Media ecologies and protest movements: main perspectives and key lessons

8021 words

Emiliano Treré (corresponding autor) - etrere@gmail.com

Faculty of Political and Social Sciences, Autonomous University of Querétaro, Querétaro, Mexico.

Department of Interdisciplinary Studies, Lakehead University, Orillia, Canada.

Alice Mattoni - alice.mattoni@sns.it

Center for Social Movement Studies, Centre on Social Movement Studies, Scuola Normale Superiore, Florence, Italy.

Abstract

Studies adopting the media ecology metaphor to investigate social movements form a promising strand of literature that has emerged in the last years to overcome the communicative reductionism permeating the study of the relation between social movements and communication technologies. However, contributions that apply ecological visions to protest are scattered, and only seldom connect their analyses to more general media ecological frameworks. The article critically reviews and classifies the diverse strands of scholarship that adopt the ecological metaphor in their exploration of activism, and connects them with the more general literature on media and communication ecologies. Moreover, it extracts the constitutive elements of this literature that can help scholars to better address the complexity of communication within social movements, and it articulates four key lessons that a media ecology lens bring to the understanding of media and protest. Finally, the article further demonstrates the strengths of this approach through an illustration of the preliminary findings of an ongoing investigation on the 15M movement in Spain.

Introduction: media ecologies, protest, and communicative reductionism

Twitter, Facebook and YouTube Revolutions have became common etiquettes to describe the cycle of contemporary uprisings that in the last five years have shaken our world at different latitudes, from Europe to Arab countries, from North America to Latin America, from Russia to Hong Kong. Conceiving these insurgencies as being *unidirectionally* driven by social media technologies means neglecting the complex historical, social, political and economical factors in which these social movements originate and thrive. Although this kind of superficial and *monocausal* explanation is increasingly more common in punditry and

technological journalism, than in academic literature (Freelon et al., 2015), these labels are a symptom of a simplistic way of understanding the link between communication and social movements, i.e. a *communicative reductionism*, that also permeates the academia. This reductionism has manifested itself in two main ways. First of all, from a narrow-minded, instrumental view of media as neutral channels that has been pervasive in discussions of media within social movement studies (Carroll & Hackett, 2006; Downing, 2008; Huesca, 2001). As Lasén & Martínez de Albeniz have argued, in social movement studies media are often considered nothing more than mere resources to reach pre-established political goals (2011). Secondly, communicative reductionism is revealed through the reduction of the broad "repertoires of communications" of social movements (Mattoni 2013) to single, isolated technological platforms, an attention usually matched by *presentism* (Postill, 2012), i.e. the *fetishization* of technological novelty, and the strong fascination with web centric approaches (Barassi, 2015; Wolfson, 2014). This latter form of reductionism has been clearly identified by research carried out in the Middle East (Hofheinz, 2011), Europe (Author, 2012; Barassi, 2015), and North America (Bray, 2014).

We believe that one promising strand of literature that has emerged in the last years to overcome this communicative reductionism and restore the communicative complexity of social movements is the one that has adopted the media ecological lens, which has been used by a diverse set of authors working in the field of collective action, in order to impart the complexities of the connections between social movements and media technologies. As these authors, we too are convinced that the media ecological framework is particularly suited for the study of the social movements/media nexus, because of its ability to provide fine-tuned explorations of the multiplicity, the interconnections, the dynamic evolution of old and new media forms for social change. However, contributions that apply ecological visions to protest movements are scattered, do not constitute a coherent body of research, do not benefit from engaging in a dialogue with each other, and only seldom connect their analyses to more general media ecological frameworks. This heterogeneity clearly mirrors the diversity of the more general media ecology tradition that is also constituted by diverse, sometimes contrasting, approaches.

This article has two main objectives. First, to critically review and classify the diverse strands of scholarship that adopt the ecological metaphor in their exploration of activism, and connect them with the more general literature on media and communication ecologies. Second, to extract the constitutive elements of this literature that can help us to better address the complexity of communication within contemporary social movements, and to show the

main contributions that an ecological lens can bring to the understanding of media and protest.

With our work, we aim to bring more clarity in the emerging field that investigates the intersections between media ecologies and social movements. By summarizing and evaluating the key aspects and the contributions that this literature provides, the article can support the development of more informed and fine-tuned reflections on the role that media ecologies play in relation to social movements. Furthermore, by establishing previously uncharted associations among researchers working on ecology and contention, and between these approaches and the different strands of the media ecology tradition, this article represents a contribution to the refinement of the contours of an emerging ecological approach to media and protest, communication technologies and social movements.

The outline of the article is as follows. We begin by reviewing the contributions of the most relevant media ecological approaches. Then, we critically scrutinize and categorize the literature that uses the ecological metaphor to explore the movements/media nexus in order to understand to what extent they build on the contributions of more general theorizations on media ecologies, and determine how they conceive media ecologies in relation to social movements. After that, we articulate the key lessons of an ecological approach to the understanding of the media/movements nexus. Finally, we use some preliminary findings of our ongoing investigation on the 15M movement in Spain, in order to show the strengths of an ecological approach, and we reflect on the research horizons that our appraisal contributes to delineate.

Four ecological perspectives on media

Several ecological perspectives have flourished in the field of media studies in the past decades. They all suggest the importance of tackling media from a holistic perspective in order to go beyond specific media instances and appreciate the complexity of media as empirical phenomena. Moreover, ecological perspectives display and explain a variety of metaphors, and analytical tools, that scholar might use when investigating the empirical reality of media as they are embedded in and employed by societies at large. That said, ecological perspectives on media also differ under many respects, amongst which the emphasis they put on specific aspects of the media as well as the very metaphors that they employ as explanatory lenses that inform our understanding of the role of media in societies. This is clear when addressing the four ecological perspectives that we summarize in Table 1 and review and discuss below. All of them have been, and still are, particularly relevant

within the field of media studies, although they start from different premises and reach different conclusions with regard to what constitutes an ecological glance on the media. In what follows, we review and discuss such ecological perspectives to set the ground for a more in-depth analysis.

[Table 1 here]

The medium theory approach

The medium theory approach, as defined by the Canadian School of influential thinkers including Marshall McLuhan and Harold Innis, has never ceased to attract the attention of academia, as recent re-evaluations of its contributions also demonstrate (Scolari, 2012; Stephens, 2014). Postman introduced the *media ecology* metaphor in 1968, recognizing that McLuhan had used the concept before in a personal communication (Lum, 2006, p. 9). Postman defined it as "the study of media as environments", meaning that "technological change is not additive, but ecological" (Postman, 1998, p. x): thus, each new medium does not simply represent an additional layer, but alters the relations within a system of other media, reconfiguring the ecology in unexpected ways. If we conceive of media as ecologies, we can look at them from an evolutionary perspective, and explore the reasons for the *extinction* or *survival* of certain media or technological supports, and investigate the *coevolution* of multiple media (Scolari, 2012).

However, during the last five decades medium theory has also attracted many critiques, the most recent one coming from the *mediatization* paradigm, that has accused this approach of detaching media from their social and cultural contexts, thus proving unable to properly address media, societal and cultural changes (Hepp, 2013). In other words, medium theorists are not interested in fundamental processes of social and cultural change that are not media-related, and this seriously limits their capacity to understand how collective formations such as social movements operate (Gamson et al. 1992). The literature that has criticized medium theory is wide and draws on a variety of disciplines, from political economy to critical sociology, feminism and post-structuralism (Potts, 2008). For instance, Williams' study of television (1975) specifically engages with McLuhan's writing by not considering the advent of television and its impact on society as something inevitable, but instead exploring critically the social needs that were met by the development of the TV, and the roles of the government and corporate interests in shaping this phenomenon. The relevant "Social Shaping of Technology" approach (MacKenzie and Wajcman, 1988) has also

opposed the technological determinism of medium theory, showing that technologies do not directly generate social consequences, but they operate, and are operated upon, in a complex social field. In his influential media theory book, McQuail dismisses medium theory for having limited value for researchers (2005).

Despite the various shortcomings of medium theory, its reflections on the coexistence and the interrelations between old and new media still have an impact on current literature on media and societies. For instance, they have clearly inspired—among others—the relevant 'convergence' paradigm developed by Henry Jenkins (2006), although the author shies away from simplistic conceptions of technological convergence and insists on the cultural relevance of changing communicative practices.

The information ecologies perspective

A second relevant ecological approach is the information ecology perspective (Nardi and O'Day 1999) that applies the ecological framework in order to explore the interactions among actors, practices and technologies. According to this approach, information ecology is "a system of people, practices, values, and technologies in a particular local environment [… in which] the spotlight is not on technology, but on human activities that are served by technology" (ibidem p. 49). The aim of this conceptualization is to go beyond the instrumental view of metaphors that describe the media as tools, texts and systems, hence suggesting the image of a single person interacting with technology. Rather, the objective of the information ecologies approach is to capture a notion of locality that is missing when scholars employ the metaphors listed above, hence reintroducing human agency, and eschewing the technological determinism of medium theory. In short, the information ecology approach includes the network of relationships, values, and motivations involved in the use of technologies and is thus especially useful at the micro level to analyze all the nuances inherent in multiple local interactions, changes, and practices. In addition, similarly to the medium theory approach, the information ecologies approach the very concept of *coevolution* is particularly relevant, especially to carry out diachronic analyses on the evolution of media, actors, and practices.

The communicative ecology perspective

A third ecological approach is the communicative ecology perspective, that has been inspired by the theorization of the "ecology of communication" (Altheide 1995) developed to explore the interrelations among social activities, information technologies and communication

formats. Although Altheide's interest rested with examining the connections between social activities and technologies for control, his framework has evolved proving to be extremely versatile: it has been largely adopted in studies that analyze the use of digital media in various settings, especially in relation to digital communication for development and community media projects aimed at poverty reduction and digital inclusion in South Asia and Africa (Tacchi, Slater & Earn, 2003). Unlike the medium theory approach reviewed above,[1] traditionally more interested in media effects, the communicative ecology perspective emphasizes "meaning that can be derived from the socio-cultural framing and analysis of the local context which communication occurs in" (Hearn & Foth, 2007). A communicative ecology is thus defined as a milieu of agents who are connected in various ways by various exchanges of mediated and unmediated forms of communication, along three different layers: technological, that includes the devices and connecting media that enable communication and interaction; social, that includes people and their social modes of organization, and discursive, that refers to the very content of communication (Tacchi et al., 2003). As it is also clear from this definition, the aim of the communicative ecology perspective is to extend the meaning of media ecologies as used in the medium theory approach in order to include the structure and the context of media uses.

Fuller's media ecology renewal

Matthew Fuller further helped revitalize the concept of media ecology in 2005. His work and that of other scholars he has inspired (see for instance Goddard & Parikka, 2011) finds its inspiration in the work of Felix Guattari. Fuller aims at mapping the "dynamic interrelation of processes and objects, beings and things, patterns and matter" (2005: p. 2) and understands media ecologies mainly through artistic and activist practices, paying attention to agency and processes of subjectivation and to the materiality of informational objects. In order to do that, Fuller extends Gibson's concept of affordances to grasp the "interaction of various regimes of materiality" (Goddard & Parikka, 2011: p. 2). Fuller opposes the use of the environment metaphor, that characterizes the medium theory approach, because it suggests "a state of equilibrium" while "ecologists focus more on dynamic systems in which any one part is always multiply connected" (2005, p. 4). The stability of media environments is thus opposed to the radical dynamism of media ecologies that goes beyond the physical systems to include social relations and the production of subjectivity. Despite its more evocative than normative

[1] The work of Altheide is itself informed by the media ecology tradition we analyzed in the previous section.

commitment, Fuller's conception of media ecologies is able to bring to the analysis of the media-movement nexus a renewed, enthusiastic dynamism, a special attention to the dimension of practices, a need to focus on the materiality of media technologies, and a particular regard for the political dimension of media ecologies.

The ecological perspective on media and social movement studies: a critical appraisal

In the previous section, we sketched out the main characteristics of the most important ecological perspectives for the analysis of media, and summarized their main contributions. It is an almost impossible endeavor aiming to summarize the contributions of four ecological traditions in the brief space of an academic article. The difficulties are related not just to space, but also to the inherent differences and diverse historical developments of these approaches. In sum, it is not possible to provide a simple and univocal definition of what media ecologies *are*. Each approach and perspective on media ecologies, indeed, brings with it a set of different reflections coming from sometimes contrasting traditions. However, we can eschew some basic points derived from our review that can guide our future reflections on the link between media ecologies and social movements.

First of all, although medium theory is often criticized, it is constantly invoked, especially for its convincing critique of additive media change, and for recognizing the need to look at media from a more holistic, and less simplistic point of view. Despite its evident shortcomings, we agree with Scolari (2012) who argues that some of the key reflections of medium theory can still prove useful for contemporary analyses of media and society. In this article, the limitations of medium theory are integrated by the strengths of the other ecological approaches. The other three perspectives bring different interesting aspects to the fore. In particular, information ecology is able to move concepts of medium theory like coevolution and coexistence from the macro level to the micro/local dimension of analysis; communicative ecology shows the need to study the complex interplay between the technological, the social and the discursive levels; and Fuller's media ecology reintroduces the significance of the political nature of the ecology, and the need to reflect on the materiality of communication technologies.

In this section, we will consider how these aspects have been applied with different degrees of sophistication in the literature dealing with social movements in order to restore the communicative complexity of contemporary social movements. More specifically, we review studies on the most recent mobilizations that have employed the ecological framework to understand how social movements interact with different types of media. The purpose of

this preliminary systematization is twofold. As a first and necessary step, we aim to understand the extent to which these studies build on the contributions of more general theorizations on media ecologies. As a second step, we aim at grasping how these different approaches position media ecologies in relation to social movements. We believe these two steps are fundamental in order to appreciate the added value of an ecological framework in the study of media and social movements that will be at the center of the next section. In the following lines, the current body of knowledge on the topic is categorized into a typology that includes three types of literature, depending on the degree of their 'engagement' with the ecological perspective on media. In particular:

- *low engagement literature*: these works only mention the ecology concept but do not specify which elements compose the ecology and do not connect it to any of the media ecology perspectives*;*
- *medium engagement literature:* the works clarify which elements of the ecology are relevant, but do not connect these reflections to ecological perspectives; -
- *high engagement literature:* the works clarify which dimensions of the ecology are relevant, and connect these considerations to one or more of the ecological perspectives illustrated above[i].

Low engagement literature

Low engagement literature uses a terminology that seems to be drawn from the four ecological perspectives on media outlined in the previous section, without however actually engaging with such theoretical and empirical works. Moreover, such literature does not go into details when explaining which dimensions of the media ecologies are relevant and for which reasons. Amongst other areas of research, the most recent empirical works dealing with the use of the so-called web 2.0 technologies within pro-democracy and anti-austerity protests often employ the "media ecology" metaphor. Without being exhaustive, some examples of such literature are: reflections on the uprisings that spread worldwide between 2010 and 2011, in which portable devices like smartphones and social media platforms combined with more traditional mass media channels giving rise to "new 'media ecologies'" (Darmon 2013); works on protests in the Middle Eastern and North African countries, often grouped under the label Arab Spring, in which an "hybrid media ecology" seemed to emerge due to the combination of older and newer media technologies (Robertson 2013, Wilson and Dunn 2011); research on the Occupy Wall Street mobilizations, characterized by the presence of a "loosely bound media ecology" according to which digital material circulate across

different social media platforms (Thorston et al 2013); research on the 2010 protests against the G20 in Toronto, in which the authors speak about an "activist social media ecology" (Poell and Borra 2013).

In all these works, the "media ecology" metaphor is present, but authors use it in a rather general way. More than a proper analytical tool, the metaphor is used as an evocative semantic tool that refers to the intersections and combinations between different types of media technologies. However, the very concept of "media ecology" is not elaborated further in such literature. Moreover, besides the marginal reference to some of the conceptualizations that characterize the four ecological perspectives outlined in the previous sections, all these works make no attempt to dialogue with the broader ecological tradition.

Medium engagement literature

Medium engagement literature includes those studies that do not explicitly connect these reflections to broader ecological theories, although they try to clarify which elements, dimensions and functions of the media ecologies are relevant and provide an examination of the ecologies' composition.

A relevant example in this direction is Srinivasan and Fish's (2011) ethnographic work in Kyrgyzstan in 2010, according to which "networked, digital media technologies are situated within an *ecology* of other technologies that inform both local and transnational awareness of political events" (p. 3). The two authors employ the (media) ecology metaphor to delineate the contours of the revolutionary media ecology as composed by a multiplicity of Web 2.0 platforms, but also low-tech media channels of communication that stimulated the formation of activists' community networks and grassroots coordination "through the re-mediation of messages via posters, megaphones, and word-of-mouth" (p. 3). Beyond the analysis of the main media technologies, both high- and low-tech, the two authors also consider the very functions of the media ecologies they take into consideration, including their ability to "re-mediate local events into local and transnational discourses that inform multiple publics about political events" (p. 3). Moreover, they include in their media ecology conception the agency of social actors, claiming that the "*media ecology* […] included grassroots activists, citizen journalists, and international television networks" (p. 3).

Other works also go beyond the mere use of the 'media ecology' metaphor, suggesting some relevant dimensions that need to be taken into consideration in order to unfold the complex ensemble of communication practices that characterizes protest politics. Going tin this direction, Rinke and Röder's (2011) work on the Egyptian uprising considers

the cultural specifities of the media ecologies in the Arab world, pointing at "what and how communication is socially acceptable, conducted and furnished for social change" (1274),. In their research on Tahrir Square, Tufecki and Wilson (2012) explore the reasons to engage in political protest in Egypt and argue that media ecologies should also be considered as a "connectivity infrastructure" (365) hence taking into consideration the material side of complex media ecologies going beyond any specific technological platform. Finally, drawing on his research on the G20 Toronto protest, Poell (2013) conceptualizes social media as "complex assemblages, which are deeply entangled in on- and offline techno-cultural and political economic configurations" (2013, p. 13), hence underlining the cultural, but also the economic aspects that characterize media ecologies.

In unpacking some of the elements, dimensions and functions of media ecologies, medium engagement literature goes beyond the use of the "media ecology" metaphor as an evocative semantic tool. Rather, it offers some insights on the various elements that might constitute a media ecology in the context of social movements. Further, it shows how such a perspective can be particularly useful for understanding the interrelation between newer and older media as well as its organizational functions, its diachronic evolution and the linkages between the cultural and economic dimensions of media ecologies in which social movements are embedded.

High engagement literature

High engagement literature includes authors who establish a theoretical and empirical connection between their own work on social movements with at least one of the four media ecology perspectives that we reviewed in the previous section. In some cases, authors elaborate on just one specific media ecology perspective, also with the aims of advancing it from a theoretical and conceptual point of view. This is the case, for instance, with Kahn and Kellner (2008) who base their work on the technopolitics of blogs on one of the main thinkers of the medium theory approach, Marshall McLuhan, and his notion of media as environments. More specifically, the two authors seek to expand this concept in order to include also newer technologies and, in doing so, they suggest to re-theorize the very technopolitics media ecologies from a critical and reconstructive standpoint: critical of corporate and mainstream uses of technology, and reconstructive in the sense of advocating for appropriations of technology that can advance social, and political struggles (p. 23). Another work revolving around one specific media ecology perspective is by AUTHOR (2012) who employs the information ecology perspective to analyze the media practices of

the student movement that emerged in Italy in 2008. According to AUTHOR, such a perspective is necessary to "advance research on the coexistence of multiple technologies and the coevolution of actors, practices, and their tools" (2372) hence going beyond a deterministic conception of media technologies to look at how social movement actors and their media practices evolve over time during the same protest campaign. The communicative ecology perspective, instead, is a fundamental aspect of Peeples and Mitchell (2007) research on protests against the WTO summit in 1999: they indeed find the use of different communicative ecology layers – technological, social and discoursive – as particularly useful to understanding the interactions between the organizational dynamics within activist networks and the communication themes that emerged from their discussions. Finally, Goddard (2011) examines one of the key sources of Fuller's ecological renewal, namely Felix Guattari's engagement with media ecology, and focuses on the ways Guattari's media ecologies conceptualizations were related to free radio movements in Italy and France. The author acknowledges the consequences of the political nature of media ecologies, whose political potential remains inseparable from their technological essence. In particular, he shows that the dynamics of the media ecology in which free radios were embedded are inseparable from the dynamics of the radical social movements to which free radios were linked, both in Italy and France.

In other cases, authors tend to combine more than one media ecology perspective to count on more nuanced theoretical frameworks and empirical guidelines in the study of media and social movements. Along this line, Feigenbaum et al. (2013) borrow the language of media ecology to make sense of the multiple relations among social actors, things and environmental conditions in the context of protest camps. In doing this, they rely on a wide spectrum of ecological approaches that we outlined in the previous section, although the reflections by Felix Guattari on media ecologies seems particularly relevant to their work. Guattari's reflections are invoked especially as a means for the authors to go beyond a mere environmental conception, situating the social and the political at the center of ecological thinking. Moreover, Feigenbaum et al. (2013) suggest that an ecological's viewpoint applied to protest camps also takes into account that adopting this perspective can transform the ways in which activists think about their own positions and interactions within the media ecology, thus helping us to "navigate the ways in which social movement ideologies are exchanged and carried into the reproduction of protest camps' infrastructures and practices" (p. 72). This aspect is significant because it allows us to trace these ecologies as spaces of experimentation, creativity and inventiveness. Also the work of Dahlberg-Grundberg's

(2015) starts from a definition of media ecology that rests on different media ecology perspectives, including the medium theory approach and Fueller's ecological renewal. According to the author, indeed, a "*media ecology* refers to overall, encompassing networks of communication and interaction between several forms of communication technology, which actors are immersed within, whereas hybridity, in particular, refers to the entanglement of online and offline dimensions […] making the concept useful when trying to establish a more thorough understanding of the interaction and intertwinement of human agents or movements and technologies (p. 4). Dahlberg-Grundberg employs such definition as an analytical framework to analyze "how the use of technologies and communicational arrangements might affect and inform the organizational forms and strategies of a social movement" (p. 2) in the case of the Telecomix activist cluster, a net-based movement fighting for communication rights, net neutrality, and against corporate surveillance that played a significant role during the Arab Spring uprising. The author concludes that not only did this movement appropriate social media and other digital media to disseminate information and organize activities, but that these same technological mechanisms were an integral part of its organizational form. Consequently technology is not only affecting the political activities performed, but also the ways these actions unfold practically: the media ecology that the Dahlberg-Grundberg sketches is dialectical, continuous, and 'processual' and has to do with both the movement's development and the co-evolution of its technological infrastructure. Finally, the author remarks that contemporary social movements and their media ecologies act according to hybrid logics and organizational types, where various dimensions intertwine; the human and the non-human/ the global and the local/the offline and the online.

How to study social movements and media? Four key lessons from the media ecology perspectives

In the previous section we offered an analytical and critical literature review of works that include a media ecology perspective in their investigation of media and social movements. This first step was necessary for us to understand the extent to which the media ecological analytical frameworks employed in literature dealing with social movements are related to and build on the contributions of more general media ecology perspectives. Moreover, our aim was to understand the different conceptions of media ecologies at work in such literature and for which reasons and with what results they were employed in studying social movements and media. As we also showed through our typology, literature varies greatly, from evocative, superficial uses of media ecologies with no reference and conceptual

grounding with the more general traditions, to more sophisticated analyses that detail the nature of these ecologies, and build on previous media frameworks. We believe that the work we grouped into the medium engagement and high engagement types of literature can help us to delineate the strengths of media ecological perspectives employed to investigate social movements and media. In particular, it is clear that the approaches that are able to relate to, and build on the more general reflections on media ecologies are the ones that can give us more insights into the benefits and usefulness of this approach for understanding today's protest.

In this section, we fine-tune our analysis on the literature in point in order to extract some valuable considerations for scholars interested in the study of social movements and media. More specifically, we consider the constitutive elements of this literature that can help us to better address the complexity of communication within contemporary social movements, in order to respond to the following question: what do we gain from adopting an ecological approach on the interactions between media and social movements in contentious politics? In what follows, we articulate four key lessons that media ecology perspectives impart for understanding the media/movements nexus: first, the need and the ability to overcome (media) dichotomies; second, the recognition and exploration of (media) multiplicity; third, the adoption of a diachronic perspective on social movement and media; and, fourth, the recognition of the political and critical nature of media ecologies.

Overcoming dichotomies

Eschewing media centrism, and rejecting technological determinism and communicative reductionism, ecological authors underline that protests are traversed by mediation and remediation flows, and go beyond simplistic dichotomies that characterize many accounts of media and movements, namely: online VS offline (Poell, 2013), new VS old (Srinivan & Fish, 2011; Tufecki & Wilson, 2012), global and transnational VS local (Kahn and Kellner, 2008), organizational capabilities (Peeples et al., 2007) VS cultural specificities (Rinke and Röder, 2011). This does not entail the move to an undifferentiated and all-encompassing liquidity, where there are no boundaries and no possibility of nuanced analysis, but suggests instead new ways of coping with the complexity of media and communication in the unfolding of current social protest.

Recognizing and exploring multiplicity

The recognition and focus on a multiplicity of media forms and practices is one of the most important contributions of an ecological approach. Even *low engagement* approaches stressed the multiplicity of technologies that are often involved in the unfolding of current protests. The repertoires of communication of contemporary protest movements are constituted by a plethora of several communication technologies that include older and newer media, online and offline modes of communication, as well as a continuum ranging from independent and radical platforms to consolidated and still powerful mainstream media (Author, 2012; Dalhberg-Grundberg, 2015; Howarth, 2012; Poell, 2013; Srinivan & Fish, 2011; Tufecki & Wilson, 2012). These multiple media technologies and practices are variously related and interconnected (Howarth, 2012; Poell, 2013), and human agents coexist and interact with non-human networks (Feigenbaum et al. 2013; Dalhberg-Grundberg, 2015).

Adopting a diachronic perpective

Another fundamental dimension that ecological authors outline is the need to study the unfolding of the ecology in a diachronic perspective (AUTHOR, 2012; Feigenbaum et al. 2013; Dalhberg-Grundberg, 2015; Rinke and Röder, 2011). The complexity of media forms and practices of contemporary digital activism is not a fixed thing, but a dynamic, fluid, unpredictable process (Howarth, 2012). Ecological scholars urge us to perform diachronic examinations that recognize changes, unfoldings, and subversions at the technological, social and discursive levels that characterize modern activism. This aspect is particularly relevant in order to eschew the *presentism* and the *fetishization of novelty* that plague contemporary accounts of media protest and constitute one of the main pillars of communicative reductionism, as we also outlined in the introduction to this article.

Recognizing the political and critical nature of media ecologies

The political nature of the (media) ecology in relation to activism is also a significant dimension (Feigenbaum et al., 2013; Goddard, 2011; Kahn & Kellner, 2008). The political potential of these ecologies is inseparable from their technological essence, and ecological scholars urge us to struggle to theorize them from a critical perspective that unmasks corporate and mainstream uses, while advocating appropriations that, from a reconstructive perspective, are able to advance social and political change. This last aspect firmly situates the analysis of media ecologies of protest within actual power relations and political conflicts, and open the possibilities of a productive dialogue with new strands of literature on political economy, critical theory and social struggles (Fuchs, 2014; Wolfson, 2014).

We believe that the various dimensions of the ecological approaches we have eschewed are able to overcome the two pillars that constitute the communicative reductionism in the exploration of the media/movement nexus: the instrumental conception of media, and the *fetishization* of the technological novelty. The ecological lens is appropriated to recognize, to cope and criticize the diversity and richness of hybrid, variable ecologies of humans, technologies and their practices, and their complex, evolving interconnections and developments. With different levels of deepness and conceptual finesse, all these works provide conceptual tools capable of recognizing, understanding and making sense of the *communicative complexity* that characterize contemporary social movements and protests..

The media ecology of the 15M movement. Some concluding remarks

In this article, we have offered a critical journey throughout the many applications of the ecological metaphor to the field of social movements, political contention and the media. First, we reviewed the contributions of the most relevant media ecological approaches. Then, we systematized the studies that have employed the ecological framework to understand how social movements interact with the media in order to spell out the extent to which they build on the contributions of more general theorizations on media ecologies, and determine how they conceive media ecologies in relation to social movements. After that, we articulated four key lessons from the media ecology perspectives to better outline the media/movements nexus: overcoming dichotomies; recognizing and exploring multiplicity; adopting a diachronic perspective; and recognizing the political and critical nature of media ecologies.

Our own ongoing comparative study on media in anti-austerity movements in Spain, Italy and Greece also suggests the usefulness of an ecological conception of media and protest, and its *raison d'être*, i.e. the need to recognize and make sense of the communicative complexity of modern social movements. In our current project, based on 60 semi-structured interviews (20 for each country involved) with activists, media professionals and independent media producers involved in anti-austerity protests since 2008, we have encountered a multifaceted communicative scenario characterized by diversity, multiplicity, hybridity, and multiple interconnections. Facing different degrees of mainstream media manipulation and bias, media activists turned to Web TV services, radical online tools, alternative Websites, Twitter accounts, Facebook pages and groups, posters, graffiti, banners in order to organize, and contrast the official narratives of the protest. Although there is not enough space in this article to analyze in depth the first findings of the project, we believe that a brief analysis of

the Spanish 15M movement according to the four key lessons we outlined before will allow the readers to further appreciate the benefits of an ecological glance.

First, the appropriation of communication technologies within the 15M movement perfectly demonstrates the overcoming of simplistic *dichotomies*, as the communicative practices of the movement crossed the main Spanish public squares and streets, and at the same time conquered old and new communication technologies. A *multiplicity* of continuously interconnected online/offline and old/new communication technologies composed the repertoire of communication of the movement: internal communication/organization tools (online pads, mailing lists, the alternative platform N-1 and the meetings/assemblies manager Mumble, together with mobile messages sent through the WhatsApp and Telegram applications), video and audio streaming tools and platforms, posters, stickers, banners, graffiti, independent journalistic media outlets, local radios, wikis, complemented by the strategic use of social media such as Twitter and Facebook that helped articulate the protests and mobilizations, and forge collective identities at the national and transnational level. Mainstream media were almost completely silent before the eruption of the movement, but between May 15 and 22 various newspapers (Público, El Mundo, La Gaceta) began to intermittently cover the movement. Although making up only a small percentage, news from more conventional media were shared on social media platforms by 15M activists. Most of the news of the movement was self-produced and self-diffused.

Second, the 15 movement cannot be properly understood without situating its media appropriations within a *diachronic* perspective that recognizes its social, cultural and technological antecedents in the fight against the *Sinde* Law, the *Nolesvotes* (Do not vote for them) and *Juventud Sin Futuro* (Youth Without Future) grassroots organizations, and the *Movimento para una Vivienda Digna* (The Movement for the Right to Housing). But most of all, it is key to understanding that its media appropriations and practices evolved according to the phases in which we can divide its dynamic development (Toret et al., 2015): emergence (between January 2011 and May 15), explosion (between May 15 and June 19), and evolution (until May 2015). In the last years, the 15M movement has mutated and 'fertilized' other phenomena such as the technologically advanced *Party X* (January 2013) and influenced the development of the *Podemos* Party's communicative practices, and the uses of media platforms in the 2015 local 'municipalistas' elections throughout all Spain. Many of these initiatives have had deep impacts in the Spanish electoral arena after the elections to the European Parliament on May 2014. Although they follow different communicative paths, all these initiatives show an intensive use of a multiplicity of communication technologies, and

the will to experiment through crowd-funding platforms and new ways of performing and conceiving of politics that connect them to the 15M movement.

Finally, an ecological approach is able to recognizing the *political and critical nature* of the 15M media ecologies by showing for instance that the movement –alongside the intensive and massive use of corporate social media as Facebook and Twitter- developed a kind of "technological sovereignty" (as defined by tech-activists of the movement) through the creation of autonomous infrastructures such as tomalaplaza.net, the use of the radical social media N-1, and the appropriation of open code tools like *Mumble* and online *pads*. We believe that these preliminary insights from our empirical investigation on the *Indignados* Movement further demonstrate the strengths of an ecological approach to media and contention.

Despite its usefulness in analyzing the media-movement nexus, the proposed ecological approach has weaknesses. First of all, the examination of the interrelated relations among all the components of a movement's media ecology requires a huge amount of time and analytical finesse: when both time and sophistication lack, ecological explorations appear as nothing more than descriptive lists of the many devices used by social movements actors: the communicative complexity of movements is left uncharted in these superficial ecological accounts. Moreover, while our article has summarized the key lessons of different frameworks, it remains difficult to clearly apply an ecological lens to media and movements, because of the contrasts in the conceptions of what a media ecology represents, and the fast-evolving scenario of contemporary media that continuously challenges our understandings of media ecologies. In addition, the examination of protest movements' communicative complexity requires an approach that transcends boundaries and intents to establish 'hazardous' connections among diverse fields, as various authors have argued (Earl et al., 2014; Milan, 2015; Rodríguez, 2015) from different standpoints. We believe that a media ecology perspective on social movements and media might possess the capacity to aggregate approaches from different fields (media studies, social sciences, political theory, internet studies, science and technologies studies, etc.) in order to grasp the technological sophistication of social movements. Hence, we urge other scholars to continue the work of theoretical refinement, and empirical application that this engaging concept requires and deserves.

References

AUTHOR, 2012

AUTHOR, 2014a; 2014b

Altheide, D. L. (1995). An ecology of communication: Cultural formats of control. New York: Aldine de Gruyter.

Barassi, V. (2015). *Activism on the Web: Everyday Struggles against Digital Capitalism*. Routledge.

Bratich, J. (2014). Occupy all the dispositifs: memes, media ecologies, and emergent bodies politic. *Communication and Critical/Cultural Studies, 11*(1), 64-73.

Carroll, W. K., & Hackett, R. A. (2006). Democratic media activism through the lens of social movement theory. *Media, Culture & Society, 28*(1), 83-104.

Cottle, S. (2008). *Global crisis reporting*. McGraw-Hill Education (UK).

Dahlberg-Grundberg, M. (2015). Technology as movement On hybrid organizational types and the mutual constitution of movement identity and technological infrastructure in digital activism. *Convergence: The International Journal of Research into New Media Technologies*, 1354856515577921.

Darmon, K. (2013). Introduction: Protest in the New Media Ecology. *Networking Knowledge: Journal of the MeCCSA Postgraduate Network, 6*(3).

Deuze, M. (2011). Media life. Media, Culture & Society, 33(1), 137–148.

Downing, J. (2008). Social movement theories and alternative media: An evaluation and critique. *Communication, Culture & Critique*, **1**(1), 40–50. doi:10.1111/j.1753-9137.2007.00005.x

Earl, J., Hunt, J. & Garrett, K.R. (2014). Social Movements and the ICT Revolution. In H.A. van der Heijden (Ed.), *Handbook of Political Citizenship and Social Movements* (pp. 359-384). Cheltenham, UK: Edward Elgar Publishing.

Feigenbaum, A. Frenzel, F. McCurdy, P. (2013) Protest camps, London: Zed Books

Freelon, D., Merritt, S., & Jaymes, T. (2015). Focus On The Tech: Internet centrism in global protest coverage. *Digital Journalism*, *3*(2), 175-191.

Fuchs, C. (2014). *OccupyMedia!: The Occupy Movement and Social Media in Crisis Capitalism*. John Hunt Publishing.

Fuller, M. (2005). *Media ecologies: Materialist energies in art and technoculture*. MIT Press.

Huesca, R. (2001). Conceptual contributions of new social movements to development communication research. *Communication Theory*, *11*(4), 415-433.

Gamson, W. A., Croteau, D., Hoynes, W., & Sasson, T. (1992). Media images and the social construction of reality. *Annual review of sociology*, 373-393.

Goddard, M. (2011). FCJ-114 Towards an Archaeology of Media Ecologies: 'Media Ecology', Political Subjectivation and Free Radios. The Fibreculture Journal, issue 17 2011: unnatural ecologies

Goddard, M. & Parikka, J. (Eds) (2011). Unnatural ecologies, *The Fiberculture Journal*, issue 17 2011.

Howarth, A. (2012). A Hunger Strike-The Ecology of a Protest: The Case of Bahraini Activist Abdulhad al-Khawaja. *M/C Journal*, *15*(3).

Hearn, G. N., & Foth, M. (2007). Communicative ecologies. *The Electronic Journal of Communication*, *17*(1-2). Available at: http://eprints.qut.edu.au/8171/1/8171.pdf

Hepp, A. 2013. Cultures of mediatization. Cambridge, England: Polity Press.

Hofheinz, A. "Nextopia? Beyond Revolution 2.0" International Journal of Communication 5 (2011): 1417-1434.

Horst, Heather A., Rebecca Herr-Stephenson and Laura Robinson (2010) Media Ecologies. In Mizuko Ito, et. al. Hanging Out, Messing Around, and Geeking Out: Kids Living and Learning with New Media. Cambridge: MIT Press.

Kahn, R., & Kellner, D. (2008). Technopolitics, blogs, and emergent media ecologies: A critical/reconstructive approach. *Small tech: The culture of digital tools*, 22-37.

Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. NYU press.

Lasén, A., & Martínez de Albeniz, I. (2011). 'An original protest, at least'. Mediality and participation. *The cultures of participation. Media practices, cultures and literacy. Berlin: Peter Lang*, 141-158.

Lum, C. M. K. (Ed.). (2006). *Perspectives on culture, technology, and communication: The media ecology tradition*. Cresskill, NJ: Hampton Press.

MacKenzie, D. and Wajcman, J. (eds)(1999). The Social Shaping Of Technology, Oxford: Oxford University Press.

Mattoni, A., 2013. Repertoires of Communication in Social Movement Processes. In B. Cammaerts, A. Mattoni, & P. McCurdy, eds. *Mediation and Protest Movements*. Bristol, UK: Intellect, pp. 39–56.

McQuail, D. (2005) McQuail's Mass Communication Theory 5th edition, London: Sage.

Milan, S. (2015). From social movements to cloud protesting: the evolution of collective identity. *Information, Communication & Society*, 18(8), pp. 887-900.

Nardi, B., & O'Day, V. (1999). Information ecologies: Using technology with heart. Boston, MA: MIT Press.

Peeples, J., & Mitchell, B. (2007). No mobs–no confusions–no tumult': Networking civil disobedience. *Electronic Journal of Communication*, *17*(1-2).

Poell, T. (2014). Social media and the transformation of activist communication: exploring the social media ecology of the 2010 Toronto G20 protests.*Information, Communication & Society*, *17*(6), 716-731.

Poell, T., & Borra, E. (2012). Twitter, YouTube, and Flickr as platforms of alternative journalism: The social media account of the 2010 Toronto G20 protests. *Journalism*, *13*(6), 695-713.

Postill, J. (2012), 'Media and social changing since 1979: Towards a diachronic ethnography of media and actual social changes,' paper presented to the EASA 2012 biennial conference, Nanterre, Paris, July 2012.

Postman, N. (1998). Five things we need to know about technological change. Conference in Denver, CO. Retrieved May 20, 2015, from http://www.mat.upm.es/~jcm/neil-postman – five-things.html

Potts, 1. (2008) Who's afraid of technological determinism? Another look at medium theory,

Fibreculture. Available online at: http://journal.fibreculture.org/issue12/issue12-potts.html.

Rinke, E. M., & Röder, M. (2011). The Arab Spring| media ecologies, communication culture, and temporal-spatial unfolding: Three components in a communication model of the Egyptian regime change. *International Journal of Communication*, *5*, 13.

Robertson, A. (2013). Connecting in crisis:"Old" and "new" media and the Arab Spring. *The International Journal of Press/Politics*, 1940161213484971.

Rodríguez, C. (2014). Studying media at the margins: Learning from the field. *Scholars' Symposium on Media Activism*, December 4-5, 2014, Philadelphia: Annenberg School for Communication.

Scolari, C. A. (2012). Media ecology: Exploring the metaphor to expand the theory. Communication Theory, 22(2), 204–225. doi:10.1111/j.1468-2885.2012.01404.x

Srinivasan, R., & Fish, A. (2011). Revolutionary tactics, media ecologies, and repressive states. *Public Culture*, *23*(3 65), 505-510.

Stephens, N. P. (2014). Toward a more substantive media ecology: Postman's metaphor versus posthuman futures. *International Journal of Communication*, *8*, 19.

Strate, L. (2008). Studying media as media: McLuhan and the media ecology approach. MediaTropes eJournal, 1, 127–142.

Tacchi, J., Slater, D., & Hearn, G. (2003). *Ethnographic action research: A user's handbook* (http://eprints.qut.edu.au/archive/00004399/). New Delhi: UNESCO.

Thorson, K., Driscoll, K., Ekdale, B., Edgerly, S., Thompson, L. G., Schrock, A., ... & Wells, C. (2013). YouTube, Twitter and the Occupy movement: Connecting content and circulation practices. *Information, Communication & Society*, *16*(3), 421-451.

Toret, J., Calleja-López, A., Marín, O., Aragón, P., Aguilera, M., Barandiaran, X., ... Monterde, A. (2015). Tecnopolítica y 15M: La potencia de las mutitudes conectadas. Barcelona: Editorial UOC.

Tufekci, Z., & Wilson, C. (2012). Social media and the decision to participate in political protest: Observations from Tahrir Square. *Journal of Communication*, *62*(2), 363-379.

Williams, R. (1975) Television: Technology and Cultural Form, New York: Schocken.

Wilson, C., & Dunn, A. (2011). The Arab Spring| Digital media in the Egyptian revolution: descriptive analysis from the Tahrir data set. *International Journal of Communication*, *5*, 25.

Wolfson, T. (2009). The Cyber Left: Indymedia and the making of 21st century struggle. Dissertations available from ProQuest. Paper AAI3536592. Available from http://repository.upenn.edu/dissertations/AAI3536592.

[i] We deliberately decided to include only those studies that explicitly use the media ecology metaphor and to exclude those research that instead employs other ecological metaphors, like the protest ecology metaphor used in the work of Bennett and Segerberg (2012) because it refers to a different, and broader, conceptual framework that goes beyond communication technologies. Unless otherwise specified, we have added the use of italics in the quotes so to emphasize the particular uses of the ecological terminology.