem. Before mapping, the knowledge about the extent of dumping was local, that is, it was only experienced by the people that lived in the affected areas. After the mapping exercise the extent of dumping was for the first time known at the country scale, and became publicly known because it was discussed in various media outlets. This information can be interpreted in new ways due to its visual nature and level of aggregation, and this enhanced ability (*visualization*) allowed municipal teams to build the logistics of garbage collection for the cleaning day.

To the extent that the dumping problem is known to the wider public, there is more questioning about why the problem exists and more consensus about the need to support solutions to the problem. The shared awareness of the waste problem prompts stakeholders (municipalities and local authorities) to take action because of reputation concerns. This results in the mobilization of local authorities to support the organizing of the cleaning event, and consequently reinforces the legitimacy of civic movement.

The code *facilitated:visualization* is related to the use of visual information to mobilize participants and partners to a collective action event. Besides the waste map, organizers of Project Let's Cleanup Portugal also used the short video about Teeme Ära to help participants and partners envision how an organized cleaning event looked like and better understand how they could contribute.

Association AMO Portugal: informing a missed community

The cleaning event organized by Project Let's Cleanup Portugal achieved an unprecedented level of volunteering mobilization. As explained in chapter 4, the success of this national scale event propitiated the creation of a formal organization to continue pursuing the vision of the civic movement, and hence AMO Portugal was founded. Comparing to Project Let's Clean Portugal, the organizational structure of this civic association is more centralized. Although the organizational boundaries of AMO Portugal are more clearly delimited at the core, boundaries have remained fluid at the edges and hence membership is highly volatile.

For AMO Portugal, the use of ICTs is related to the codes *facilitated:dissemination of information*, *facilitated:reporting*, *hindered:proximity*, *hindered:mobilization*, *hindered:empowerment*, and *hindered:engagement*. The relative importance of *dissemination of information* and *reporting*, and the absence of the code *facilitated:group brainstorming* are revealing of changes at the level of communication practices.

Indeed, it seems that the use of ICTs within the new organizational structure did not generate identical opportunities for debate and discussion. Nowadays, communication is more centered on disclosing information to the public and on reporting about local collective actions organized by municipal teams. The following quote is illustrative: *We have the website of AMO, which is really nice and facilitates some things, but we cannot dialogue in there... I think dialogue is really important, we need to exchange ideas, opinions, and interpretations... it's important because that's what gives life and creates*

enthusiasm [in participants]... We cannot expect people to come to in person meetings because we know people are too busy with other things. So, what can we do? Basically, I am using email to send information about what we have and what we plan to do, but email is not open and so there is no discussion... I respect what they [collaborators of municipal team] asked me, so I keep emailing with bcc and the replies come only to me.

The use of ICTs is also associated with limitations in terms of establishing strong relationships with participants and mobilizing support for collective action. With respect to *proximity*, an interviewee reported that *these tools [social media] condition the kind of relationships we create or, in reality, [relationships] we don't create. We have Facebook and we post announcements there, but I think it's important to create more proximity... because who wants to know about us can find us, but who doesn't care is not bothered*, and another interviewee added that *we have not been able to reproduce the dynamic of Ning [community website] in terms of involving volunteers... so yeah, we need an easier way of communicating with volunteers because there is a somewhat big distance between national coordination and volunteers, which doesn't motivate participation.*

Although *mobilization* of participants depends on many factors, there are certainly ways of encouraging participants to volunteer that involve the use of ICTs in particular ways. For example, the fact that some ICTs make participation visible is consequent in terms of mobilization because the (lack of) visibility of participation (slows) facilitates mobilization (Hampton, 2003). Indeed a PLP interviewee noted that: *with Ning [community website] the volunteer feels that he is part of something big that is happening, right? when we see the enrollment numbers growing, and every day more members, every day more groups... we feel that we are part of something that is worthy and that other people want to be part too.*

Threshold models of collective behavior (Granovetter, 1978) suggest that individuals' propensity to engage in a certain behavior depends on the proportion of people already

engaged in that behavior. In other words, individuals' decision to participate in a collective action event depends on how many others have already joined. This is especially relevant in the kind of collective action events that AMO Portugal (and LDI) organize because these events have an accelerating production function. As such, the impact of these events increases with the number of participants and, according to the critical mass theory of collective action, these events require a threshold of participants to create the conditions for the involvement of many others (Marwell and Oliver, 1993).

However, the use of other ICTs, namely the website and social media, for enrollment of participants has not enacted the same kind of visibility that of the community website. On the one hand, the enrollment of a participant through the website of AMO Portugal creates a connection between that participant and organizers but this connection is not visible to others. On the other hand, enrollment through groups in social networking sites makes individual connections visible to others but, since groups related to AMO Portugal are not collated within the social networking site, members of these groups cannot see the 'whole picture' of enrollment, that is the enrollment numbers in the whole country. Moreover, since there is no connection between enrollment in the website and in social networking sites the use of these two ICTs in combination actually fragments enrollment numbers.

Finally, the use of ICTs is also related to limitations in terms of agency of participants, as expressed in the codes *hindered:empowerment* and *hindered:engagement*. However, it's important to note that these are limitations in relative terms. In other words, these limitations exist in comparison to the baseline situation experienced before by participants within Project Let's Cleanup Portugal. For example, during the preparations of the cleaning event participants could enroll in the community website and immediately join groups, participate in discussions, and interact with other participants, but nowadays the opportunities for interaction and intervention that exist in the website of AMO Portugal

require administrative moderation.

In this respect, an interviewee said that: *yes, we can register in the website as volunteers but there is nothing else a volunteer can do... I can't contribute in other ways, so I really don't get the point of this registration.* And another added: *Participants have to submit [their registration data] to an inspection, that is, a kind of audit of their application, and this has created a significant obstacle to participation... yeah the mobilization to our initiatives has changed in a significant way and maybe this issue of registration to participate in the debate [in the website forum] matters.*

Surprisingly, popular generalist communication platforms such as social networking sites do not grow an identical level of interest from participants. With respect to the cleaning event organized by AMO Portugal in 2012, an interviewee explained that: *this year we used Facebook page and I didn't like that much. Maybe Facebook spreads more [the information], I guess, but it did not have at all the same kind of result... in general, people don't get excited, they don't visit the page, they say nothing. So yeah, it was really difficult to bring people to our page, we were always asking our friends to like our page and posting stuff, like pictures of a forest and pictures of dump sites, to see if it started to take off, but nothing happened... we ended up with 20 persons and most of them were the people we had asked to like our page.*

To summarize the results of cross-case analysis that were presented in this and in the previous section, table 5.11 shows the categories and codes most relevant within each case. Although LDI and PLP are two cases of a similar kind of collective action, there are not many commonalities in this table. In my opinion this could be for different reasons: first, it may be that there is no one-single way of organizing this kind of consensual collective action; second, I hypothesize that the way ICTs are used in the context of collective action organizing is dependent on the underlying organizational structures; and third, it could be that the data collected is insufficient to make this kind of comparisons.

Looking at categories, rather than looking only at codes, may provide some additional explanation. There is indeed more overlap in the upper part of the table and therefore it might be that the entwinement of ICTs with collective action organizing is stronger for communication and connectivity dimensions. Nonetheless, I think that the table is also useful to show how PLP and LDI have evolved over time in relation to using ICTs to facilitate or hinder certain dimensions of collective action organizing. Again, I think that different organizational arrangements may explain some within case variability, and I also believe that a more definite answer could be answered with additional data.

Table 5.11: Cross-case analysis: comparison of categories and codes

Categories and Codes	**Case LDI**		**Case PLP**	
	Teeme Ära	LDI! World	Project Let's Cleanup PT	AMO PT
Communication				
Facilitated: dissemination of information		✓	✓	✓
Facilitated: group brainstorming			✓	
Facilitated: reporting				✓
Connectivity				
Facilitated: monitoring		✓	✓	
Facilitated: mobilization			✓	
Facilitated: proximity		✓		
Hindered: mobilization				✓
Hindered: proximity		✓		✓
Coordination				
Facilitated: systematization	✓			
Facilitated: work breakdown			✓	
Facilitated: visualization			✓	
Individual Participation				
Hindered: accountability		✓		
Hindered: empowerment				✓
Hindered: engagement				✓
Organizing costs				
Facilitated: efficiency	✓			

5.4 Summary

This chapter presented the results of PLP and LDI case analysis. I grouped the findings in three sections: first, I examined the organizational structure of both cases over time; in the second section I looked at PLP and LDI's communication practices; and in the third section I studied the different ways in which the use of ICTs affects the organizing of collective action in PLP and LDI.

With respect to the organizational structure, PLP and LDI combined hierarchy with decentralization, albeit to different degrees and in different ways. Both the organizational structures of PLP and LDI evolved over time: LDI became less hierarchical, whereas PLP became less decentralized. Apparently, centralized organizations have less capacity for disruption than decentralized organizations, whereas decentralized organizations are afflicted by coordination difficulties that are uncommon in centralized organizations. Therefore, a combination of structure (hierarchy) and autonomy is necessary for activities that have scale issues, such as national scale events.

In terms of communication practices, both LDI and PLP use a variety of ready-to-use software in their internal and external communication, namely email, discussion groups, social media, official website, intranet, and Skype. Whereas meeting in person is especially important for LDI's internal communication, for PLP the less frequent in person meetings are supplemented with a significant amount of computer mediated communication. Despite all the hype around social media, traditional media played a significant role in PLP and LDI's external communication. Hence, in both cases there is evidence of the exploitation of a hybrid media system, which is characteristic of contemporary forms of collective action (Chadwick, 2007).

In the final part of this chapter I went beyond generalist claims about the role of ICTs in collective action organizing, such as those that equate the use of ICTs with enhanced coordination and lower organizing and participation costs, to actually thoroughly explain

the different ways in which organizing is entwined with use of ICTs. Hence, I came to uncover seven dimensions of collective action organizing in relation to the use of ICTs in PLP and LDI cases, and I discussed each of them against the backdrop of collective action literature. Overall, the use of ICTs seems to facilitate some aspects of organizing while also hindering other aspects. This pattern exists in all dimensions I studied, except for organizing costs wherein the use of ICTs is tied only to lower organizing costs.

Next chapter provides a thorough discussion of the implications of these findings. Among other things, I will argue that the role of ICTs in these consensual movements subscribes to both the 'cyber-optimistic' and the 'cyber-skeptical' discourses, and that these discourses are not mutually exclusive and can, in fact, be reconciled.

Chapter 6

Discussion

In this thesis I examined two cases of consensus movements with the goal of explaining the role of ICTs in their collective action organizing. In the analysis of these cases I took three perspectives: firstly, I looked at PLP and LDI structures over time; secondly, I inspected their communication practices; and thirdly, I examined the implications of the use of ICTs for their collective action organizing. The combination of these perspectives allowed me to better understand the entwinement of information and communication technologies with the structure and activity of these movements. The current chapter aims to establish what can be concluded from the findings of this study.

On the whole, the role of ICTs in consensual movements subscribes to both the 'cyber-optimistic' and the 'cyber-skeptical' discourses (see section 2.5.3 for a depiction of these discourses). In reality, I believe these discourses are not mutually exclusive and can be reconciled. Therefore, I argue that although the use of ICTs in collective action is substantially empowering for organizers, it can also constrain their agency and the agency of participants. Yet, this ambivalent effect cannot be attributed to the use of ICTs per se but is predicated in social forces. Next, I elaborate on this argument as I explain the implications of case findings.

6.1 The Constitution and Structuring of Movements

Emergence of civic movements

There is a key difference in the constitution of PLP and LDI collectives. Whereas Project Let's Cleanup Portugal (PLP case) emerged from collective behavior facilitated by enabling ICTs (most importantly, the community website), in the genesis of Teeme Ära (LDI case) we have primarily social processes (most notably, the coming together of a group with shared, strong social ties). This defining characteristic is important because recent scholarship has suggested that ICT platforms can assume the role of organizing agents of collective action (e.g, Bennett and Segerberg (2013), Anduiza et al. (2014)). However, the empirical data examined in this study suggests that the enabling role of ICTs in the constitution of collective action is in reality more nuanced.

In the previous chapter we saw that, in PLP case, the initial aggregation of individuals with identical awareness of a problematic situation (the littering of forests) in the community website resembled the logic of connective action depicted by Bennett and Segerberg (2013). Moreover, we saw that in the sequence of in person meetings throughout the country, the movement structured itself in municipal teams and national coordination team. This structuring brought the movement to another level in terms of being capable of intentional and strategic action. At this level, the movement's logic of action was akin to hybrid connective and collective action (Bennett et al., 2014).

Hence, the connective action logic initially facilitated by the use of ICTs in reality resulted in latent collective action because social structuring processes were necessary for PLP's non-organized collective to evolve into a capable collective entity. Indeed, in PLP case, collective action groups remained latent if their activity was circumscribed to the connecting, sharing, and discussing facilitated by the community website. It was the coming together (meeting in person) and the doing something together that converted these latent groups into an actual municipal team. As Dolata and Schrape (2015, p.12)

contend, although the ICT infrastructure is nowadays a major starting point for new collective actors, technologies "do not override classical forms of social organizing and structuring".

Institutionalization dynamics have traditionally been understood as resulting from social processes but this has been changing. The ICT infrastructure significantly expanded the communication and organizing capabilities of movements and, hence, the institutionalization of movements is nowadays better depicted as a socio-technical process. This means that although ICTs support the constitution and stabilization of collectives, classical social organization processes remain critical for movements "to build and maintain their momentum" (Dolata and Schrape, 2015, p.13). The importance of social processes in contemporary collective action suggests that human agency is perhaps more important than it has been acknowledged in the literature about collective action and ICTs. This point will be further developed later in this chapter.

Structuring of civic movements

Despite the absence of a formal organization behind Teeme Ära and Project Let's Cleanup Portugal, case results discussed in the previous chapter point to the importance of structure and leadership in these movements. Both cases display a pattern of 'organized informality' (Berdou, 2011) that becomes a fluid, collective entity to which participants affiliate not only by performing relatively simple and inexpensive actions, (e.g. registering in the community website or mailing list, or following them in social media), but also by performing more difficult offline work, such as mapping dump sites, collecting garbage, or engaging sponsors and patrons.

Organizational structures are not static: structures are continuously adjusting in the decentralized – centralized continuum. Moreover, centralized and decentralized structures enact different logics of action. A typical evolutionary dynamic for movements is institutionalization, which allows for the building of collective identity and the emergence

of organizing cores. Both PLP and LDI movements experienced institutionalization and evolved into formal organizations: LDI became Let's Do It! World foundation, and PLP became association AMO Portugal.

Let's Do It! World and AMO Portugal are non-profit organizations that aim at mobilizing citizens for consensual collective action. They operate like social movement organizations because they "bring people together in the field, shape coalitions, confront opponents, and assure their own future after the exhilaration of the peak of mobilization has passed" (Tarrow, 2011, p. 123). In other words, their organizational structures institutionalize collective action.

Tarrow (2011) observed that the type of organization can have profound effects on the success of a social movement. On the one hand, centralized organizations are not good platforms to launch movements because when orders come from above the membership may follow, but often they lack the motivation to "give their all". Indeed, a hierarchical organization can more easily sustain interaction with allies, authorities, and supporters, but hierarchies lose much of their capacity for contention, an output better suited to autonomous, horizontally organized groups. On the other hand, decentralized organizations based on autonomous groups often succeed at launching a movement and generating interest, but their lack of coordination can hamper the movement's progression.

Therefore, Tarrow suggests that in social movements there must be a delicate balance between hierarchy and autonomy: "one that can only be bridged by strong, informal, non-hierarchical connective structures" (Tarrow, 2011, p.137), and that the most successful movements have this informal connective tissue operating within and between formal movement organizations. In a nutshell, Tarrow's point is that movements succeed by combining formal organization and informal connective structure, and this is in essence what Hybrid connective and collective action is about: "loosely tied networks of organizations sponsoring multiple actions and causes around a general set of issues in which

followers are invited to personalize their engagement (more or less) on their own terms" (Bennett and Segerberg, 2013, p.13).

On the whole, the empirical cases here discussed support Tarrow's argument. None of the four organizational structures examined hereto – Teeme Ära, Let's Do It! World, Project Let's Cleanup Portugal, and Association AMO Portugal – is a pure archetype of a centralized or decentralized organization because they all combine centralized and decentralized governance, albeit to different degrees. In terms of movement success, I do not see significant difference between the mobilization outcomes of Teeme Ära (more centralized) and Project Let's Cleanup Portugal (more decentralized). In fact, both movements were successful at mobilizing a large crowd of followers – 3% of Estonian population and 1% of Portuguese population, and both achieved the goal of actually removing tons of garbage from the country's forests. The same kind of comparison for Let's Do It! World and AMO Portugal, the non-profits that grew out of the movements, is not straightforward because their goals are different: the former aims at mobilizing countries for global scale collective action events, while the latter aims at mobilizing citizens for country scale collective action. Nevertheless, it seems that both organizations have retained their mobilizing capabilities, albeit their zest might have declined.

Therefore, it seems that successful collective action organizing happens in decentralized structures operating with an hybrid connective and collective logic. This kind of structure leverages the strengths of decentralized organizations in order to grow and operates with an hybrid logic that encourages individual participation. According to Brafman and Beckstrom (2006), the strength of decentralized organizations originates in five strengths[1]: circles, catalysts, networks, ideology, and champions. Interestingly, I found evidence of these strengths in the empirical cases I studied. Moreover, to this list I add another item, based on the inspection of the weaknesses of PLP and LDI structures:

[1]To be more precise, Brafman and Beckstrom (2006, p.86) say that "A decentralized organization stands on five legs. As with the starfish, it can loose a leg or two and still survive. But when you have all the legs working together, a decentralized organization can really take off."

polycentric governance (Ostrom et al., 1961). Next, I discuss the significance of these strengths in PLP and LDI structure. I subsumed catalysts and champions under the label 'organizers' because the role of catalysts and champions in enacted by organizers in PLP and LDI cases.

6.2 Strengths of Successful Civic Movements

Organizational structures with decentralized leadership are valuable for collective actions where issues of scale exist, such as country-scale or global-scale events, and for collective actions with accelerating production functions (Marwell and Oliver, 1993). These structures build on strengths that synergistically facilitate mass mobilization, namely:

Circles: decentralized organizations are based on circles, that is, independent and autonomous groups of people that do not depend on hierarchy to realize the mission of the organization (Brafman and Beckstrom, 2006). PLP's circles are the municipal teams, and LDI's circles are the country teams that are part of the global civic movement. Circles do not form on their own, they are the counterpart of decentralized leadership, as the following quote of a PLP interviewee illustrates: *I think the organization of this project was the most decentralized thing that happened in Portugal in recent past. [...] We didn't have: "I am in charge so you will do it my way". Each municipal team began to work as desired and made their own decisions.*

At times, circles work so well on their own that they do not see benefits in cooperating with other circles. An LDI interviewee explained that although they would very much like to have better integration of circles, in practice that is difficult to achieve: *The good thing is that country teams have much liberty in decision making so they can design a lot of different campaigns by themselves. Of course they exchange*

*ideas during LDI conferences, but there could be improvements in the integration and cooperation between teams. For example, country teams are often unaware of what is happening in the neighboring country, and I think this is why we may lose a bit on both sides.*In this respect, another interviewee added: *If country teams are organizing the cleanup for the first time they are so involved that they hardly have time to concentrate on the network. Besides, it has never been an obligation, nothing happens if they don't share... it's that the network loses the know-how they are creating if they don't share about what they're doing.*

Preexisting network: a significant number of decentralized organizations that experienced exponential growth were launched from a preexisting platform (Brafman and Beckstrom, 2006). Both PLP and LDI global movement leveraged communities of nature-related activities to grow their constituency. For example, LDI draw on the Global Ecovillage Network to publicize their initiative and also visited conferences around the world to spread the idea of the movement and to get other countries on board. As an interviewee explained: *The idea to export this idea to other countries was [...] more a kind of a regular process that everybody is aware that this is a possibility, and then it was about, for maybe one year or more, there were a couple of people who were going around the world visiting some conferences and telling about it.*

The civic movement PLP was born in the online forum of all-terrain vehicles' owners. They also sought the involvement of various other communities including cyclists, geocachers, orienteering hobbyists, Scouts, and they had the Catholic church advocating for their cause. A PLP interviewee explained that *the first contacts with potential partners did not yield much... I think people must have thought that the cleanup was a great idea but inviting people to cleanup the litter others had created and doing that without spending a penny was insane. So, near*

the end of 2009 we contacted the archbishop, who is receptive to this kind of popular initiatives. After our talk he was interviewed for the television and newspapers and he mentioned PLP. And it was from then on that he saw more openness from companies and people to collaborate with us. I think people realized that if they were hearing about PLP in the church, then this PLP thing must be something for real.

Ideology: members of a decentralized organization are bounded together by the values and principles that constitute the organization's ideology (Brafman and Beckstrom, 2006). LDI and PLP are value-based organizations that subscribe to pro-environmental values. Specifically, they envision a world (or country) without littered forests and in the importance of recycling and reducing waste. A value-based organization has "soft identity" requirements because it allows individuals and teams to preserve their own identity when they affiliate. On the contrary, a membership-based organization is more burdensome because becoming a member is a kind of "hard identity". Therefore, being part of a value-based organization is more inviting for country teams and for municipal teams because they retain their independence.

Organizers - catalysts and champions: there are specific kinds of organizers who can boost the growing of a civic movement (or organization): catalysts and champions. Catalysts get circles started and going, and then cede control and ownership to circles' members. Champions are the personification of the movement, that is, they believe in the vision of the movement to the point they are relentless in promoting the movement's causes and ideology in order to get organizations and individuals to support it (Brafman and Beckstrom, 2006).

The founders of PLP and the district coordinators that joined them had a catalyst role in PLP's collective action, as this quote illustrates: *I remember that, at a certain point, whenever we organized a meeting in a municipality, or a parish, to*

get them started it was like we had kindled a fire! Upon our leaving the meeting, people in the room were like: we are going to eradicate every dump site in this parish)!

The core team of LDI World is also regarded as the catalyst of the global movement, as this LDI interviewee put it: *there is practically no global coordination... I mean, the Estonians are still the messengers: they have regional coordinators that try to find people in countries and country coordinators to start the project there.* And other LDI interviewee reflected on the core team role as: *So I think that what we've been really doing is bringing people together during these conferences and consciously trying to create the atmosphere for these processes to unfold, for something new to happen. So I really believe in bringing people together, having some purpose to this coming together, but at the same time letting happen what is there to happen.*

In their effort to grow a movement, organizers may enact both the roles of catalyst and champion. This happened in PLP and LDI cases. PLP case the role of champion was enacted in the district coordinator, whereas LDI has a team of regional coordinators that work on finding groups of people or organizations in countries around the world to organize a cleaning event. Moreover, an LDI interviewee explained that *we have this guy from Finland who is a very special person. Some might say he is crazy and that it is not wrong <laughs>... so he kind of volunteered and basically what he started to do is: there is no money or anything involved, just basically with his own invalid pension, he travels and preaches to people in... I don't know exactly where, but places like India, Ukraine, Russia, Eastern European countries... and he told about Teeme Ära, and so he actually kind of sold the idea to people in many countries.*

Notwithstanding these strengths, decentralized structures are fluid and ambiguous and hence are prone to issues of control, including difficulty in securing recognition

and poor accountability of collaborators or participants. In contrast, structures with centralized leadership are more rigid and, while they easily achieve standardization and accountability, they may have difficulties in empowering the edges of the organization. Throughout the institutionalization process of PLP and LDI there have been difficulties in reconciling the tensions between organizational fluidity and leadership. In this dissertation, I wish to argue that the delicate balance between control and empowerment of circles may be achieved with polycentric governance (Ostrom et al., 1961). Hence, to the previous list I add the item *polycentric governance*.

Polycentric governance: According to (Ostrom et al., 1961, p.831), polycentric refers to "many centers of decision-making which are formally independent of each other (...) [that] function in a coherent manner with consistent and predictable patterns of interacting behavior." Polycentric systems are thus characterized by multi-layered governing structures that display patterns of robust, multilevel self-organization (Ostrom, 2010b; Galaz et al., 2012). Self-organization dynamics results from the existence of centers of power at different scales that allow for interventions that correct perverse dynamics of distribution of authority and for the institution of appropriate rules and norms of conduct (Aligica and Tarko, 2012).

Polycentric governance is especially relevant in contexts of international collaboration, but it can also be useful in interactions that cut across local and national level domains of influence. This kind of governance is based on a polycentric order that consists of the "processes and structures that allow complex actor constellations not subject to any single authoritative coordinating mechanisms or authority, to self-organize and make mutual adjustments" (Galaz et al., 2012, p.22). According to Galaz et al. (2012), the underlying processes of polycentric order are:

- Information sharing: requires the existence of a communication platform and routines of information sharing. This process exists in both PLP and LDI and

is supported by the use of ICTs. However, it can be improved because it is not sufficiently empowering for local level structures.

- Coordination of activities: the focus in on joint collaboration in activities and projects that require stronger commitment of parties and result in stronger relationships. This process also exists in both cases and is, to a great extent, supported by the use of ICTs. However, long term collaboration requires more costly trust building activities that depend more on the possibility of personal contact.

- Problem solving: this process requires collective sense making capabilities in order to interpret diverse and often conflicting information and build shared understandings. There is evidence of this process in both cases: in PLP it was mostly supported by the use of ICTs and it was stronger before institutionalization; in LDI, it is also supported by use of ICTs and is stronger in the global movement format.

- Conflict resolution: in situations where actors are trying to operate purposefully there are multiple perspectives and conflicts often arise. Solving conflicts is thus inevitable in any organization, including in polycentric settings. There are reports of conflictual incidents in both PLP and LDI structures, which have had different upshots.

Both problem solving and conflict resolution processes require stronger ties between multilevel structures, which calls for investment in establishing and maintaining relationships. Although the use of ICTs facilitates the maintenance of connections when the possibilities of offline interaction are limited, the building of proximity relationships through ICT mediated interaction is in fact much difficult, according to PLP and LDI empirical data. Despite the fact that the use of ICTs can support all the generic processes of polycentric order, to a great extent ICTs are mostly involved in the maintenance of loose ties that is characteristic of information sharing and ad-hoc collaboration.

Yet, structures with strong polycentric order are implied in interactions beyond information diffusion and coordinated action in multilevel governance settings. According to Galaz et al. (2012), the constitution and maintenance of structures with a stronger polycentric order is threatened by external and internal tensions. Most notably, the lack of funding for common projects and the difficulty in managing internal political tensions that threat the cohesiveness of the network of structures. These tensions are predicated in social forces, which, again, suggests that non-technological factors, such as people's intentions and capacities, are key for the constitution of structures with polycentric order.

6.3 Operations and Activities of Movements

Overall, the use of ICTs seems to facilitate some aspects of collective action organizing while also hindering other aspects. This pattern exists in all dimensions I studied, except for organizing costs wherein the use of ICTs is tied only to lower organizing costs[2]. This findings suggests that the organizing of collective action can indeed be facilitated by the use of ICTs, but actual participation remains a big unknown. In other words: if organizers build it, participants may or may not come.

As an LDI interviewee put it: *we realized that: ok, we can make so detailed instructions and we can optimize with IT and whatever, but in the end people will do what they think is best[...] So we had to let go, just let go! Yes, especially a few days before the cleanup, at that point you can't do anything anymore. It's a bit frightening but on the other hand it was pretty nice because suddenly practically all email died, and everyone was just waiting.*

[2]Although the use of ICTs contributed to lower organizing costs in PLP and LDI, organization and participation costs remain high for collective actions that involve more than online activities. In PLP and LDI cases, organizers and participants performed more than relatively simple and inexpensive online actions (e.g registering in the community website or mailing list, commenting and following social media sites). They also performed more difficult and costly offline actions, such as mapping dump sites, collecting garbage, and engaging sponsors and patrons.

A PLP interviewee also conveyed an identical perspective: *In this municipality volunteers were basically waiting to see what was going to come out of what we [organizers] were doing... we didn't have much feedback [in community website], and this made it difficult for us because we couldn't know if we were going to have 250 volunteers or 1000 volunteers [in the cleaning event]. If we just relied on internet, we could have had problems... suppose that suddenly lots of people appear? or no one? To overcome that we contacted and talked to lots of people directly, in order to get a firm compromise that they were coming. And that's different kind of compromise that we get from people saying in an internet page they will come.*

The use of ICTs facilitates some aspects of collective action organizing and hinders others. While the use of ICTs is in general substantially empowering for organizers, at the same time it may limit participant's further involvement, especially if ICTs are used in a collective action logic fashion. When ICTs used do not offer opportunities for people to engage with collective action in more personalized terms (e.g. widgets that facilitate sharing, possibility of interaction with organizers and other participants), network effects are difficult to exploit (Bennett and Segerberg, 2013; Wright, 2015). For example, websites are good broadcasting platforms that offer ownership and control over content (good for organizers) but they need to be made more participatory in order to seize network effects.

Also, social media platforms serve the organizers of collective action well because collective actions grow out of connecting with interested and resourceful participants. These platforms are authentic "engines of connectivity" (Van Dijck, 2013) that exploit network effects. Recent history showed that sharing of user generated content, particularly videos, in social media platforms is a powerful way of generating viral interest and induce mass behavior. The Kony2012 video (Thomas et al., 2015) and the video of the Egyptian Khaled Said being tortured attest just that. This also happened with the video produced

by LDI about the cleaning event in Estonia. It can be argued that these videos had a catalyst role in collective action, and indeed, in PLP and LDI case, videos were part of organizers' "mobilization toolkit".

For network effects to become significant, a critical mass of connections is required (Markus, 1987). In the absence of this critical mass, it is unlikely that a collective action will grow the necessary connections to become viable (Marwell and Oliver, 1993). Engaging a critical mass of organizers is difficult per se, yet it is becoming even harder within incorporated social media. Incorporated social media platforms like Facebook, YouTube, and Twitter are tuned to users' desire to make connections and share user-generated content. Although these platforms articulate a feeling of connectedness and collectivity, connectivity within these platforms is engineered by opaque algorithms that are staked on the values of popularity, hierarchical ranking, and personalized recommendations (Van Dijck, 2013). Consequently, the dynamic nature of these algorithms meddle in how connectivity is in fact created among users because visibility in these platforms is "subject to various ranking, sorting and classification algorithms" (Bucher, 2012, p.1176).

The implications of these engineered connections within social media platforms for the organizing of collective action are substantial. First, it impairs significantly the reach of collective action groups that rely on social media to publicize their content. As Tufekci (2014, p.10) noted, with respect to Facebook and Twitter algorithms: "groups without funds to promote their content will become hidden from public view, or will experience changes in reach that are beyond their ability to control". Second, the tailored distribution of content to users further reinforces the natural tendency that humans have to selectively expose to information (Festinger, 1957), and consequently contributes to a growing fragmentation or balkanization of the internet public space (Van Alstyne and Brynjolfsson, 2005), with the inherent losses in terms of the ability to mobilize consensus.

Under these conditions, it seems that tapping on the connectivity afforded by in-

corporated social media platforms to organize collective action is increasingly difficult. These commercial platforms are fundamentally looking for ways to monetize the data and metadata that users voluntarily cede in exchange for connectivity, and therefore their technological architecture and business model are not oriented towards facilitating consensual collective action or conflictual collective action (protest movements). They are empowering and at the same time exploiting users because "sociality is enjoyed and exercised through precisely the commercial platforms that also exploit online social activities for monetary gains." (Van Dijck, 2013, p.18).

6.4 Human Agency

The success of collective actions like those that PLP and LDI organize (success meaning the realization of collective action) is profoundly linked to the capacities and intentions of the individuals and organizations behind it. Mass collective action events like those organized by PLP and LDI require a lot of preparatory work. There has to be a critical mass of organizers who work relentlessly in the practical aspects of organizing and mobilize people and organizations from all quadrants to participate. Organizers, in PLP and LDI cases, are primarily volunteers devoted to a cause, bounded by an organizational structure (formal or informal), who are working with others in similar circumstances, and are using various ICTs to support the interactions within that work.

As such, in PLP and LDI cases, the use of ICTs is instrumental. Overall, the use of ICTs in collective action supports the activities of organizers and their interaction with participants. However, without resourceful organizers and motivated participants, collective action does not take off. Therefore, although the use of ICTs allows organizers and participants to operate purposefully in order to organize collective action, the extent to which they succeed in the actual concretization of collective action depends on their capacities and intents.

The last point suggests that human factors are, to a great extent, implicated in the success of collective action supported by ICTs. The effect of technology in collective action situations is, as Toyama (2015, p.29) put it, "to amplify human forces. Like a lever, technology amplifies people's capacities in the direction of their intentions". This is in line with human agency positions about the consequences of information technology, which suggest that ICTs are "implicated in social change at the discretion of human agents" (Boudreau and Robey, 2005, p.4).

In instances of collective action supported by social media platforms, the agency of organizers and participants is, at the same time, amplified and co-structured by these technological platforms. Collective action is structured according to rules that are coded in these platforms, which incentivize certain behaviors and difficult others (Van Dijck, 2013). As such, "the technology itself only appears to execute, or implement, the coordinating and structuring functions that enable collective behavior in the Internet. The real protagonists are above all the leading Internet companies, as these lay the foundations on which non-organized collective behavior on the web can unfold and become stable." (Dolata and Schrape, 2015, p.7).

As modern social life becomes more intertwined with ICT platforms, we should consider our involvement with these technologies, particularly social media. The success of collective action supported by ICTs should not clash with the economic logic of corporate social media. For instance, in PLP case, when the community website was terminated, the content was siloed in the Ning platform and could not be transferred to another platform. As a result, there was a major breakup with the community that had been created through that platform with consequences for the future of the movement and AMO Portugal. These rifts are not irreconcilable because sometimes communities are able to reassemble. However, what is perhaps a valuable lesson from this case, ownership of content and control over communication platforms is important for the longevity and

resilience of civic movements supported by ICTs.

Chapter 7

Conclusions

In this thesis I investigated the entwinement of ICTs with the organizing of consensual collective action. My aim was to explain how the use of ICTs facilitate or hinder the organizing of collective action by consensus movements. I found that, on the whole, the use of ICTs empower and constrain the agency of organizers and participants in these movements, and I argued that the success of collective action organizing is predicated in human forces and in social processes. This argument was based on the critical observation of how these consensus movements were constituted, structured, and how they operated. In the following sections of this chapter, I outline the conclusions of this study, explain its implications for theory and practice, and elaborate on the shortcomings of this research and on the perspectives for improvement and future work.

7.1 Lessons Learned

In terms of the dynamics of emergence of civic movements, the findings of this thesis imply that the constitutive role of ICTs is more limited than suggested by other studies (e.g. Bennett and Segerberg (2013)). The empirical data analyzed indicated that collective action remains latent if organizers and participants' activities are circumscribed to online

possibilities of interaction and that social processes are necessary for the structuring of movements in informal groups that are able to mobilize resources and participants for collective action events. This result is in accord with Dolata and Schrape (2015, p.7) who assert that the emergence of capable collective action groups is "regularly accompanied by distinct social formation and differentiation processes and the emergence of more stable forms of organization and coordination".

The findings of this thesis also suggest that decentralized structures operating with an hybrid connective and collective logic are best poised to organize collective actions with accelerating production functions. This kind of structure is especially effective for organizing scalable collective actions, that is "mass actions whose effect increases with the number of participants" (Marwell and Oliver, 1993, p.63), as for example country-scale collective action events that take place at the local level, or transnational collective actions that involve various countries. Further, I argued that this kind of organizational structures are effective because they exhibit the following strengths: they are based in the co-operation of autonomous groups of people (circles); they leverage pre-existing social networks to grow; their members and affiliates subscribe to the movement's established ideology; and their fluidity and self-organizing is buttressed by a certain kind of leadership – one that involves having catalysts and champions as organizers and the establishment of a polycentric order.

Overall, these strengths are more dependent on a combination of human factors than on the existence of a certain technological infrastructure. Hence, I argued that the success of collective action organizing is profoundly linked to the capacities and intentions of individuals and organizations behind it – the organizers – who are bounded by a formal or informal structure and work on the practicalities of organizing collective action. Moreover, these organizers nowadays use various ICTs to support their work and their interactions with participants, sponsors, and others. In this respect, another

finding of this thesis was that the use of ICTs facilitated some aspects of collective action organizing and, at the same time, hindered other aspects. In general, the use of ICTs is substantially empowering for organizers but, at the same time, is a limiting factor in participant's involvement, especially when ICTs are used with a collective rather than connective logic.

In sum, the empirical cases examined in this thesis point to an instrumental role of ICTs. That is, the use of ICTs allows organizers and participants to operate purposefully in order to organize collective action, but the success of collective action hinges on the capacities of organizers and motivations of participants. Based on this argument, I concurred with the assertion of Toyama (2015) that ICTs amplify human forces. To a great extent, the use of ICTs in collective action amplifies organizers and participants' capacities in the direction of their intentions.

7.2 Contributions

This thesis offers the following contributions to research about the entwinement of ICTs with collective action organizing:

- A comparative study of two cases of collective action's entwinement with ICTs, occurring in two different countries (Portugal and Estonia), and focusing on the rare and understudied phenomenon of consensus movements;

- A thorough and critical examination of the role of ICTs in collective action organizing, addressing ICTs' positive and negative interferences in this phenomenon;

- A conception of the entwinement of ICTs with collective action organizing as a seven-dimensional construct comprised of: communication, connectivity, coordination, entry and exit capability, individual participation, legitimacy, and organizing costs;

- A critical integration of the cases findings with the extant literature, which reflects on the adequacy of existing frameworks, and suggests refinements and extensions.

These insights have the potential to be useful to the "practice" of collective action too. The understanding of how the use of ICTs meddles in the organizing of collective action is relevant for an array of organizers who engage in these undertakings, namely organizations from civil society (e.g. associations and non-governmental organizations), interest and advocacy groups, social entrepreneurs, social movements, and online communities (e.g. communities of practice and hobby communities). This, however, should not rule out the possibility that these insights may be relevant too for example for practitioners involved in the management of processes of technological innovation, especially radical or disruptive innovations that are path-breaking in an industry or sector. Indeed, according to Hargrave and Van de Ven (2006), the processes of technological innovation and entrepreneurship are in many ways similar to the collective action processes of social movements because both involve collective mobilization to legitimate either a technical innovation or, in the case of movements, social change.

7.3 Limitations and Future Work

There are limitations associated with the research conducted in this thesis. To begin with, in this research I did not consider the cultural dimensions of the countries in which the cases examined hereto take place. Variability in societal cultures explain "broad tendencies to prefer certain states of affairs over others" (Hofstede, 2001, p.5), and hence it could be that variational aspects of the cases studied in this thesis are explained by differences in the national cultures of Portugal and Estonia. As such, future work should consider this shortcoming and draw on theoretical models of national culture as tools to compare cultures.

Other limitations concern with the strategy of inquiry used in this work. For instance,

the case study method was a viable possibility for conducting this investigation but it must be noted that qualitative research methods that allow for a continuous immersion in the field settings, such as ethnography, could probably provide more varied data. For example, in this research it was not possible to get the insider's perspective that data collected from participant observation affords.

In addition, the case study method is limited in terms of generalizability of results. The results of interpretive case study research are contextual and hence cannot be extrapolated to a population. However, case studies are generalizable to theoretical propositions Yin (2009). According to Walsham (1995), interpretive case study findings are valuable not as predictions for future situations but because they provide rich insight on particular phenomena. I believe the findings of this thesis are fit to this kind of generalizability because the cases investigated hereto are quite unique and thus revelatory of the understudied phenomenon of consensus movements and consensual collective action.

Still with respect to methods, another shortcoming is that data collection was done retrospectively. The timespan examined covered the periods of 2007-2013 for Let's Do It and 2009-2013 for Project Let's Cleanup Portugal. Yet, documentation about both cases was collected in 2011 and after, and interview data was collected in 2012 and 2013. Whereas documentation rests as a stable data source, it could be that the interviews are biased by participants' difficulties in recalling events from some time ago. However, I believe that the conjugation of documentation with interviews provides for a strengthened dataset.

This research can be extended in a number of ways. One possibility is studying more cases of consensus movements, including cases of unsuccessful movements, and using qualitative comparative analysis (Ragin, 1989) to unveil patterns of consensual collective action organizing with ICTs in order to thoroughly trace the configurations

of this phenomenon. Another possibility is using survey methods to collect data more extensively about the phenomenon. The survey can be based on propositions built from the seven-dimensional construct of the entwinement of ICTs with collective action organizing (see section 5.3.1. Seven Dimensions).

A third possibility involves investigating other instances of collective action in order to verify if the findings of this thesis hold for different settings. The kind of organizing examined in this thesis also happens in instances of collective action that are revolutionary and, to some extent, also in collective actions with decelerating production functions (Marwell and Oliver, 1993). Hence, the results of this research beget the question of whether these findings hold, for example, in protest movements, in communities of practice, or in varied interest groups (e.g. groups of parents, expats, and hobbyists organized through MeetUp, Facebook, and Google groups).

Finally, an issue that I believe should be further investigated is the harnessing of different types of content (e.g. video, images, text) in collective action organizing. Similarly to this study, previous research about the use of ICTs in collective action reported about the catalytic role of videos to generate interest and mobilize support for collective action (for example, Leong et al. (2015); Cardoso and Neto (2004); Gaby and Caren (2012); Harsin (2013); Thomas et al. (2015); Radsch and Khamis (2013)). However, none of these studies, including this thesis, has theorized about how the production and curation of different types of content integrates with collective action organizing and how it impacts different audiences.

7.4 Concluding Remarks

Some, or perhaps many, dreamed that the emergence of movements such as Let's Do It and Project Let's Cleanup Portugal was the harbinger of citizen-driven governmental accountability and a reinvigorated way of influencing politics and reducing power dis-

tance. Indeed, these movements achieved an unprecedented level of consensus by rallying citizens, private organizations, public organizations, and civic associations to bridge their differences and tackle the problem of environmental degradation in the forests of Estonia and Portugal. Although these rallies did not bring out a revolution, the vision and the process of collective organizing of these movements was indeed revolutionary. As such, these movements are emblematic of new ways of organizing facilitated by the use of ICTs and indicate that this kind of organizing can contribute to a revitalization of the public sphere.

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Appendices

Appendix A

Concepts matrix

This appendix shows the concepts extracted from each journal article examined in the literature survey, compiled into a matrix.

Year	Reference	Incl.	ICTs Discussed	collective / shared awareness	collective behavior	communication network	communication-based public goods	community dreaming and reflection	computer mediated communication	connective public good	crafting of rules and sanctions	critical mass	dimensions of collective action	emergent collective action	heterogeneity and homogeneity	identity	impact of ICTs	individual level contribution to CA	institutionalization inertia	interaction strategies	interest groups	involvement of stakeholders	IT as a resource	leadership	multilevel perspective	NGO	notoriety or reputation	online collective action	open source production	organization costs	organizational attributes	organizational hybridity	ownership	peripheral group members	political parties	predictors of collective action	private benefits	reflective media	repertoires of action	reshaping / reconfiguring access	social integration and polarization effects	social movement	social ties / capital	sustainability of collective action	swarm intelligence	tactical innovation and tactical adaptation	technology as a reinforcer / reinforcement model	technology as simplifier / amplification model	transnational mobilization	visibility
2002	Agre	Y	Internet									x					x		x																														
2009	Anthony Et Al	Y	Wikipedia				x					x																	x																						
2012	Banerjee & Agarwal	Y	Blogs		x									x																																				
2002	Brunsting & Postmes	Y	Internet									x	x				x											x					x		x														
2000	Burgoon Et Al	N	New communication technologies																																															
2007	Chadwick	Y	Internet														x				x				x						x				x						x					x			
2009	Chandes & Paché	N	logistic systems																																															
2011	Coopman	Y	Internet		x									x																																		x			
2006	Flanagin Et Al	Y	New communication technologies														x			x				x						x	x	x																	
2004	Fulk Et Al	Y	Corporate Intranets									x	x					x									x																							x
2003	Hampton	Y	mailing list						x			x						x										x		x																			x
2008	Hara & Jo	Y	Internet																				x								x			x														
2006	Hess and Ostrom	Y	Scientific commons								x							x																															
2013	Hoefnagel et al	N	Information technologies																																														
2004	Hooff	Y	Electronic calendar				x			x																																							
2013	Hussain & Howard	Y	mobile phones, internet, s.m.																			x	x																										x
2006	Jung Et Al	N	group collaboration system																																														
2006	King	Y	technological infrastructure			x																	x																										
2010	Lam and Ostrom	N	none								x													x												x													
2007	Lev-On & Hardin	Y	internet											x			x											x		x																			
2003	Lin & Dutton	Y	website, mailing list														x		x											x										x										
2010	Livingston & Klinkforth	Y	internet, sm, mapping technologies														x					x																									x	x		
2002	Lombardo Et Al	Y	email, websites	x													x						x			x		x																					
2010	Lomicky & Hogg	Y	blogs																				x						x																			x		
2007	Lubell et al	N	none																																														
2006	Markus Et Al	Y	vertical IS standards												x							x			x																								
2009	Moore et al	N	IT security																																														
2004	Mueller et al	N	none																																														
2009	Nielsen	Y	websites, email, sm						x								x						x							x	x				x			x										
2012	Norwood & Cumming	Y	GIS	x				x														x														x													
2007	Peddibhotla & Subramani	Y	public document repositories								x							x									x								x									x				
2009	Pickerill	Y	websites, email, sm														x				x						x										x											
2012	Pilny & Shumate	Y	hyperlinks			x								x											x		x																						
2011	Prasarnphanich & Wagner	Y	wikipedia									x															x								x								x						
2012	Rao	Y	internet discussion forum																								x																			x				
2013	Rubira & Gil-Egui	N	blogs																																															
2005	Sandoval	Y	mailing list, website														x				x								x																					
2008	Shumate & Lipp	Y	hyperlink networks				x			x					x											x				x																				
2012	Srinivasan	Y	video making and sharing					x						x																							x													
2005	Steinfield Et Al	Y	vertical IS standards																			x			x																								
2005	Tatum	Y	google bomb hyperlinking														x										x																							
2012	Thapa Et Al	Y	wireless network project			x			x								x						x									x																
2013	Thigo	Y	ushahidi and huduma	x										x			x																																	
2000	Townsend	Y	Internet													x	x																																	
2012	Valcic & Domsic	N	websites, destination manag sys																																														
2006	Vasi	Y	Internet			x										x	x																															x		
2003	von Hippel & von Krogh	Y	open source software							x								x						x					x				x				x											
2013	waal & Ibreck	N	Internet																				x																										
2005	Wasko & Faraj	Y	electronic network of practice			x						x						x								x										x												x
2004	Wasko Et Al	Y	electronic network of practice			x					x																									x													x
2008	Yzer & Southwell	Y	New communication technologies						x						x	x	x								x															x						x	x		
2012	Zhang & Wang	Y	Wikipedia															x						x				x						x														
2011	Zhao Et Al	Y	vertical IS standards												x							x			x											x	x											
2005	Zheng & Wu	Y	Internet														x			x			x																							x	x	x		

Figure A.1: Concepts matrix

Appendix B

List of selected bibliographic references

This appendix lists the bibliographical references of the journal articles included in the literature survey, ordered alphabetically by author's last name.

List of Selected Sources

1. Agre, P. E. (2002). Real-time politics: The internet and the political process. *The Information Society*, 18(5):311–331.
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Appendix C

Code book (literature review)

This appendix shows the structure of the code book I used for examining the journal articles included in the literature survey. This code book was created with HyperResearch – the qualitative data analysis software used in this research.

- All Codes
  - AFFORDANCES
    - INDIVIDUAL - awareness
    - INDIVIDUAL - barriers to participation
    - INDIVIDUAL - change geography of access
    - INDIVIDUAL - empowerment
    - INDIVIDUAL - self-regulation
    - INDIVIDUAL - shape time horizon
    - INDIVIDUAL - visibility
    - ORGANIZATIONAL - affiliation
    - ORGANIZATIONAL - coordination costs
    - ORGANIZATIONAL - cumulative contribution
    - ORGANIZATIONAL - distributed trust
    - ORGANIZATIONAL - division of labor
    - ORGANIZATIONAL - enable self-created spaces
    - ORGANIZATIONAL - integrate online and offline
    - ORGANIZATIONAL - IT as a resource
    - ORGANIZATIONAL - mass communication
    - ORGANIZATIONAL - modularity
    - ORGANIZATIONAL - new modes of engagement
    - ORGANIZATIONAL - permeability of boundaries
    - SOCIETAL - bypass gatekeepers
    - SOCIETAL - decentralize power
    - SOCIETAL - documentation of events
    - SOCIETAL - reconfiguration of networks
    - SOCIETAL - shape agenda
    - SOCIETAL - social monitoring
  - COLLECTIVE ACTION THEORIES
    - approaches of different disciplines
    - expectancy value model
    - relative deprivation theory
    - social capital theory
    - social exchange theory
    - social identity theory
    - theory of CPR governance
      - continuous investment
      - crafting of rules and sanctions
      - leadership
      - long term performance
      - monitoring
      - short term performance
      - stakeholder co-operation
      - willingness to act collectively
  - CONSTRAINTS
    - ORGANIZATIONAL - accountability
    - ORGANIZATIONAL - commitment and identification
    - ORGANIZATIONAL - communication problems
    - ORGANIZATIONAL - control
    - ORGANIZATIONAL - disembedded network
    - ORGANIZATIONAL - transaction costs

```
        ORGANIZATIONAL - trust building
        ORGANIZATIONAL - use in combination
        SOCIETAL - ephemerality
DEFINITIONS
        classic vs modern types of CA
        collective action
        commons-based production
        conflict interaction
        cooperation interaction
        framing CA as a communicative phenomenon
        free rider
        individual vs collective acts
        normative vs non normative actions
        property - impossibility of exclusion
        property - jointless of supply
        social loafing
        types of players
ICT IMPACT INDIVIDUAL LEVEL
        enable sociotechnical capital
        extensive participation
        identity construction
        networked individualism
        spacing
ICT IMPACT ORGANIZATIONAL LEVEL
        CMC as organizing tool
        Collective Action Space
                consequence - group size
                consequence - volatility
                definition - collective action space
                footprint in CA space
                mode of engagement in CA
                modes of interaction in CA
        Dissentworks Theory
                centrality of digital networks
                consensus
                dense relational networks
                dissent network
                organizational structure
                process and resource sharing
        network forms of organization
        organizational hybridity
        repertoires of collective action
                digital network repertoires
                repertoires of interest groups
                repertoires of political parties
                repertoires of social movements
                tactical dynamics
ICT IMPACT SOCIETAL LEVEL
        acceleration
        amplification model
```

changes in governance
collective cognition
compilation effects
control and power
increased regulation
institutional change
patterns of tensions
reinforcement model
social production
technological determinism

INSTANCES OF COLLECTIVE ACTIVITY

common pool resources
communality class type
community improvement projects
connectivity class type
electronic network of practice

MECHANISMS THAT EXPLAIN COLLECTIVE ACTION

cognitive capital
commitment
critical mass
network centrality
network externalities
ownership
positive and negative social controls
propinquity
reciprocation
reputation
strong direct social ties
swarm behavior
weak social ties

OTHER

recommendations
technological landscape

QUOTES

disparate phenomena but same processes

RESEARCH GAPS

conditions that lead to social change
configurations of information infrastructure
failure cases
how ICTs are used in representational strategies
ICTs and grassroots networks
international comparison studies
nature and dynamics of costs of participating
perceived legitimacy of CMC information
role of good samaritans in production PG
sustained collective action in networks
why collective actions are viable
why ICTs are used in certain ways by activists

Appendix D

Invitation sent to participants

This appendix is a printout of the electronic newsletter sent to AMO Portugal volunteers inviting them to participate in the research study of PLP case.

Se tem dificuldades em ver correctamente este Boletim Informativo, leia-o online, carregue aqui.

AMOPortugal.org

A M.O. Portugal - Associação Mãos à Obra Portugal

Mãos à obra! Portugal

AMO Portugal – Associação Mãos à Obra Portugal

A AMO Portugal, considerando que o estudo de caso do **Limpar Portugal 2010** permitirá compreender o papel das tecnologias de informação em projetos de iniciativa dos cidadãos com preocupações ambientais, decidiu apoiar a iniciativa que está a ser desenvolvida pela doutoranda Ana Cardoso da Universidade do Minho.

Para tal solicita-se a todos os Voluntários disponíveis acedam aqui.

Para saber mais aceda a http://www.AMOPortugal.org.

Universidade do Minho

AMO Portugal - Associação Mãos à Obra Portugal
Organização não governamental de ambiente
Instituição sem fins lucrativos

A AMO Portugal é herdeira da organização de base do Projecto Limpar Portugal e estará sempre intimamente ligada à metodologia de acção implementada pelo Projecto, que culminou no DIA L, 20 de Março de 2010.

Os emails enviados destinam-se única e exclusivamente a informar. Não devem ser considerados SPAM. Ao abrigo da legislação em vigor de regulação do tratamento automatizado de dados de caracter pessoal, o destinatário pode aceder aos seus dados, rectificar ou cancelar os mesmos.
Não responda a este email. O seu envio foi efectuado de forma automática. Os emails recebidos no endereço utilizado não serão lidos.
Para nos contactar, utilize, por favor, um dos endereços disponíveis na página de "contactos" em http://www.AMOPortugal.org.

Figure D.1: Newsletter emailed by AMO Portugal to PLP volunteers about the study

Appendix E

Informed consent form

This appendix shows the informed consent letter handed to the interviewees of PLP and LDI case studies.

Universidade do Minho

Escola de Engenharia

Departamento de Sistemas de Informação

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ESTUDO DE CASO PROJECTO LIMPAR PORTUGAL

Informação Para Participantes

1. O que é este estudo?

Este estudo tem como objectivo compreender o papel das tecnologias de informação em projectos da iniciativa de cidadãos com preocupações ambientais, de forma a poder futuramente desenvolver tecnologia mais adequada às necessidades deste tipo de projectos.

2. Quem são os investigadores?

Este estudo está a ser feito por Ana Cardoso, e fará parte do seu trabalho de Doutoramento em Tecnologias e Sistemas de Informação na Universidade do Minho, sendo supervisionado pelo professor doutor João Álvaro Carvalho, professor catedrático no Departamento de Sistemas de Informação da Universidade do Minho e pela professora doutora Marie-Claude Boudreau, professora associada na Universidade da Geórgia nos Estados Unidos da América.

3. O que envolve a minha participação?

A sua participação neste estudo envolve uma entrevista onde lhe serão colocadas questões relacionadas com a sua participação no projecto Limpar Portugal. Nesta entrevista NÃO lhe serão colocadas questões de foro privado ou sobre assuntos confidenciais.

A entrevista será, idealmente, áudio gravada por razões práticas. No entanto, poderá interromper a gravação a qualquer momento e, caso não deseje prosseguir, a gravação será apagada.

4. Quanto tempo será necessário? Quando e onde será realizada?

A entrevista tem uma duração estimada de 30 minutos e será feita em horário e local de sua conveniência.

5. Se eu decidir participar, posso alterar a minha decisão no futuro?

A sua decisão de participar neste estudo é completamente voluntária, pelo que não é obrigado(a) a participar. Caso aceite participar poderá, a qualquer momento, alterar a sua decisão.

6. O que acontece às informações prestadas por mim?

Todas as informações prestadas por si são estritamente confidenciais e apenas serão conhecidas pelos investigadores envolvidos neste estudo. Poderá ser publicado um relatório sobre este estudo, mas os participantes NÃO serão identificáveis nesse relatório.

7. Que contrapartidas resultam da participação neste estudo?

Todos os participantes serão incluídos no sorteio de 3 vales oferta no valor de 50 Euros, 30 Euros, e 20 Euros. O sorteio será efectuado após a realização de todas as entrevistas e os premiados serão contactados por e-mail. Os vales oferta serão remetidos por correio para a morada que os vencedores indicarem.

Adicionalmente, quando o estudo for concluído, todos os participantes serão informados dos resultados obtidos.

8. Corro algum risco ao participar neste estudo?

Não há quaisquer riscos conhecidos em relação à participação neste estudo.

9. Tenho questões adicionais sobre a minha participação neste estudo

Agradecemos todas as questões que nos possa endereçar sobre este estudo e faremos os possíveis por responder de imediato às suas dúvidas. As suas questões devem preferencialmente ser endereçadas ao e-mail: anachcardoso@dsi.uminho.pt

Esta informação é para sua futura referência.

Departamento de Sistemas de Informação da Universidade do Minho

FORMULÁRIO DE CONSENTIMENTO INFORMADO PARA PARTICIPAÇÃO EM ESTUDO DE CASO PROJECTO LIMPAR PORTUGAL

Eu, _____, com o
(nome do participante)
endereço de e-mail _____, declaro que tive conhecimento da informação para participantes no estudo de caso Projecto Limpar Portugal e que decidi participar.

_____ _____
Assinatura do Participante Data

Entreguei nesta data ao participante a carta de informações sobre o estudo e disponibilizei-me a esclarecer as suas questões, pelo que acredito que este possui informação suficiente para decidir de forma esclarecida.

_____ _____
Assinatura do Investigador Data

Universidade do Minho

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CASE STUDY LET'S DO IT

Information for Participants

1. What is this study?

The objective of this study is to understand the role of information and communication technologies in the organization of large civic movements.

2. Who are the researchers?

This study is part of the doctoral work of Ana Cardoso toward a Phd degree in Technology and Information Systems at University of Minho, in Portugal. Her work is supervised by professor João Álvaro Carvalho from University of Minho in Portugal, and by professor Marie-Claude Boudreau from University of Georgia, in United States of America.

3. What involves my participation?

Your participation in this study involves a 30-minute interview where you will be asked only about Let's Do It project. In this interview, you WILL NOT be asked to disclose any private or confidential issues.

For practical reasons, we ask your consent to audio record the interview. Recording significantly eases the process of interviewing thus taking much less time, given that there is no need for the researcher to take detailed written notes.

In any case, you may interrupt the recording at any time and, if you do not wish to proceed, the recording will be deleted.

4. If I decide to participate, can I change my mind later?

Your decision to participate in this study is voluntary, and you are not obliged to do it. You may, at any time, change your decision and ask to withdrawal.

5. What happens to the information disclosed by me?

All information provided by you is strictly confidential and will only be known by the researchers involved in this study. We expect to publish academic articles based on this research, but we will NOT identify any participant in our reports.

6. Are there any benefits from the participation in this study?

When we complete the study, we will email a report with the results to participants who express that wish. In addition, the publication of articles about this study in international conferences and academic journals will contribute to the visibility of Let's Do It civic movement globally.

7. Are there any risks for me or for my health concerning this study?

There are no known risks from the participation in this study.

8. I have additional questions about this study.

We thank any questions you may address us about this research and will try to answer them promptly. Please address the questions preferably to the email: anachcardoso@dsi.uminho.pt

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CONSENT FOR PARTICIPATION IN INTERVIEW RESEARCH

I have read and understand the information about this study. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.

_____ _____

(Signature of Participant) (Signature of Researcher)

_____ _____

(Printed name of Participant) (Date)

Appendix F

Interview protocol

This appendix is the interview protocol established for the interviews conducted in this research.

Interview Protocol

This document outlines the general procedure and guidelines to be adopted in the conduction of face-to-face interviews with the participants of the study Let's Do It Portugal and LDI. The interview will evolve through three main moments, which are covered below.

First moment – Briefing

The interaction begins with an introduction in order to facilitate rapport with the participants. This introduction covers the following aspects:

- Introduction of the researcher and the study, explaining the overall purpose of the study and the interview;
- Asking the participant if he/she has any questions regarding the letter of information about the study that was sent beforehand and if he/she is willing to give his/her informed consent;
- Assuring participants of the confidentiality of data and their right to withdraw from the study at any time;
- Thanking the participant for his/her contribution and asking if he/she has interest in receiving a summary report with the main conclusions of study;

Second moment – Interview

The second moment is the interview itself. The researcher will avail herself of the interview guide and will focus on maintaining a fluent conversation with the participant by demonstrating interest, through direct eye contact, and also by showing understanding through nods and other expressions of agreement such as " hum-hum", "yes", "of course", "I see".

Third moment – Debriefing

The goal of debriefing is to attain a nice closure with the participants and to relieve some tension or anxiety that the interview may have caused.

The following aspects will be covered in the third moment:

- Asking the participant if he/she wants to report anything else and if he/she has any questions about the study or the interview;
- Reiteration of thanks for the contribution given and show openness regarding answering any future questions or doubts about their participation;
- Asking permission to come back to them in the future case any clarification regarding the interview is needed;

Interview Aftermath

After the interview, a period of informal conversation usually follows. If any interesting aspects arise during this interaction the researcher will ask permission to take notes and include these in the study.

After goodbye and parting from the interview locale, the researcher should create another backup of the audio file so that the risks or losing the recording are minimized. The researcher will also set aside some quiet time to write the immediate impressions about the interview and about what has been learned.

Appendix G

Interview guide

This appendix is the interview guide used with PLP and LDI interviewees.

V4. Junho 2013.

Tópico	**Exemplo de Questões**	**Desenvolvimento, provas**
PLP	- Como conheceu o PLP?	- De que forma se envolveu? - Como participou?
	- Que tecnologias ou programas de computador utilizou?	- Pode dar exemplos da utilização que fez?
	- Como era feita a comunicação do PLP ao nível da vossa equipa?	- Que programas de computador utilizou na comunicação? - Qual é a sua opinião sobre a utilização desses programas? - Dificuldades e vantagens?
	- Como foi feito o planeamento do dia L?	- Que programas de computador utilizaram? Por exemplo no mapeamento e na logística - Que dificuldades tiveram?
	- Como envolviam os voluntários?	- Como se relacionavam com a coordenação concelhia? - Como foi a formação de equipa?
	- Como se relacionava com a coordenação nacional?	- Como foi a formação da equipa da coordenação nacional? - Como trabalhava a equipa da coordenação nacional? - Que programas de computador utilizavam? - Quais as vantagens e dificuldades deste tipo de organização?
Pós PLP	- Depois do dia L, o que acontece ao PLP?	- Contacto com os voluntários - Destruição das equipas, incluindo a coordenação nacional
	- Como compara a AMO Portugal ao PLP?	- Como é a comunicação e articulação? Reuniões? Programas de computador? - Relacionamento com voluntários?
LDI World	- Como o PLP se relacionou com LDI Estónia?	- E atualmente, como se relacionam com LDI World?
	- Como comunicam e que programas de computador utilizam?	- Qual é a sua opinião sobre a estrutura do LDI World?

Interview Instrument #1

Topic	Exemplary Questions	Follow-ups, Probes, Specifying
Preparation of cleaning event	- How did you get involved in LDI back in 2008?	- How did you learn about the idea?
	- How was the planning done on the side of IT?	- Was it a structured IT project from the beginning? How were the decisions about IT needs done? How about funding?
	- Can you describe the IT team of LDI?	- How was the team structured (e.g. leadership)? Who else worked in IT? How did the IT team and the LDI core team related?
	- In what ways was IT useful in the preparation of the cleanup event?	- Could you give some examples of specific situations where the IT team intervened?
	- What were the major hurdles and difficulties in this project?	- Were there any threats to the realization of the project? Do you remember any significant milestones in this project?
Cleaning event	- What kind of IT support was necessary in the cleaning day?	- Can you provide some examples of IT supporting the work on the field on the cleanup day?
Aftermath	- Do you remember what happened after the cleaning event?	- What happened to the software? What happened to the team?
	- What did you learn from this IT project in terms of impact of IT?	- Do you see any connection between the IT part of the project and the results of the action?

Interview Instrument #2

Topic	**Exemplary Questions**	**Follow-ups, Probes, Specifying**
Motivation	- How did you get involved in LDI?	- What did you think about the idea of the project?
Work	- Can you describe your work within LDI? - How do you use IT in your work within LDI?	- Why is this work necessary? - Can you give some other examples of IT supporting work within LDI? - Are you working autonomously or are you part of a sub-team within LDI?
Structure	- How is LDI structured nowadays? - How has this structure evolved since 2008?	- How are decisions made within LDI? Are there any functional dependencies? - How does this structure works, in practice?
Role of IT	- How is IT used within LDI organization? - How is IT supposed to help you in your work within LDI?	- Can you provide examples of situations where IT is not used? - Are there any difficulties or limitations because of using IT? - How do you feel IT does or does not do the job it is supposed to do?
Relationship	- Can you explain how LDI nowadays relates to the countries participating in Clean World 2012?	- Can you provide examples of collaboration involving IT between LDI and other countries?

Appendix H

Transcription protocol

This appendix shows the rules and guidelines used in the transcriptions of interviews in order to achieve coherent and normalized transcriptions.

Transcription Protocol

This document summarizes the conventions and rules adopted in the transcription of audio taped interviews for the purpose of quality assurance and uniformity of the resulting text files.

1. *Document form*
   - Margins, indentation, and font type used in the document as per the default settings of HyperTranscribe, the software tool used to transcribe the audio files, because these settings are optimized for formatting documents to be later analysed with HyperResearch; Font size will be of minimum 12 points, to facilitate readability.
   - Extra space will be inserted between the paragraphs to facilitate readability and avoid eye tiredness.
   - To signal the questions, the interventions of the researcher are formatted bold and italic, as follows: The identification of the researcher is formatted bold, and the question wording is formatted in italics.
2. *Document sections*
   - Header of the document - the first section of the document contains the details of the interview, namely: participant identifier; date of interview; place of interview; duration of interview; transcribing time;
   - Body - this section contains the narration of the conversation between the researcher and the participant in their exact words. Each intervention is preceded with the identification of the speaker, using the wording Researcher and Participant;
   - Remarks - the final section of the document contains any handwritten notes taken after the interview, as for example the impressions of the researcher about the interaction with the participant, or additional interesting aspects that emerged from informal conversation after the recorder was turned off and that the participant agreed to include in the study.
3. *Contents of the document*
   - The interviews are transcribed in written style because the objective is to report the participants' account in a readable manner and the transcript will not be used for linguistic or conversational analysis;

- Non-verbal expressions, as for example laugh, sarcasm, cough or sigh, are inserted in the text through a parenthetical reference. Example: <laughs>
- Other unanticipated events that may interrupt the conversation are also parenthetically inserted in the text. Example <Someone knocked the door. The participant answers the door and then resumes>
- Inaudible parts of conversation are inserted through the expression <inaudible>
- Mispronounced words will be edited and corrected during text revision for the sake of clarity but there will not be any change in the sentence structure case the sentence is grammatically incorrect;
- After a complete cycle of question and answer, a timestamp is introduced to signal the beginning of a new cycle of question-answer. This timestamp is a link to the segment of the audio file that the researcher will listen when doing the coding in order to bring back the oral conversation aspects that may not be evident in the transcript.

4. *Issues related with handling files*
   - Files are named according to the unique numerical identifier of the participant. For example, if the participant's identifier is 105, the audio file is named Interview105.mp3 and the correspondent transcription file is named Interview105.htd;
   - If needed, the document can be exported to other file formats as for example txt or rtf file formats;
   - Backup copies of both the audio and the text files are to be kept in other hard disks, always making sure that these are inaccessible to unauthorized persons in accordance with the privacy requirements for this study.
   - After revising the transcription and upon preparing files for coding, every file will be locked in order to prevent accidental change of content when coding.

Appendix I

Example of memos

This appendix shows examples of memos written in tandem with data analysis and reading of literature.

Memo #8 – Identity

 # 15 August 2012

Boundaries of an online community

Territoriality and boundary work is important for any community, as noted in Johnson et al. (2010).

Could it be that it is difficult for PLP to define its boundary and thus lacks a strong identity? The fact that they accept everyone who wants to join and that a real mechanism of formal affiliation is inexistent, as noted in #100, is problematic for boundary creation. On the other hand the subsequent creation of an association could point to a preoccupation with creation of such identity and boundary and also to the definition of its own space in ONG landscape.

In the recent forest protection programme that they are trying to put in place, it seems that they are evolving into a more structured and standardized way of working. However, they are still operating as they are used to, meaning that: they are still dependant on a loose structure of coordinators and volunteers; they are issuing broad guidelines but, at the same time, are limiting the possibility of interaction with the volunteers because the social network website was terminated and the discussion forum available in the website is incomparably less active. Somehow, it seems that the interaction with volunteers and others is diverted from the website of AMO Portugal to other spaces, such as Facebook and blogs, and I don't know if that is intentional or not.

Another aspect related to community that could be important is that after the cleaning event, there was this idea of leveraging the garbage mappers that signed to 3rdBlock to work as an online community of "environmental inspectors". Given the loose nature of social ties of PLP volunteers, such community could maybe be a 1st step towards boundary creation and definition of identity of AMO Portugal.

 # 13 September 2012

AMO Portugal does not want to worry only with illegal dumping but also with forest protection in a general sense, which is a broader objective. They do not want to be recognized as the people who clean up the trash other people leave behind, but as a group of citizens that have environmental concerns and want these concerns to be discussed and addressed by responsible authorities and institutions (see #123 and #136). Hence, there seems to be a real preoccupation in the redefinition of the identity of AMO Portugal.

Memo #25 – Interviewing

#11 June 2013

I interviewed participant #44 for PLP case yesterday. This interview was planned for last January but at that time it was not possible to reconcile a schedule with the participant. I noticed some changes in my interviewing technique, for example I felt I was more on a confirmatory agenda and my questions were focused on the issues that I think are central and distinctive about PLP: use of community website Ning, leadership, relationship with national coordination, and institutionalization. I did not hear new things about these issues in this interview and I think that is a good sign.

One thing that was interesting, but again not completely new, was that PLP is a replication of the current organizational structure of LDI World (the global movement), but is different from LDI Estonia (Teeme Ara). This means that local groups of PLP do not get much from national coordination team of PLP, as PLP team does not get much from LDI World core team. The one thing these local groups get is the framing of the movement at a national (global) scale, which gives them more arguments and a concrete justification for their existence. They are also stronger (or legitimate?) because of the scale of the civic movement being national or global.

I also felt that I am much more confident in my interviewing abilities and think it would have been a great help if I had this attitude since the beginning. I know some of my interviews are not so good, I sometimes gave up too much control and ended up with 20 minutes of the talk related to how garbage collection works in a particular town. Also, the selection of participants for the first round of interviews was not perfect. Even though I sent a list of topics to the participants for self-selection, some of them actually replied without checking the topic list and when I got there I realized that their contribution could have happened regardless of what ICT was in place.

Anyway, I think I should be done with the interviews for PLP. As to LDI, I still have 3 people to interview and need to reconcile a schedule with them. In addition, I think I cannot avoid interviewing <name concealed for privacy reasons>. Hence, I need to ask <name concealed for privacy reasons> to connect me to her/him. I know that s/he is not sympathetic to interviewing because at the Clean World Conference I overheard a researcher from University of Turku asking him/her for an interview and s/he answered: 10 minutes only.

Memo 41: Configuration of features that facilitate collective action

 # 28 December 2013

How to imprint into the design of IT applications the features that facilitate collective action, when the work requires cooperation? That is, how to make systems more cooperative? I think we need to question surveillance, sanctions, and carrots and sticks. The technologies of cooperation and sharing economy are, according to Rheingold (2005):

- Easy to use – blog, email, wikis
- Enable connections – webs of links, markets are conversations, blog rolls create blogospheres
- Open – no license needed to publish
- Self-instructing – view source, blog clients
- Group forming – ebay, Wikipedia, buddy lists
- Leverage self interest – pagerank

 # 15 January 2014

As I am reading the literature, I am finding many scholars puzzled with the fact that Internet-based collaboration requires little resources. This perhaps explains why we have been seeing more and more instances of this kind of collaboration and we will tend to see more. I think the theory of critical mass is highly explicative in this respect: indeed, in the cases I am examining there is a small group of people that contributes a lot, and the vast majority only contributes a tiny bit. Despite this big tail of small contributors being important for the large-scale result, it is however the work of the small critical mass of large contributors that viabilizes the collective action. Hence, the motivations of these two groups are different and they probably need to be different. Whereas the critical mass of large contributors must be self-motivated (and here we have intrinsic motivators being very important), the huge crowd needs external motivation to chip in.

Why is it that a critical mass operates so well in the context of Internet-based collaboration? I hypothesize that it is the property of technology being substitutable by labour that makes it possible. The view of IT as a resource is perhaps where I need to explore more the literature. I know that there are studies about IT productivity but nothing else. Perhaps the network structure is also relevant in that mass collective action happens in the context of software tools that leverage the network. Another thing is that we have mostly ready-to-use technologies, which are very easy to use and demand little IT skills – no programming needed. That is perhaps one reason why these actions fuel rapidly and are self-reinforcing.

 # 6 March 2014

Key things highlighted in PLP interviews:

- Importance of visual messages: first, the video from Estonia and then all the photos and videos that were posted in Ning impact mobilization and motivation; also, the waste map

- Importance of having the history of what had been done in Ning, something like a traceable record of the action that people could understand what was going on: this was possible because of the various Internet forums available in Ning and couldn't be done with mailing lists. And this allows people to jump in, irrespective of the point they join the action (for example, see report of #111)
- The archives and the history are also important for motivation, when people joined Ning they could get a sense of how big the whole thing was, and the attraction law could work
- The fact that it was a new thing and it was meant to be a singular event
- The social side of the website, especially the photos of members allowed everyone to see who was in and did not require having to know the email or contact of someone to be able to contact that person
- The groups feature allow people to see how many volunteers exist in a municipality whereas in the Internet forum that is not possible

Issues to consider for the future of PLP/AMO:

- If they want to be a platform for people to self organize around forest protection topic: allow the crowd to create their own events (not planting, not cleaning) whatever they want to do, in a similar way as The Day of Collective Actions in Estonia
- If they want to mobilize people for their specific events: chapter structure with a group of well motivated coordinators, require some in-person contact, more community-oriented website
- Make explicit the knowledge about waste disposal and waste monitoring, and become a reference in waste at national scale; not just manuals, but a knowledge base
- More content dynamic in the website because this attracts people, and the side-discussion or polemics, to a certain degree, are beneficial because it keeps people engaged
- Summer camp of AMO Portugal in Geres or elsewhere, every year (a weekend): similar to annual concentration of 4X4
- Renew and rotate people, but keep the inspirational leaders nearby
- What else?...

Maybe an important thing to explore is how can we relate different types of information (visual, textual, audio) with collective action success?

Another thing to remember: institutions do not want to partner in situations where there is uncertainty, and some municipal groups had problems with that (see #133). So, who is the team (people) organizing is important.

Appendix J

Code book (selective coding)

This appendix shows the structure of the code book I used in the focused analysis stage. This code book was created with HyperResearch – the qualitative data analysis software used in this research.

- All Codes
  - Facilitated
    - FACILITATED: accountability
    - FACILITATED: approachability
    - FACILITATED: assembly
    - FACILITATED: assorting communication
    - FACILITATED: authentication
    - FACILITATED: collective information management
    - FACILITATED: commitment
    - FACILITATED: credibility
    - FACILITATED: dissemination of information
    - FACILITATED: efficiency
    - FACILITATED: empowerment
    - FACILITATED: engagement
    - FACILITATED: enrichment of content
    - FACILITATED: generativity
    - FACILITATED: group brainstorming
    - FACILITATED: hierarchization
    - FACILITATED: immediacy
    - FACILITATED: mobilization
    - FACILITATED: monitoring
    - FACILITATED: networking
    - FACILITATED: proximity
    - FACILITATED: reporting
    - FACILITATED: scalability
    - FACILITATED: social recognition
    - FACILITATED: storing of information
    - FACILITATED: systematization
    - FACILITATED: transparency
    - FACILITATED: visibility of problem
    - FACILITATED: visualization
    - FACILITATED: work breakdown
  - Hindered
    - HINDERED: accountability
    - HINDERED: control
    - HINDERED: dialogue
    - HINDERED: empowerment
    - HINDERED: engagement
    - HINDERED: enrichment of content
    - HINDERED: focus
    - HINDERED: mobilization
    - HINDERED: networking
    - HINDERED: proximity
    - HINDERED: reliability of information
    - HINDERED: universality
    - HINDERED: visibility
  - Tool
    - TOOL: blog
    - TOOL: cleanup form
    - TOOL: community website
    - TOOL: documents sharing
    - TOOL: email
    - TOOL: GPS device
    - TOOL: internet forum

TOOL: internet marketing
TOOL: Intranet
TOOL: logistics system
TOOL: mailing list
TOOL: mobile phone sw
TOOL: newsletter
TOOL: registration form
TOOL: skype
TOOL: social network sites
TOOL: spreadsheet
TOOL: video sharing
TOOL: waste explorer
TOOL: waste map
TOOL: website

Appendix K

Categories with codes and frequencies

This appendix shows the list of codes from the focused analysis stage sorted in categories, with the respective code frequencies.

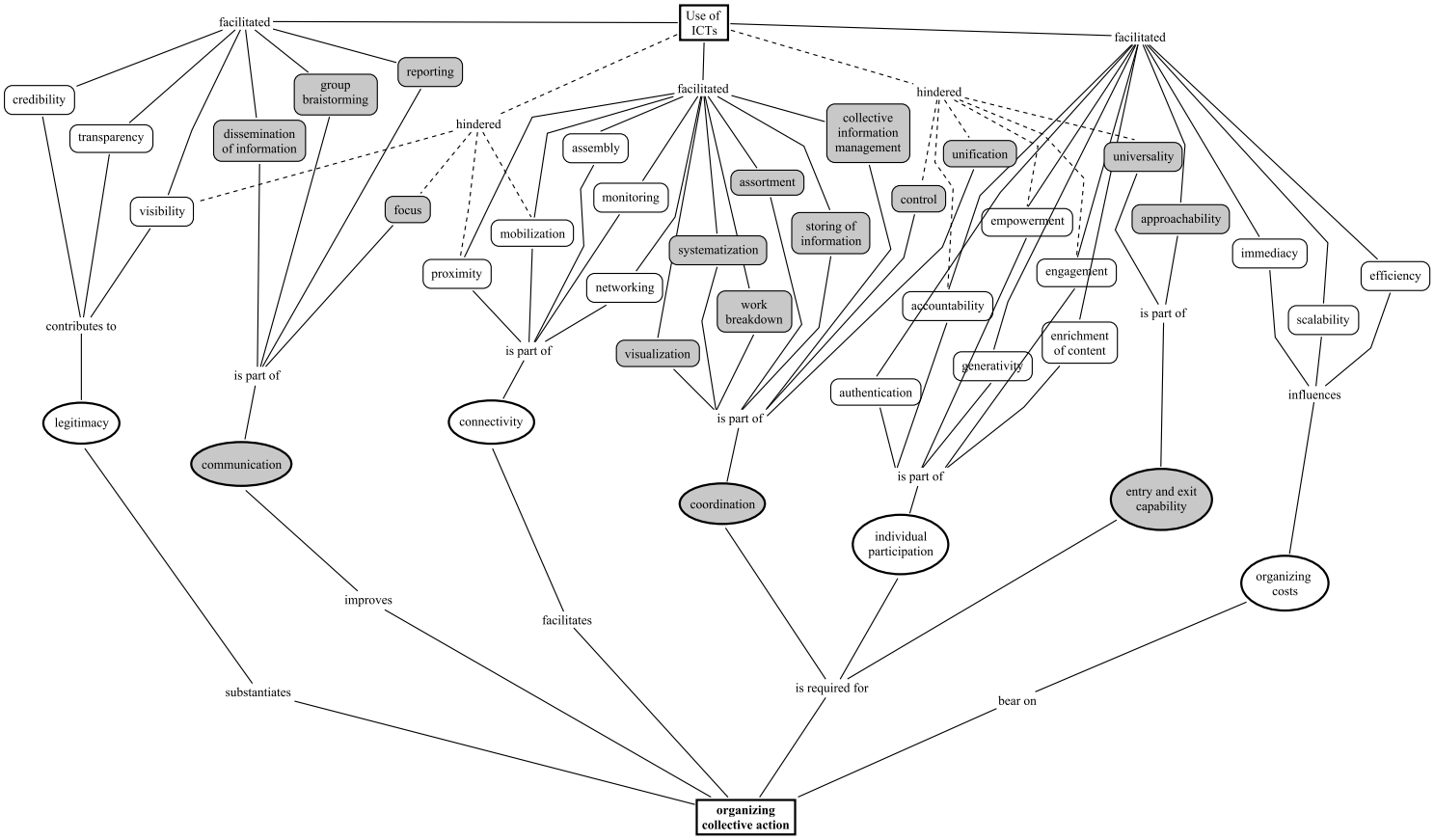
Category	Code	Code Frequency
Communication	Facilitated:dissemination of information	53
	Facilitated:group brainstorming	23
	Facilitated:reporting	21
	Hindered:focus	9
	Hindered:dialogue *	2
Connectivity	Facilitated:assembly	13
	Facilitated:mobilization	26
	Facilitated:monitoring	33
	Facilitated:networking	10
	Facilitated:proximity	19
	Hindered:mobilization	16
	Hindered:networking *	1
	Hindered:proximity	10
Coordination	Facilitated:assortment	14
	Facilitated:collective inform. managem.	15
	Facilitated:storing of information	11
	Facilitated:systematization	23
	Facilitated:visualization	30
	Facilitated:work breakdown	41
	Hindered:unification	4
	Hindered:control	7
Entry capability	Facilitated:approachability	7
	Hindered:universality	11
Individual Participation	Facilitated:accountability	7
	Facilitated:authentication	10
	Facilitated:commitment *	2
	Facilitated:empowerment	12
	Facilitated:engagement	19
	Facilitated:enrichment of content	7
	Facilitated:generativity	7
	Facilitated:social recognition *	2
	Hindered:accountability	18
	Hindered:empowerment	7
	Hindered:engagement	6
	Hindered:enrichment of content *	1
Legitimacy	Facilitated:credibility	11
	Facilitated:transparency	3
	Facilitated:visibility	8
	Hindered:reliability of information *	2
	Hindered:visibility	3
Organizing costs	Facilitated:efficiency	19
	Facilitated:immediacy	6
	Facilitated:scalability	9

Codes followed by the symbol * were discarded.

Appendix L

Code Map

This appendix is a graphical depiction of the relationships between codes and categories. Codes are the round-shaped rectangles and categories are the oval shapes with thick border. These codes and categories were used in the focused analysis stage.


Use of ICTs
facilitated
credibility
transparency
visibility
dissemination of information
group braistorming
reporting
contributes to
legitimacy
is part of
communication
improves
substantiates
hindered
focus
proximity
mobilization
is part of
connectivity
facilitates
facilitated
assembly
monitoring
networking
systematization
visualization
assortment
work breakdown
collective information management
storing of information
is part of
coordination
is required for
hindered
control
accountability
unification
authentication
is part of
individual participation
facilitated
universality
empowerment
engagement
enrichment of content
generativity
approachability
is part of
entry and exit capability
immediacy
scalability
efficiency
influences
organizing costs
bear on
organizing collective action