

Online and Offline Continuities, Community and Agency on the Internet

Jon W. Anderson

Abstract

How the Internet spawns community and gets its features into offline life is a recurring problem met in searches for “impacts” of its successive iterations in the Middle East and arises particularly in assessing equivocal findings most recently about social media in the Arab Spring uprisings. But the problem is more methodological than ontological: it lies in viewing the Internet through a media lens on communication as message-passing and “influence” as the outcome to be identified. The Internet and its current embodiment for new users as social media have a richer – and, I argue, normal – sociology in a more extended habitus explored here through comparison of longer-term, intermediate-term, and immediate processes highlighted by recent research that give better pictures of the Internet as networking and as cultural performance, and of appropriate methodologies that will retrieve their features.

Keywords

Internet studies, activism, blogs, public sphere, cyberactivism, social networks, Internet, social media, information and communication technology, communication studies, Arab Spring

Continuities between online and offline life, social fields, and actions have been a persisting – and increasingly take on the character of a fundamental – problem for those studying and thinking about the social life of and on the Internet (Gruzd, Wellman and Takhteyev 2011; Katz et al 2001; Hampton and Wellman 2003; Matei and Ball-Rokeach 2001; Nie 2001; Best and Krueger 2006).¹ Thinking about their relations in the Middle East tends to follow a predictable curve, in which each new Internet technology from the World Wide Web and portals in the 1990s to social media in the last decade is first greeted as liberation technology, enabling alternatives, and empowering those who grasp them. Then, skepticism sets in as the new

online social formations are found to draw on old offline resources – not to be so revolutionary or liberating as initially hyped – or not to have quite the online resonances expected. As attention moves on to newer technologies, the cycle repeats, most recently on the roles of social media and their practitioners in popular uprisings from Iran, various “Twitter Revolutions,” and what some characterized as a “Facebook Revolution” in Egypt. Most of the more aggressive claims have been backed off as further inquiry has shown wider ranges of existing social resources, practices, and roles that online activists draw on and at least to some extent draw into their online constructions (Aday et al. 2012) or into a repertoire of communications reflecting a “media ecology” (Axford 2012, Kuebler 2011, Lim 2012). Taken together, the literature seems to affirm that online activism – and more generally online life – partly translates and partly replicates the offline. But the disconnect persists; so what accounts for it?

One might suggest persistent premature conceptualization, or it may be an artifact of method somewhat closer to the ground than revolutionary analysis. Analyses attributing positive structuration to the Internet treat it locally as an independent variable, having an “impact,” while those emphasizing its own social construction treat it distantly as a dependent variable, and in both cases ontology recapitulates methodology. More measured political science seems, after initial attributions of structuration to the Internet (e.g., Alterman 1998, Lynch 2007), to settle on more modest roles as “catalyst” of social and political change (Alterman 2011, Lynch 2011). Others in communications studies tend toward a larger, more positive role as “affordances” (Howard 2010), a concept originally adopted from human-machine interface studies by the network sociologist Barry Wellman (2002, Wellman and Hampton 2003) to capture how Internet use expands social networks on their margins. Focused perhaps by our up-close-and-personal default (aka, fieldwork), anthropologists have been more caught up in the ethnographic moment of getting the description right, or in the fervor of their interlocutors to get the interpretation right. I don’t claim this to be a particularly profound insight – some might dismiss it as mundane or as no insight at all – but I do think these are compelling rea-

sons to back off a bit and to seek a more comprehensive view of the subject and a more integrative perspective.

Common to these treatments is a strong outcomes orientation that obstructs conceptualization of behaviors, mechanisms, strategies composing a more comprehensive habitus in at least three ways. They are left theorizing about too little data, particularly about what came before the outcomes they seek to explain. Differing conceptions of what actors bring to situations and find in situations really point to different kinds of data about their relations to those situations that need to be united. Bourdieu's concept of practice (1977) as a larger body of data (than outcomes intellectualized by actors or by analysts) provides a useful starting point for bringing more information to bear and to resolve the indeterminacy that particularly bedevils thinking about the hard case of online-offline relations that is cyberactivism or the movements, links, connections – in Castells' (1996) terms, "flows" – between online activities and consciousness and those offline. Sassen's (2000) specification of such flows as "social thickening" (of the global in local sites) and "hollowing out" (of local institutions) opens that process, which can be a first step in thinking about the Internet in terms of online/offline practical continuities. Second, as activities the subject of online and offline continuities is really about computer-mediated communication (CMC), at least in the minimal sense of actual practice on the Internet. The question is how it figures, and for the most part the answer has been as communication: whether as tool or as medium, the Internet is framed above all as communication and fundamentally of information. This mostly seems self-evident. After all, is that not how we (anthropologists, other observers, practitioners) experience the Internet in the first instance and throughout? For whatever reason, this seems the settled, consensus view across the range of analyses of contemporary turmoil across the Middle East in which the Internet figures: the Internet, and its component technologies, whether one attributes agency to them or not, facilitates, catalyzes, affords, enhances agency through communication by providing information that adds to consciousness, on the one hand, and mobilization, on the other. I don't propose that this is wrong, but that we cannot tell when it is right because it is limited by a model,

methodology, and framing drawn from an altogether different format – or socio-technical formation – of communication than the Internet’s and particularly than “social media” on which so much attention currently focuses, and focuses away from their habitus. Framing in terms of communications and its outcomes, typically measured by some programmatic ideal, is at the expense of process and the practices that compose Internet activities.

My own approach to the Internet in the Middle East figures in this estimation. I have been interested in Internet implementation in the region and drawn to those who do it (Anderson 1995, 2000, 2003-04, 2007, 2011, Anderson and Hudson 2008), who largely though by no means exclusively have roots in computing far more than in media, as have social media cyberactivists as well (Valeriani 2011, Pollock 2011, Della Ratta and Valeriani 2012). So does the Internet: its roots are in computing, as are its key developments including the Web and its characteristic portals that conveyed the Internet to the public as a publishing medium down to – especially to – social media, or what is called Web 2.0 that are the Internet to the non-computing public. Its originating concept and implementing structure throughout has been the subordination of communication to computing which its engineers describe as removing “intelligence” from the system to its margins (see Abbate 1999). Its underlying structure and developer practice implements what computer scientists call “von Neumann architecture,” or “Turing machines,” which underlies all contemporary computing and distinguishes today’s computers from the calculation machines that preceded them. Its basic idea is that operations as well as data are each “machine-independent,” handled entirely in software, where results of operations on data feedback to modify further operations in the software, which is what makes it possible to model natural processes. The Internet’s engineers routinely think of it as software that makes it possible to use any medium of signals propagation to connect any programmable machine, and of its applications as modeling some higher-order process such as email or electronic bulletin boards and newsgroups that are progenitors of today’s social media. Social media model or, more specifically, incorporate models of and proceed by generating more models of social behavior, as its

current apodictic developers such as of Google and Facebook are keenly aware (Levy 2011, Lacy 2008, Kirkpatrick 2011, Mezrich 2009). Their programming models activities and practices that user-contributed and user-distributed content extends as models of worlds they are in, worlds they want and, somewhat more problematically, enact, which are not the same thing, except as modeling.²

This may seem a strong claim and even perverse in its subordination of communication to computing. Don't more people communicate than compute? And surely all those newbie users aren't computer scientists but otherwise ordinary people tweeting, blogging, facebooking. But understanding that activity as modeling actually frees communication from comparison to broadcasting and operationalized there as passing messages that change dispositions of recipients, which fails to register how what is called "user-contributed content," the *sina qua non* of social media, extends the programmers' modeling in a von Neumann sense – in this case of social processes. Artists understand this implicitly as in Clay Shirky's arguments for "how technology makes consumers into collaborators" (2011, also Shirky 2008). It is a commonplace in the web-designer realm that progressively more "user-friendly" software (i.e., that incorporates progressively more user behavior) collapses distinctions between consumers and producers that originate in studies of mass communication, particularly since producers do not need to own the infrastructure, and thanks to the intervening variable of software that also in political-economy terms is machine-independent.

More modestly, my claim would be that shifting emphasis from thinking about CMC primarily as communication to its basis in computing opens up analysis to reconciling the fundamental indeterminacy over the Internet as both causing and caused by social relations. It shifts the focus from outcomes, opens the field to additional data about its practices, and in the hard case of change, has the advantage of exposing the parts in motion. Here, I draw on two recent articles out of the plethora on cyber-dissent in the recent Middle East that usefully focus on the evolution of online-off-line relations from the fields of political science and communication that typically bracket this discussion: Courtney Radsch's "Core to commonplace:

the evolution of Egypt's blogosphere," which appeared in Arab Media and Society in 2008 following the April 6 movement, and Babak Rahimi's "Affinities of dissent: cyberspace, performative networks and the Iranian Green Movement," in CyberOrient (2011). These are not the latest or most comprehensive works on their subjects; but I am not concerned here with resolving those debates. Radsch brings forward data about networks and Rahimi about situated performance that trace evolving relations between online and offline activity that parallel in shorter terms and narrower spaces my own earlier account of Internet implementation in the Middle East (Anderson 2003–04) and update that to comparison with social media in ways that together may contribute to resolving the indeterminacy over online effects offline and vice versa, bring that discussion into better alignment with analyses developed elsewhere, and better contribute data from the Middle East to their refinement.³

My goal is not a new narrative of cyberactivism. Instead, I believe that "catalyst" and "affordances" are too weak and open-ended as conceptualizations of how Internet technologies figure in or contribute to offline environments and to changes in them. There is here more comprehensive task of conceptual resolution, or at least bringing separate conceptualizations into a common frame, which is the holistic goal of anthropology. It is primarily as an anthropologist that I approach this task and not as a political scientist interested in power or from a more humanist perspective on communication as meaning transfer. Although it is not my goal here, better outcome measures, I believe, will come from better understanding the processes that produce them.

Activities and socio-technical formations of IT

Going back to the first generation of Internet implantations in the Arab Middle East in the 1990s before the Internet was widely available to general publics, *Fig. 1* aligns technologies, actors, activities and gross social formations linking them as stages in the Middle East's going online and compares them with the similar evolution in online Islam. The purpose was to identify and specify different kinds of "virtual communities" as reference groups and

their practices that linked online with offline activities, principally work – that is, focusing on occupations as key sites of connection and crossover.

Technology	Muslim (cultural) space	Mid East (political) space	Sociological Habitus
<p><i>1970s-1980s</i></p> <p>interactive computing</p> <p>WANs, MIS, 'minis'</p> <p>Listserv, newsgroups</p>	<p><i>Technological Adepts</i></p> <p><i>diaspora populations</i></p> <p><i>scientists and engineers</i></p> <p><i>put texts online</i></p>	<p><i>Technocrats</i></p> <p>administrative modernization</p> <p>in government and orgs</p>	<p><i>Creole Journeys</i></p> <p>internationalists</p> <p>public service</p> <p>modernization</p>
<p><i>Early to Mid-1990s</i></p> <p>personal computers give access</p> <p>World Wide Web for publication</p>	<p><i>Culture Managers</i></p> <p>official and oppositional 'content' providers</p> <p>restore context</p>	<p><i>Entrepreneurs</i></p> <p>IT niche businesses</p> <p>development = globalization of markets</p>	<p><i>Contending Elites</i></p> <p>information managers</p> <p>nationalists</p> <p>globalization</p>
<p><i>Late 1990s</i></p> <p>interactive Web</p> <p>global networking</p>	<p><i>Modulators</i></p> <p>add social and psychological contexts</p> <p>'new' ulema, modern professionals</p>	<p><i>Software Developers</i></p> <p>programmers and designers</p> <p>form internal/ regional diaspora</p>	<p><i>Postmodern Nomads</i></p> <p>'knowledge workers'</p> <p>transnational job circuits</p>

Fig. 1. Adapted from J. W. Anderson, "Vers un théorie techno-pratique d'Internet dans le monde arabe" (Maghreb-Machrek, Winter 2003-04). WAN = Wide Area Network, MIS = Management Information Systems, WWW = World Wide Web.

This chart is an attempt to line up developments in Muslim (cultural) space with a similar evolution in Arab (political) space, the characteristic technologies which those developments engaged, and the habitus they formed. Reading across lines up related developments; reading down, the progressions of those developments. So, for instance, the multi-user, interactive, networked computing of the 1970s and 1980s was embraced by technological adepts to bring Islam on-line and by technocrats to bring Arab governments on-line in a pattern that recalls what Benedict Anderson (1990) called “creole journeys.” Subsequently, with the World Wide Web came culture managers in the Islamic realm and entrepreneurs in the Middle Eastern around a habitus of elite contention, which modulated with the increasingly interactive Web into postmodern nomads moving around and between both spheres, passing skills and themselves between them in new patterns of mobilities of persons and skills. One of the things this chart shows is how, at any particular stage, Muslim and Middle Eastern tech actors were using, and contributing to uses of, the highest available Internet technology – whether the pre-Web Internet of the research world where it originated, the World Wide Web that took the Internet public, or the interactive Web later called Web 2.0 that spawned social media. It does not attempt to resolve priority of technology (on the left) or sociology (on the right) but to show gross features of their alignments in the evolution or development of Internet Islam (Anderson 2002) and in the Middle East’s coming online. The latter is based on a comparative study of Internet implementations in Jordan, Egypt, Syria and Saudi Arabia (Anderson and Hudson 2008).

Both progressions (in the cultural and the political spheres) began with technological adepts, who had gone or been sent overseas to study in the same high tech precincts where the Internet first spread beyond its original development (see, Abbate 2000). In the Islamic space, these were mostly students who, like their peers, brought avocational interests on-line, in their case Islam in the form of scanned texts of the Quran and Hadith collections as a kind of database they could search and discuss with co-religionists online along with issues of life in non-Muslim societies. Their counterparts in the political space were technocrats aiming to apply technologies of com-

putation-based, data-driven analysis to tasks of administrative modernization and, beyond that, informational freedom to their countries. Among the former are many now anonymous members of Muslim Student Associations, starting with chapters at the University of Southern California and MIT, which in the 1970s were academic homes of key Internet implementers. Among the technocrats was a similar cohort who received PhDs in computer science at the point it was becoming distinct from electrical engineering.⁴ Dr. Marwan Muasher became famous as Jordan's Minister of Information for installing the Internet free of restrictions placed on media. Dr. Ahmed Nazif in Egypt went from a government think tank that introduced the Internet to become Egypt's first Minister of Communication and Information Technology with rollout of public Internet (and later Prime Minister), and Dr. Sami Khiyami in Syria taught a generation of engineers who founded the Syrian Computer Society to campaign for introducing the Internet there.

This phase was followed by the Internet's introduction into public use with the World Wide Web, which opened the Internet to less technically skilled cadres of culture managers. Activists and official spokespersons for Islam came online to provide "correct" interpretation of Islam in place of what they regarded as religious amateurism of tech adepts. New actors in the national spaces were for the most part IT entrepreneurs seeking business and often trained in it and in applications of computer science. Characteristic of culture managers were shifts from tech adepts' and technocrats' perspectives on IT as development tool to stronger views of IT as development sector – a shift in both cases to "local" content and modeling the Internet around it.

From these elite contentions of culture managers and the technologically adept emerged what were then called "knowledge workers," such as celebrated in the first Arab Human Development Report (2002). They range from engineers creating IT businesses focused on regional markets to seminary students at Qom who set about programming access to its libraries of religious texts (Amir-Ebrahimi 2008) to Web designers patronized, some-

times sponsored by, sometimes seeking out da'wa organizations, such as Islamonline.net, which featured Yusuf al-Qaradawi (Gräf and Skovgaard-Petersen 2009) and a coterie of “young Azhari” (Zeghal 1999) bringing Islam into contemporary vernaculars and concerns. Circulations between Egypt, the Levant, the Gulf, even to Southeast Asia traced an internal diaspora of post-modern nomads moving among high-tech firms, training programs, conferences, and projects that all took advantage of the proliferation of global networking in Muslim environments for programming the more interactive Web.

This comparison traces parallel developments that broadened the spheres and practices of both technological and cultural adepts by opening the strong tie networks of each through weak ties to the other. Sociologically, it is well established that information flows from strong tie nodes (such as friends and family or, in this case, educational cohorts) where everyone knows the same things through weak ties to friends of friends who know different things (Granovetter 1983). This is how the Internet neither merely reproduces existing networks nor creates wholly new ones but expands networks on their margins – i.e., as weak ties, which Wellman (2002) conceptualized as “affordances.” Designating action possibilities in the field of human-computer interaction,⁵ affordances such as email or community websites that he studied may be thought of as stronger than catalysts because they don't unleash blocked actions but enable the specific ones of their means. In this sense, the Internet does not unleash somehow restrained democracy, protest, dissent, social movements; instead, it opens channels that convey the properties of those channels – in other words, “networking” – through their performance.

Internet networking and internet performances can extend this comparison of actor formations in two important ways by including Radsch's focus on networks and networking in the emergence of the Egyptian blogosphere about half a decade later and Rahimi's on Internet performances in Iran's “Twitter Revolution.” Twitter and blogs have much in common: they exist socially through and as networks of links and skilled performances. The

solitary tweeter or blogger is just that, solitary. Success in each is registered in the form of links on blogs and accumulating followings by subscribing to tweets in a game of building profiles and forming alliances through adept practice of the medium that connect to others in games of reputation management. Blogs are a more extended version of Twitter, which came later and was initially described as mini-blogging for its short (140 character) messages. Blogs become networked through links to others via blogrolls, which are a feature of all blogging software, and getting others to link to one's blog (known as exchanging links). The same sociology extends to Facebook: each identity is a node in a network (of "friends") and is performed through posts that build a more durable reputation, known as a "wall," than a record of Tweets, but more out of fragments (like Tweets) than blog entries. Together, these comprise what are vernacularly termed "social media," for the extensive interaction they provide, essentially to model self-fashioning.⁶

Radsch's formulation of networking in the Egyptian blogosphere can be aligned with these features. She depicts the emergence of the Egyptian blogosphere in three stages similar to mine:

1) Initially, a few dozen Egyptians discover and tinker with blogs as Internet access extends (and becomes nearly free) in Egypt and blogging software internationally after 2002. They form a loose body of technological adepts who experiment with the format by bringing their interests online in it. Beginning as self-expression, they "perform" for other bloggers, acquiring blogging skills, tips, and tricks from each other and by applying those to their own Egyptian and youth-culture content. In my terms, theirs are creole journeys, or projects in Radsch's more active representation of self-fashioning online. She labels this an experimentation phase that produced a "blogger elite" in Egypt, certainly blogging adepts who gained reputations for it.

2) Blogs gained exposure outside their own precincts and outside the Internet through roles taken up in offline movements, like Kefaya in 2004 or April 6 in 2008, and through attention of mainstream media and inter-

national human rights organizations. In the blogosphere, the former are more recognizable to the latter (as “people like us”), who created links to sample the Egyptian blogs, while bloggers seek links to institutions online in search of allies and audience (subscribers) on their margins. In these flows, “bloggers become activists and activists become bloggers,” and the blogosphere grows both in users and in content – particularly, in turns to activism from personal to political content as mobilization becomes part of the performance.⁷

3) Subsequently, Radsch depicts a phase of “diversification and fragmentation” as the Egyptian blogosphere, expanded to thousands and, with increasingly many politicized, began to resolve into “virtual enclaves... engaged primarily, though certainly not exclusively, with each other” around specific, limited interests that they cultivated – in other words, into self-referential strong nodes – some associated with parties or political factions and focusing on archiving and documenting uses of their technologies in the movements they joined.⁸

Radsch’s three phases in the emergence of the Egyptian blogosphere describe a progression of networking from strong-tie nodes that developed around the technology and its users in her first phase into something like open (weak-tie) constituencies in her second phase that fragment into multiple strong-tie nodes around documenting their particular participations in the expanded blogosphere. This self-referentiality is what Kelty (2008), in a study of programmers, characterized as “recursive” public spheres, self-consciously set apart as alternatives to other authorities by strong focus on their means of production (here in the form of archiving tech contributions) that is their habitus as a community. That is, an evolution from networks of strong ties of collaboration into the weaker ones of alliances that fragment into multiple projects of intense self-reference focused on its own habitus.

Adding Radsch’s three phases of blogger networking that grow online around local offline content to my initial model focused on actor types and activities that evolve through online interaction brings its sociology down to the social dynamics in networking practice (*Fig. 2*).

Social Type	Social Activity (Radsch)	Network Forms
Tech Adepts	Tinkering and experimenting with blogging	Strong-tie networks form around blogging practices and linking
Entrepreneurs and Elite Contention	Activists become bloggers, bloggers become activists	Explosion of weak-tie networks through external links
Postmodern Nomads	Looser constituencies resolve into enclaves of self-reference	Implosion on strong-tie nodes around their habitus

Fig. 2.

It might be objected that both cases can be described more simply as “domestication” of technology by the addition of cultural content, and that this would be in line with the general observation that the Internet doesn’t change much or so much as it catalyzes or affords shifts in existing balances. But this would overlook what is being added to produce such outcomes: identities, skills, practices, in this case of networking with and through technologies that specifically perform what is at stake in content that the technologies model.

Rahimi brings analysis a step closer to that performance in a similar trajectory in the Green Movement that contested the outcome of the 2009 presidential election in Iran. Focusing on a much shorter span – of weeks, by comparison to Radsch’s months, even years – he conceptualizes a trajectory of performances linking action, affect, and “social affinities” (i.e., identities) in net activism. In the run-up to the election, net activism began with “self-promoting platforms” similar to Radsch’s blogger elites’ bringing tech skills to margins of political activism overlapping with their practices. These activities, he implies, were mostly in the background – applied to campaign logistics and get-out-the-vote efforts – of the political-contestative performances of rallies, speeches, debates. Following the election and charges of fraud came a shift to “other-offensive performative actions” in dispersed

activism (demonstrations) of “ephemeral micro-publics.” Using SMS messaging, Twitter, and blogs to direct and communicate globally in real-time the social drama in the streets become part of the action and among the ways demonstrators interacted with authorities, which merge into a single game, or social field, bounded by high affect. This falling away of boundaries corresponds to what Radsch described in the Egyptian case as “bloggers become activists and activists become bloggers.” As authorities reasserted institutional control and restore separation of IT and political space, returning activists withdrew into “self-maintaining performative action” that, in Rahimi’s account, “largely revolves around memorial and mythical narratives for the maintenance of social affinities,” which would correspond to Radsch’s “virtual enclaves” documenting their own cyber-activities.

Three observations can be made about aligning network performance with network structures and structural transformations. First, the activities Rahimi describes as “self-promoting,” “other-offensive,” and “self-maintaining” unfold over a shorter term than Radsch’s (weeks versus months or years) or mine (years to decades), which highlights performance. Second, performance highlights the social drama in loosening structures and boundaries that include the structures and boundaries of online and offline activity – in their cases, both in the streets and reactions of authorities, in mine between professions. Third, when structure is restored, the actors’ activities include not just previous identities but also skills acquired and exercised reflexively in recording the contributions of those skills. What Radsch refers to as documenting and Rahimi calls memorializing are real discoveries about how online activities get into offline ones. The marginal differences in performance that he identifies track Radsch’s account that I recast as online and offline nodes momentarily merging in loose-tie networks, which Rahimi called “ephemeral semi-publics” characterizing the liminal field of demonstrations, from which emerge a new set of fragments. Temporal condensation also highlights an emotional loading implied in the crucible of elite contentions in each case but not retrieved in the rational-actor lens of resource-mobilization or the longer durée of creole journeys morphing into postmodern nomadism.

Additionally, the sort of inward-turning, self-referential memorials that Rahimi brings forward as performances and that Radsch's focus on networks brings forward as virtual enclaves should cause us to look again at other, similar documentation projects to assemble online records of online participation. A more recent example might be the Facebook page, "We are all Khalid Saeed," created to memorialize a young activist and Internet adept tortured to death by the Egyptian police and credited with being one of the sparks of the February 2011 demonstrations that led to the fall of the Mubarak regime. It is significant that the co-creator, Wael Ghonim, was identified with the contemporary heart of the Internet, as a Google executive, not only because it was in that context that reputation accrued to him most strongly, but for his subsequently forsaking return to Google in favor of applying ICT skills to documenting online participation in the demonstrations and deriving tools from them. In other words, applying the Google methodology, but in another content frame. Barsolou (2012) describes similar turns following the 2011 Tahrir Square demonstrations of bloggers and other techies to preserve, archive, and analyse "Arab Spring' tweets and web-based materials," ranging from a non-profit data-mining project, R-Shief (2013) to others recording particular political interests, such as the transnational Jadaliyya (2010), Egypt Remembers (see Good 2011), which began as a collaborative Google Doc and association with a Canadian website, and The Archival Platform (2007/) that describes itself as "a civil society initiative committed to deepening democracy through the use of memory and archives as dynamic public resources," on to individual and party efforts (listed in Barsalou 2012). ICT-adept participants not only learn on line but, in memorials/documentation of that, they proceed to model the process, not unlike pilgrims who return home with tales to tell, or the high-tech postmodern nomads emerging from their creole journeys.

The two cases, I am suggesting, have more in common than the play of the Internet in dissent, opposition, demonstrations and social movements. They open additional middle range conceptualization of relations of online and offline life and practice than the narrower ranges of political "impact" analysis of whatever time frame. Rahimi's adds an additional kind of data to the

model in *Fig. 2* that connect online and offline activities in actor formation, networking, and network forms and, in net performance, two important facts. First, collapse of boundaries between online and offline activities (the middle phases) is temporary; it doesn't last but is not reversed on exiting the field.

Actor Forms	Actor activity	Network Forms	Net Performance
Tech Adepts	Tinkering and experimenting with blogging	Strong-tie networks form around blogging practices	CMC form self-promoting networks
Entrepreneurs, contending elites	Activists become bloggers, bloggers become activists	Explosion of weak-tie networks	CMC become parts of high affect social drama
Postmodern Nomads	Looser constituencies resolve into self-referential enclaves	Implosion on strong-tie nodes around multiple cultural content	CMC reflexivity of participation

Fig. 3.

Second, the actors, networks, and performances emerge transformed by reflexive focus on their means: Radsch's bloggers on documenting the blog record, Rahimi's telling stories about the medium in the medium, and post-modern nomads on the mobilities of their CMC praxis.

Here, it is worth noting that the middle or intermediate phases of these sequences all involve contention, blurred boundaries, and heightened emotion associated with moments of liminality and the experience of communitas that Turner (1967) identified with social drama,⁹ and which is more apparent in the shorter term but not absent in the medium or longer term. The initial phases are characterized by experimentation and rather tentative or low-commitment outreach, and the last phases by a combination of heightened self-reference focused on its means. Minimally, these features

organize a richer body of concepts, and middle range theories, for thinking about the Internet around sequences of fitting it with or inserting it into social life that suggest what to look for; but I have a bit more ambition for this demonstration.

Toward more integral interpretation

As much as Radsch's focus on networking and Rahimi's on its performances extend accounts of the Egyptian and Iranian activists' use of the Internet, the role that Internet's socio-technical forms play in both analyses is fundamentally as communication, focusing on Internet actors as communicators. This may be termed the standard interpretation: Internet technologies and techniques – and ICTs generally – extend communication, increase access, and speed up flows of information and more of it. Underlying this framing is a concept of “more” (messages, senders, receivers, mobility, mixing) that registers as an overwhelming “hyper-reality” (e.g., Kraidy 2005). But as a resolution to the indeterminacy problem, this is inadequate: it substitutes abundance for sociology. It reproduces multiplicity and contradiction in the proliferation of voices, messages, and channels more than that captures what actors are doing – by Radsch's account networking or in Rahimi's performing. And it leaves the Internet as either a pass-through device or attributes problematic structuration to it as a multiplier or for “routing around” obstacles.

The minimum that the present exercise accomplishes is to identify different kinds of data, different middle-range phenomena, in the alignment of online and offline community that are otherwise collapsed in metaphors as “forces,” “adaptations,” or merely as combinations. They provide more specific sites for describing “flows” and “social thickening” between online and offline activities; and performance and networking are essential in moving analysis to practices that accomplish this. Taken together they are complementary, differentiated essentially by temporal frames: networking activities that are plainer in the intermediate term would be obscured in the longer term of structural transformations and invisible in the shorter term

of performances. Likewise, actor formation is harder to see in shorter terms, and fuller description of performances in longer ones would tend to resolve actions into broad types. Bringing these together helps to provide a thicker description and fuller conceptualization of how each joins online and offline activities and actors than communication as message-passing.

More ambitious than multiplying and differentiating types of data would be to go further and align them as different scales or temporalities of a uniform process in connecting online and offline activities into composite formations, activities, performances. Those are really only distinguished by temporal frames in which they unfold. In other words, I think what we see in separate longer, intermediate, and shorter terms as actor formation, networking, and performances are different expressions, in different temporalities, of a process by which unification of communities that form online, through CMC and typically around some feature or features of it, and communities offline occur. We know that communities online (and off, for that matter) come and go, lasting for longer or shorter terms, gain substance through interactions that are repeated and regularized, and gain identity through objectification of some of those experiences. We know this happens online, too, because online actors generate vocabulary to describe it – such as lurkers, newbies, adepts, masters of a technology as a platform of action. It is frequently the earlier stages that are elided in searches for impacts of online on offline activities. Accounts of political blogging, tweeting and uses of Facebook have been particularly prone to this selection bias by starting at the point that the activity becomes political.

Online habitus begins in more modest reference group behavior, which social media organize around being with and interacting with friends and fellow-travelers. Reference groups in this simple sense are first-stage phenomena of identifying with that activity which gain substance through what Lave and Wenger (1991) identified as communities of practice (as distinct from communities of identity). The concept identifies sites of informal peer-learning and mentoring as opposed to formal (classroom) teaching that characterize apprenticeships and sharing tips-and-tricks, or “situated learning.” A great

deal of learning to use the Internet, and particularly its various platforms, occurs this way – informally in communities of practice, whose members come and go, sharing individual expertise, passing from newbie to adept and some to masters, encountering or seeking out others with other expertise. Communities of practice take the form of weak-tie networks, whose strengths are those weak links to friends of friends (Granovetter 1983) who have information one needs that is not available in strong-tie nodes where everyone knows the same thing (so communication is largely through restricted codes, such as with “likes” on Facebook).

Communities of practice are distinguished from reference groups by interaction, though which they emerge, not so firm as the ideal-type community that confers identity on its members and bounds their action but firmer than the merely categorical reference group of ‘people like me.’ What Radsch termed “blogger elites” were such communities of practice, as were Rahimi’s “self-promoting” actors and those on what I referred to as “creole journeys,” each focused by and on the habitus of their expertise, acquiring it, and applying it. Della Ratta and Valeriani (2012) locate the cultural dimension of the Web objectively in such communities of practice “as a specific set of values, behaviors, skills and strategies that define... how linking, sharing and remixing have been among the core cultural practices.” When objectivated by their members, communities of practice take on the additional social reality that Kelty (2008) has called “recursive public spheres.” The concept, which would include Rahimi’s “self-maintaining performative actions” and Radsch’s “virtual enclaves,” refers to the intense focus on their own means of production as a community, which Kelty identified among Open-Source software developers and specifically as an alternative to other forms of authority, in their case for organizing software production. While Kelty is careful to restrict his reference to this population, he allows that the concept might be projected back onto the Internet, whose developers conceived of it as an alternative and of membership in their community as qualified by working on its technology. Likewise, it could be projected forward to conceptualize how communities of practice focus conscious of themselves through dedication to maintaining their practices of production as a community.

Conclusions

Reference groups, communities of practice that emerge from them through interaction, and reflexive public spheres that emerge from self-conscious focus on their means of their production as a community, I suggest, differentiate the habitus of the successive stages in each of these temporal sequences (of actor formation, networking, situated performances) and unite them in a uniform process in which reference groups become communities of practice through sharing and learning through weak ties to each other, and communities of practice become reflexive public spheres by turning their attention back on practices that constitute them as a community. At the actor level, each of these successive stages activate modeling that moves from individual projection in reference groups to interactions forming communities of practice to reifications of those practices in reflexive public spheres. In their identifications of stages in implementations of ICT practices and how they connect to social affinities, Radsch and Brahimi point to practices that extend different information-handling capacities of participants – how bloggers become activists and activists become bloggers, in Radsch’s arresting characterization – and how those unfold as types of performances. In terms of networking and performances, they capture similar curves from incorporating offline into online habitus and then online into offline practice. From contemporary experimenters with social media back to tech adepts who decided to program access to Islamic texts and technocrats who embarked on modernizing administrative processes with WANs and MIS, up to Egyptians who extended their blogging from personal to political topics or the Iranians who used their mobile phones and the Web to spread the social drama of demonstrations against repression and remodel it as media event, the principal differences are their time scales that register as ever shortening cycles when viewed against each other.

At the other end, both Radsch and Rahimi find fragmentation and withdrawal into a sort of autopoiesis¹⁰ that we can see in representations of the play of their modes of production in wider social fields as outcomes of an extended process linking peer-learning and mentoring, networks that form through those activities, performances that enact them, followed by

representations in the terms of their production. Collapsing these into communication tends to reduce to information-passing what more comprehensively resembles information-processing. By comparison to lax concepts of “hybridity” or “hyper-reality” for characterizing outcomes as mixes or additions, what we see is modeling that can be retrieved empirically as steps, identify where (on their margins) and how (through weak ties). An example could be the tech adepts, tracked into science and mathematics and away from systematic religious education, who applied principles and routines of their work to bring online what had long been stressed were the sources of Islam: the Qur’an, Hadith and interpretation. A word-searchable Quran or Hadith collection models those as databases that, like online forums created at the same time for discussing issues of living in non-Muslim societies, bypass the traditional guidance of an imam or shaykh. Searching texts also bypasses the deeply intertextual hermeneutic techniques of professional religious learning for another, which, as much as the technology, drew the attention of officialisers from traditional da’wa organizations to political movements to provide “correct” interpretations when the Internet entered a wider public and in the more accessible form of the World Wide Web. Then, Internet-adept ulema to various degrees re-program delivery of Islam to include religious advice (fatwa) both online and in databases that grow as queries are submitted and answered (Bunt 2003) and “grow” capacities of seekers to find matches themselves for their questions (Anderson 1999, Bunt 2009). At the same time, on-line ulema extend their model performance (Ask the Shaykh) to non-religious questions as a skill set that expands their own margins of connection with another population.

Radsch and Rahimi describe more compressed sequences that place actor formation in network practice and cultural performances of tech adepts taking up politics and activists taking up blogging, tweeting, and SMSing. Each describes sequences of alliance-seeking and coalition-building that extend weak-tie networks with CMC. That extension follows a general pattern of attaching new uses to applications that turn them into platforms for those activities that actors remaining in the field continue those activities by documenting/memorializing. These are significant discoveries, first for

identifying additional middle ground linking online and offline habitus, and second for disclosing actual linkages connecting them. Perhaps more significant for those disappointed by apparently equivocal “impacts” or outcomes are their identifications of the extensions of weak-ties (that pass information but not solidarity) and the documenting/memorializing of those with the means of their own production. The unifying process is not passing practices into a new field but modeling by which an application becomes a platform for developing others.

Shifting the denominator of CMC from communication to computing helps to accommodate features of the Internet as networking and as cultural performance. It also helps to unite longer-term actor-formation, intermediate-term networking, and immediate performance on the Internet around an understanding of it beyond information-passing. Modeling resolves indeterminacies between technological determination and social construction by focusing on how socialities are built into the Internet in communities of practice that feature peer-learning, mentoring, and other “informalities” that mark the margins of networking and cultural performances. The Internet embodies these processes throughout, and particularly in its incarnation as social media, as models of and models for social reality, in Geertz’s old terms. Facebook, obviously, but also blogging and tweeting enact models of social relations as cultural performances and extend them with user-contributed content. Viewing Internet activities as platforms for modeling social reality (and worldviews, such as Google’s or in Wikipedia) provides a more comprehensive frame for concepts that bring this modeling into focus as networking and cultural performances, for how information technologies support processes of learning, particularly peer learning and mentoring, and for how they actually proceed.

Acknowledgements

This article is based on research supported at various times by grants from the United States Institute of Peace, Fulbright (Near and Middle East Research and Training Act), the American Center of Oriental Research (Amman), by the hospitality of the American Research Center in Egypt, the Syrian

Computer Society, King Fahd University of Petroleum and Minerals, by my university's faculty research funds and a research professorship at Lund University's Center for Middle Eastern Studies, where the text was completed. For helpful advice and comments on earlier versions, I am grateful to the CMES Staff Seminar, to Gregory Starrett, and to anonymous reviewers for *CyberOrient*, and to Yves Gonzales-Quijano for the term "postmodern nomads."

References

The Arab Human Development Report 2002. *Creating Opportunities for Future Generations*. New York: United Nations Development Programme (UNDP), Regional Bureau for Arab states.

Abbate, Janet 1999. *Inventing the Internet*. Cambridge, MA: The MIT Press.

Aday, Sean, Henry Farrell, Marc Lynch, John Sides and Deen Freelon 2012. *Blogs and Bullets II: New Media and Conflict after the Arab Spring*. Washington DC: United States Institute of Peace.

Alterman, Jon B. 1998. *New Media, New Politics? From Satellite Television to the Internet in the Arab World* Policy Paper No. 48. Washington, DC: Washington Institute for Near East Policy.

Alterman, Jon B. 2011. *The Revolution Will Not Be Tweeted*. *Washington Quarterly* 34(4):103–116.

Amir-Ebrahimi, Masserat 2008. *Blogging from Qom, Behind Walls and Veils*. *Comparative Studies of South Asia, Africa and the Middle East* 28(2):235–249.

Anderson, Benedict 1983. *Imagined Communities: Reflections on the Origin and Spread of Nationalism*. London: Verso.

Anderson, Jon W. 1995. "Cybarites", *Knowledge Workers and New Creoles on the Superhighway*. *Anthropology Today* 11(4):13–15.

Anderson, Jon W. 2000. *Producers and Middle East Internet Technology: Getting Beyond "Impacts."* *The Middle East Journal* 54(3):419–431.

Anderson, Jon W. 2002. The Internet and Islam's New Interpreters. *In* *New Media in the Muslim World: The Emerging Public Sphere*. Dale F. Eickelman and Jon W. Anderson, eds. Pp. 45–60. Bloomington: Indiana University Press.

Anderson, Jon W. 2003-2004. Vers un théorie techno-pratique d'internet dans le monde arabe. *Maghreb-Machrek* 178:45–58.

Anderson, Jon W. 2007. Transnational Civil Society, Institution-Building and It: Reflections from the Middle East. *CyberOrient: Online Journal of the Virtual Middle East* 2(1). <http://www.cyberorient.net/article.do?articleId=3696>, accessed June 1, 2013.

Anderson, Jon W. 2011. Between Freedom and Coercion: Inside Internet Implantation in the Middle East. *In* *The New Arab Media: Technology, Image and Perception*. Majhoob Zweiri and Emma C. Murphy, Pp. 19–30. Reading: Ithaca Press.

Anderson, Jon W. and Michael C. Hudson 2008. Internet Pioneering in Four Arab Countries: The Internet as a Force for Democracy in the Middle East. Arab Information Project. <http://aipnew.wordpress.com/2008/09/15/internet-pioneering-in-four-arab-countries-the-internet-as-a-force-for-democracy-in-the-middle-east/>, accessed July 10, 2012.

Archival Platform 2007. About – Archival Platform. <http://www.archivalplatform.org/about>, accessed June 1, 2013.

Axford, Barrie 2011. Talk About a Revolution: Social Media and the MENA Uprisings. *Globalizations* 8(5):681–686.

Barsalou, Judy 2012. Post-Mubarak Egypt: History, Collective Memory and Memorialization. *Middle East Policy* 19(2):134–147.

Best, Samuel J. and Brian S. Krueger 2006. Online Interactions and Social Capital: Distinguishing between New and Existing Ties. *Social Science Computer Review* 24(4):395–410.

Bourdieu, Pierre 1977. *Outline of a Theory of Practice*. Cambridge: Cambridge University Press.

Boyd, Danah 2008. Why Youth (Heart) Social Network Sites. *In* Youth, Identity, and Digital Media. David Buckingham, ed. Pp. 119–42. Cambridge, MA: The MIT Press.

Boyd, Danah 2009. Social Media Is Here to Stay... Now What? Paper presented at Microsoft Research Tech Fest, Redmond, Washington, February 26.

Boyd, Danah and Nicole B. Ellison 2007. Social Network Sites: Definition, History, and Scholarship. *Journal of Computer-Mediated Communication* 13(1):210–230.

Browne, Heather K. 2009. The Potential of Facebook as a Social Mobilizer. Paper presented at Middle East Studies Association Annual Meeting, Boston, November 21–24.

Bunt, Gary R. 2003. *Islam in the Digital Age: E-Jihad, Online Fatwas and Cyber Islamic Environments*. London: Pluto.

Bunt, Gary R. 2009. *iMuslims: Rewiring the House of Islam*. London: Hurst.

Bush, Vannevar 1945. As We May Think. *The Atlantic Monthly*, July 1. <http://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/>, accessed June 1, 2013.

Castells, Manuel 1996. *The Rise of the Network Society: The Information Age: Economy, Society and Culture Vol. I*. Malden, MA: Blackwell.

Della Ratta, Donatella and Augusto Valeriani 2012. Remixing the Spring! Connective Leadership and Read-Write Practices in the 2011 Arab Uprisings. *CyberOrient: Online Journal of the Virtual Middle East* 6(1). <http://www.cyberorient.net/article.do?articleid=7763>, accessed 1 January 2013.

Good, Jonathan 2011. Egypt Remembers. Blog | 1000memories. <http://blog.1000memories.com/43-online-memorial-to-remember-egyptians>, accessed June 1, 2013.

Gräf, Bettina and Jakob Skovgaard-Petersen, eds. 2009. *Global Mufti: The Phenomenon of Yusuf Al-Qaradawi*. London: Hurst & Co.

Granovetter, Mark S. 1983. The Strength of Weak Ties: A Network Theory Revisited. *Sociological Theory* 1:201–233.

Gruzd, Anatoliy, Barry Wellman and Yuri Takhteyev 2011. Imagining Twitter as an Imagined Community. *American Behavioral Scientist* 55(10):1294–1318.

Hampton, Keith and Barry Wellman 2003. Neighboring in Netville: How the Internet Supports Community and Social Capital in a Wired Suburb. *City & Community* 2(4):277–311.

Howard, Philip N. 2010. *The Digital Origins of Dictatorship and Democracy: Information Technology and Political Islam* Oxford Studies in Digital Politics. New York and Oxford: Oxford University Press.

Jadaliyya 2010. *Jadaliyya*. <http://www.jadaliyya.com/>, accessed June 1, 2013.

Katz, J. E., R. E. Rice and P. Aspden. 2001. The Internet, 1995–2000: Access, Civic Involvement, and Social Interaction. *American Behavioral Scientist* 3:405–419.

Kelty, Christopher 2008. *Two Bits: The Cultural Significance of Free Software*. Durham: Duke University Press.

Kirkpatrick, David 2010. *The Facebook Effect: The inside Story of the Company That Is Connecting the World*. New York: Simon & Schuster.

Kraidy, Marwan M. 2005. *Hybridity: The Cultural Logic of Globalization*. Philadelphia: Temple University Press.

Kuebler, Johanne 2011. Overcoming the Digital Divide: The Internet and Political Mobilization in Egypt and Tunisia. *CyberOrient: Online Journal of the Virtual Middle East* 5(1). <http://www.cyberorient.net/article.do?articleId=6212>, accessed June 1, 2013.

Lacy, Sarah 2008. *Once You're Lucky, Twice You're Good: The Rebirth of Silicon Valley and the Rise of Web 2.0*. New York: Gotham Books.

Lave, Jean and Etienne Wenger 1991. *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.

Levy, Steven 2011. *In the Plex: How Google Thinks, Works, and Shapes Our Lives*. New York: Simon & Schuster.

Licklider, J. C. R. 1960. Man-Computer Symbiosis. IRE Transactions on Human Factors in Electronics HFE-1:4-11.

Lynch, Marc 2011. After Egypt: The Limits and Promise of Online Challenges to the Authoritarian Arab State. *Perspectives on Politics* 2:301-310.

Lynch, Marc 2007. Blogging the New Arab Public. *Arab Media & Society* Issue 1. http://www.arabmediasociety.com/topics/index.php?t_article=32, accessed 1 July 2012.

Matei, S. and S. J. Ball-Rokeach 2001. Real and Virtual Social Ties – Connections in the Everyday Lives of Seven Ethnic Neighborhoods. *American Behavioral Scientist* 45(3):550-564.

Maturana, Humberto R. and Francisco J. Varela 1980. *Autopoiesis and Cognition: The Realization of the Living*. Boston Studies in the Philosophy of Science 42. Dordrech: Reidel.

Mezrich, Ben 2009. *Accidental Billionaires, the Founding of Facebook: A Tale of Sex, Money, Genius and Betrayal*. New York: Doubleday.

Mueller, Milton L. 2002. *Ruling the Root: Internet Governance and the Taming of Cyberspace*. Cambridge, MA: The MIT Press.

Mueller, Milton L. 2010. *Networks and States: The Global Politics of Internet Governance Information Revolution & Global Politics*. Cambridge, MA and London: The MIT Press.

Nie, N. H. 2001. Sociability, Interpersonal Relations, and the Internet – Reconciling Conflicting Findings. *American Behavioral Scientist* 45(3):420-435.

Norman, Donald A. 1999. Affordance, Conventions, and Design. *Interactions: New Visions of Human-Computer Interaction* 6(3):38-43.

Pollock, John 2011. Streetbook: How Egyptian and Tunisian Youth Hacked the Arab Spring. *MIT Technology Review*, September/October 2011. <http://www.technologyreview.com/featuredstory/425137/streetbook/>, accessed 16 April 2013.

Radsch, Courtney C. 2008. Core to Commonplace: The Evolution of Egypt's Blogosphere. *Arab Media & Society* 6. <http://www.arabmediasociety.com/?article=692>, accessed 6 June 2012.

- Rahimi, Babak 2008 Affinities of Dissent: Cyberspace, Performative Networks and the Iranian Green Movement. *CyberOrient: Online Journal of the Virtual Middle East* 5(2). <http://www.cyberorient.net/article.do?articleId=7357>, accessed 2 June 2012.
- R-Shief 2013. R-Shief: a knowledge management system. <http://www.r-shief.org/>, accessed June 1, 2013.
- Sassen, Saskia 2000. Spatialities and Temporalities of the Global: Elements for a Theorization. *Public Culture* 12(1):215–231.
- Shapiro, Samantha M. 2009. Revolution Facebook Style. *The New York Times*. http://www.nytimes.com/2009/01/25/magazine/25bloggers-t.html?_r=0, accessed 6 June 2012.
- Shirky, Clay 2008. *Here Comes Everybody: The Power of Organizing without Organizations*. New York: Penguin Press.
- Shirky, Clay 2010. *Cognitive Surplus: How Technology Makes Consumers into Collaborators*. New York: Penguin.
- Turner, Victor 1967. *The Ritual Process*. Ithaca, NY: Cornell University Press.
- Valeriani, Augusto 2011. Bridges of the Revolution: Linking People, Sharing Information, and Remixing Practices. *Sociologica* 3:1-28.
- Wellman, Barry 2001. Computer Networks as Social Networks. *Science* 5537:2031–2034.
- Wellman, Barry 2002. The Not So Global Village of Netville. *In The Internet in Everyday Live*. Barry Wellman and Caroline Haythornthwaite, eds. Pp. 345–371. Oxford: Blackwell.
- Zeghal, Malika 1999. Religion and Politics in Egypt: The Ulema of Al-Azhar, Radical Islam, and the State (1952-94). *International Journal of Middle East Studies* 31(3):371–399.

Notes

¹ This subject ranges from early anxieties over potentially isolating effects of computer use through a literature that is more relevant here on effects of Internet use on civic participation, which almost uniformly finds that, contrary to expected isolation from personal relations and/or replacement of them by “virtual” ones, online engagements correlate with high engagement in civic life or with dense personal networks. However, prospects-for-democratization arguments rarely take account of these findings but are instead normative interpretations of idealizations by Internet engineers of their collaborative model and understanding of Internet architecture (see Mueller 2002, 2010).

² The engineers’ concept starts with automating repetitive (“lower-level”) processes in order to free operators’ attention for “higher-level” functions, given visionary formulation by Vannevar Bush (1945) and passed into Internet design by one of its forefathers, J. C. R. Licklider (1960).

³ For example, the International Journal of Communication founded by Manuel Castells dedicated a special section of its 2011 volume to “The Arab Spring & the Role of ICTs” by a mix of sociologists who study networked communications and regional specialists.

⁴ Marwan Muasher’s PhD dissertation was on “Multistage Classification of Multi-spectral Earth Observational Data: The Design Approach” (Purdue 1981), Ahmed Nazif’s was “A Rule-Based Expert System for Image Segmentation” (McGill 1983), Sami Khiyami’s was “Conception et réalisation d’un minicalcateur hybride à base de microprocesseur” (Lyon 1979).

⁵ To which the concept was introduced from industrial design by the cognitive psychologist, Donald A. Norman (1999).

⁶ The term was applied to what used to be called “groupware” by marketers after the dot-com bust of 2000 turned developers from transaction software for e-commerce to social transactions, then exemplified in dating sites (see Boyd 2009, Boyd & Ellison 2007). Their precursors in the pre-Web 1970s were listservs and newsgroups, invented by computer science graduate students, for discussions of technical topics but quickly expanding to include avocational interests of operators and then to others with those interests. Contemporary social media exemplified by blogs, Face-

book, Twitter, peer-to-peer music-sharing sites like Napster, picture-sharing sites like Picassa, and video-sharing like YouTube and including “social forums” utilizing the portal model on the original World Wide Web emerged from a plethora that after the turn of the century included Friendster (for dating) and later LinkedIn (for professional networking).

⁷ A NY Times story (Shapiro 2009) about the female co-founder of the April 6 Facebook page formed to support a workers’ strike recounts how she reached out to activists but was shouldered aside after declaring in public that she never would have done it had she anticipated being arrested. Actually, she was the partner with technical skills (trainer at a DVD company) who set up the page and was a Facebook adept: she had originally joined to keep up with her friends, fashion, music and discussions of the Quran on it.

⁸ Barsalou (2012) describes the same turn after the 2011 demonstrations.

⁹ In generalizing this concept from his studies of the liminal middle phase of rites of passage, Turner aimed to identify the experience of time-out-of-time in an undifferentiated if momentary eternal present, and experience of *communitas*, in longer form phenomena such as pilgrimage and social movements as likewise set apart from the boundaries and norms of everyday life.

¹⁰ I adopt this term in preference to common extensions of engineers’ characterization of networks as “self-organizing” (because they use feedback rules to test results) from Maturana & Varela’s (1980) theoretical rooting of cognition in biology that describe as autopoietic systems – such as Radsch’s bloggers after the April 6 movement focusing their activism on creating a record of the output of those tools – capable of making real “the network of processes that produce them... as a concrete entity in [the] space in which they exist by specifying the topological domain of its realization of such as a network” (p. 78). In systems theory, this is treated as second-order feedback that in Internet engineering is called meta-data, and not to be confused with representations in other terms, i.e., outside the system producing it.