
Recombinant Technology and New Geographies of Association

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Introduction

Forms of social organization trade on the illusion of permanence while constantly renegotiating their relationships; their stability rests in part on their ability for transformation. The global state system is a famously reified form of social organization, its defining doctrinal characteristic of state sovereignty based on an increasingly anachronistic single-point perspective (Ruggie 1993: 159). Today the social ordering functions of state sovereignty are under duress, global issues exist beyond the control of any one state, and the global political system is undergoing a significant transformation. Global political space is increasingly defined by networks that operate fluidly; enhance flows of money, people, commodities, ideas, and weapons; and accelerate trends. At the core of this oft-noted phenomenon of spatio-temporal compression is the co-evolution of organizational forms with interactive technologies (IT), a process that rearranges the ways firms produce, states fight wars, and people structure their lives. Changes to the organization of global political space are symbiotically linked to the emergence of new organizational forms of our epoch.

These forms, whether benign or malevolent, reflect a shift from the hierarchical, bureaucratic concept of "mass" (mass production, mass media) to distributed, networked forms of production and communication. It is within this shift that the bones of the sovereign state system creak while trying to regulate transborder flows with institutions evolved to regulate life within territorial borders. And it is within this shift that nonstate organizations (of all kinds) emerge to reterritorialize transborder flows in various ways (Sassen 1998; Strange 1996). Nongovernmental organizations (NGOs) are one of the most complex nonstate actors to emerge in this process, engaged directly or at the margins in the transformation of national, international, and transnational political space. NGOs are boundary objects, drawing upon their ambiguous status along the public-private spectrum to operate as informal shapers of international norms in

both oppositional and partnership modes. NGOs can be seen historically as an effect of the state system, drawing their legitimacy from claims to represent civil society and addressing issues that require state intervention (Toulmin 1994). As the organization of global political space changes to contend with global governance issues, however, NGOs have become new actors seeking to confront the diversification and reproduction of the decentralized, distributed power that was once considered the domain of the sovereign state (Sassen 1999).

NGOs' expanded role has been enhanced through their use of interactive technology, and many NGOs have rushed to embrace and encourage the use of interactive technology, with mixed results. Conventionally, the role of interactive technology is thought of as a tool to improve existing functions. In this chapter we take up the relation of interactive technology to NGOs from a different angle: what is often called information technology is less a tool to be correctly applied than a logic of interaction that contains within it a new relationship to organizational innovation. Our approach is part of a growing body of social science research that seeks to overcome the artificial divide between "society" and "technology" by viewing the social as consisting of humans and nonhumans (objects, things, artifacts).¹ Accordingly, new technologies do not simply allow organizations to communicate faster or to perform existing functions more effectively, they also present opportunities to communicate in entirely new ways and to perform radically new functions. Especially because these technologies are interactive, their adoption becomes an occasion for innovation that restructures interdependencies, reshapes interfaces, and transforms relations.

The first section below addresses the relation of interactive technology to NGOs and argues that the commonly employed information broker model is insufficient to understand how the multiplicative properties of the Internet are changing the form and function of NGOs. The second section argues that the dynamics of collaboration afforded by interactive technology are resulting in new associative relations as NGOs move from pseudo-autarky to collaboration, a change that enables their structural role in globalization to become increasingly prominent.

¹ This approach draws on the work of French sociologists Michel Callon (1998) and Bruno Latour (1991) and social scientists in the United States who have been working with similar concepts. Hutchins (1995), for example, argues that cognition is distributed across a network of persons and instruments. Suchman's (1987) pathbreaking work on human-machine interaction similarly resonates with the work of Callon and Latour and provides the basis for further studies on distributed design.

Elective Affinities?

At first glance NGOs possess a superficial isomorphism with the perceived properties of interactive technology, since for many NGOs the concept of network is closely intertwined with their operational logic. When viewed mainly as a tool for processing information, interactive technology increases NGOs' communication and facilitates networking by enhancing the core tasks of getting information to constituents, channeling and interpreting information from varied sources, aggregating information and demands, transmitting them to diverse audiences, and mobilizing individuals and groups.² Interactive technology thus seemed ideal for lowering transaction costs, increasing participation and impact, and streamlining operations. The democratic rhetoric that accompanied the early years of the Internet was also a strong plus for NGOs—social and organizational change could be seen as complementing each other.

It would be an error, however, to see NGOs as having an elective affinity with interactive technology, and then to use this a priori affinity to claim that NGOs plus IT equals new organizational forms capable of transforming global space if only the forces of friction are sufficiently overcome. This, however, is the undertone that pervades much popular discussion about NGOs. Technology is often appended to a constellation of factors that are used to explain the recent growth and prominence of NGOs, such as the retrenchment of the welfare state, the end of the cold war, and a rise in private donations (Lindenberg and Bryant 2001: 8–12). In nearly all of these scenarios, interactive technology appears in a diffusionist fashion as either speeding up the process, presenting obstacles, or both. In these representations NGOs' use of interactive technology is discussed within the confines of an information broker model.

The information broker model is a reasonable and conditioned reaction from the age of mass communication and mass production. Modern society is organized along lines of access to quantifiable information brokered between those who have information and those who want or need it. It has an hourglass structure, with information passing through the broker in the middle on the way from A to B, similar to Burt's (1992) bridges across structural holes or Latour's (1987) obligatory passage points. This can take the ruthless form of a monopolistic corporation or the benevolent form of an NGO seeking to spread formerly guarded information. Structurally, however, brokers work in the same way by exploiting gaps and, accordingly, gaining rents. They have a vested interest

² Increased communication, however, is in itself not a good. Not everything works better with e-mail (O'Mahoney and Barley 1999).

in maintaining the gap between information producers and consumers. The affordances of interactive technology can be used to maximize this brokering role, along with the power (and perils) that comes with it.

NGOs gain power through an enhanced brokering role, even while they do not mimic those who "hold" power in principle, such as states or rulers. NGOs' power can be understood in Latour's (1986: 273) sense, where power accrues to "those who practically define or redefine what 'holds' everyone together." Engaging in this practical redefinition enhances NGOs' power. Transnational NGOs are particularly important in this respect. To the extent that NGOs become obligatory passage points, power can be exerted through the discursive production of the subjects they claim to represent, be they aid recipients, organizations to be included in a civil society database, or the creation of a regional identity.³ As Paige West (2001: 29) documents in her study of environmental NGOs in Papua New Guinea, NGOs use their structural and rhetorical power 'to discursively produce 'local peoples,' 'indigenous peoples,' 'peasants' . . . and have their productions taken very seriously."⁴

But since translation is always also misunderstanding, NGOs do not only produce identities but renegotiate them. And since interactive technology affords the ability to shift from information as a discrete property to "knowledge" that requires a knowing subject, there is more out there than the brokerage model. Much of the literature, however, views technology as an external actant and therefore misses the way in which intelligence is distributed across actors and artifacts (Hutchins 1995).

Unlike information brokering, where the emphasis is on possession of information and rent-seeking, what we call knowledge facilitation emphasizes not information per se but communication and distributed intelligence. Knowledge, unlike "information," cannot exist independently of a subject and cannot be conceived of independent of the communication network in which it is both produced and consumed (thus blurring the notion itself of producer and consumer). This does not displace or solve the practical and epistemological problems occasioned by "information" (e.g., how to process large amounts of data, how to insure data protection, how to ascribe meaning to data), but raises different questions of an ontological nature. These question the very a priori (diffusionist) assumptions of the institutional and organizational forms that order our world. As Neff and Stark (2003) show for what they call "permanently beta" organizations, information technology can enable users and producers alike to reshape technology and organizations, blurring the lines

³ This bears similarities to how nonprofits in the United States helped construct the categories and stigma of welfare recipients (Cruikshank 1999).

⁴ See also our discussion of meta-NGOs in Bach and Stark (2002).

between user and producer (or agency and clients) while constituting new organizational structures.

NGOs themselves transform when shifting their emphasis from brokering information to facilitating knowledge. This could make a difference for their potential to be genuinely transformative of social structure. Facilitating knowledge is powerful for forming associations that are not just linked communities, but what we can call knowledge communities—communities that use a recombinant and multiplicative logic of link, search, interact to sustain themselves and grow.

We refer to this as the logic of link, search, interact to express concisely what it is about interactive technology—particularly its most widespread instantiation in the Internet—that makes it resonate deeply in the NGO community and in so many registers across the globe. This is certainly not the first technology to enable each of these functions: using a telephone, you can search by dialing the operator to get “information” and can then use the same phone to link with a party with whom you interact. But consider the popular search engine Google: when it suggests sites to match your query, it is also performing a search and establishing a link. To prioritize your answer, it considers all the other sites that have linked to the potentially relevant sites that match your query and ranks them based on patterns of links (i.e., the site with the highest number of links to them is considered more relevant). In other words, it searches based on the pattern of links. For the telephone the process of link, search, and interact is merely additive.⁵ For Google it is multiplicative and recombinatory: each of these processes forms the basis for the other.

This recombinant technology allows searches not only on the pattern of links, but also on the pattern of interactions. If you are even a casual user of Amazon.com, the web site will suggest titles to you based on a book or CD you are looking at. This is done not by matching terms in the title or abstract of the book, which would entail a high degree of potentially humorous error, but by tracking patterns of purchase and preferences and then using an algorithm to determine that “people who bought this book also bought. . . .”⁶ The output of Google or Amazon, of course, is web sites or books, while the output of the telephone is interaction with a person. What if you could harness the properties of the web’s recombinatory logic to suggest interaction with people?

This would be desirable even at a merely practical level; the glut of information available on the web is such that even if you know what you are looking for, you need a way to find the most relevant information ex-

⁵ Which is not to downplay linking by itself—after all, we do have a very real use for the one-to-one technology of the telephone.

⁶ This form of search is known as collaborative filtering (Gladwell 1999).

peditionally. Since the creators of all this content are *people*, not machines, it stands to reason that asking the right person might be the best way to find the information you are looking for. Researchers have developed such “word of mouth” software (one is appropriately named “gab,” as in talk, but also for Group Asynchronous Browsing) (Wittenburg 1998). But there is an even more compelling reason to prefer a recombinatory over an additive approach—when you *don’t* know what you are looking for but would recognize it when you find it (e.g., what happens every night at a singles bar). Unlike finding a phone number from “information,” this way you find things you did not know and come into contact with people whom you do not know. Most people would probably balk at interacting directly with other customers of Amazon, but there are communities where this would be quite an asset—for example, a doctor who wants to know who else is treating patients for similar rare diseases or a member of an NGO community that wants to share best practices. “During the Gujarat earthquake,” recounts Paul Mylea, the editor of an NGO website called Altnet.org that facilitates collaboration among humanitarian aid agencies, “a member was based very close to the center—and they were experienced in drought relief rather than earthquake relief. A member from our advisory board contacted the member on the ground because he had experience of earthquake relief and was able to offer advice and guidance on how to deal with the crisis. They went off site and spoke on the phone” (Lewis 2001).

Using the patterns of search or interact, one can link social structures (who knows whom) and knowledge networks (who knows what). Amazon.com’s collaborative filtering software is a commercial variant of similar programs such as the aptly named Yenta, Beehive, or the browser Alexa.⁷ For members of an NGO or nonprofit community, this could help develop and promote their respective knowledge networks. Working with a group of 285 such organizations in the Midwest, researchers at the University of Illinois developed a software program that could help the organizations identify those in the community who shared common or complementary interests and show how they may be directly or indirectly connected.⁸ This software, based on a tool called IKNOW, is distinctive because the users can find out not only “who knows whom” and “who knows what,” but also “*who* knows who knows whom,” and “*who* knows who knows what” (Contractor et al. 1998).⁹ This works by cap-

⁷ See, respectively, <http://foner.www.media.mit.edu/people/foner/Yenta/>; <http://info.alexa.com/>; <ftp://parcftp.xerox.com/pub/dynamics/beehive.html>.

⁸ PrairieNet communityware can be seen at <http://www.tec.spcomm.uiuc.edu/nosh/prairienet>.

⁹ IKNOW stands for Inquiring Knowledge Networks on the Web. The IKNOW web site is <http://www.tec.spcomm.uiuc.edu/nosh/IKNOW>.

turing network data of both knowledge networks (based on links between actors' web sites, on common links from their web sites to third party sites, on similarity in content between different web sites, and on an inventory of skills and expertise provided by the actors) and communication networks (based on an inventory of existing task and project links between them).

From social structures and knowledge networks we thus get at cognitive social structures and cognitive knowledge networks (*who* knows whom or what). The cognitive perceptions of the members of a knowledge community taken individually may be incomplete or inaccurate, but together they form a transactive memory system that shares domains of knowledge (Contractor et al. 1998; Contractor 2000). This hints at a larger significance for what at first might seem like just a good way to sell books: communities of knowledge can be not only identified, but also created. IKNOW does not just enable dyadic relationships in the manner of personal ads, but also facilitates communities of knowledge.

In a similar vein, a group of researchers is working on Augmented Social Networks, or ASN. Unlike IKNOW, ASN is not software, and unlike Altnet.org, it is not a web site. Rather, ASN seeks to establish a model for a "persistent online identity" for individuals moving between different Internet communities. This identity can be the centerpiece for enhancing "the power of social networks by using interactive digital media to exploit the transitive nature of trust through the principle of six degrees of connection. As a result, people will be able to inform themselves and self-organize more effectively—in non-hierarchical, rhizomatic social formations—leading to more opportunities for engaged citizenship" (Jordan et al. 2003: 2). The idea for ASN builds on the work of Robert Metcalfe, whose Metcalfe's Law holds that "The total value of a network where each node can reach every other node grows with the square of the number of nodes," and on research on Group Forming Networks by David Reed, who studied the exponential growth in new, and previously unknown, types of value created by the online interconnection of social networks. ASN seeks specifically to support civil society and citizen participation in governance structures through its model and is developing software, protocols, open standards, and principles of implementation (Jordan et al. 2003).

The Geography of Association

Whether idealistic, as with ASN, or practical, as with Altnet, the rise of knowledge communities opens up a space dissimilar to the established means of communication because it integrates discursive and nondiscursive

sive elements and in doing so creates a new basis for association. What we can call an associative space is as much a space *within* which something happens as it is a space *for* something to happen (Johnson 1997). As a space within which something happens, we can trace empirically the circulation and creation of knowledge communities. As a space for something to happen, we can speculate that new forms of social organization, including new social bonds (Levy 1997: 10–13), will develop on the basis of a relation to knowledge (for example, by the relocating of ties in social structures such as the family or the workplace, the valorization of programming skills and the mobility of electronic labor, and so forth). Such a transformation does not imply that knowledge is a function of interactive technology, any more than exchange is a function of capitalism. But just as exchange acquired specific characteristics under capitalism that became the basis for a complex system, so does knowledge acquire new characteristics in our age.

Three of these characteristics are of particular importance in understanding how NGOs are embedded in a changing geography where knowledge is increasing as a resource for creating enduring associations (i.e., as a source of power). The first is related to the organization of global political space, specifically the shift among states and intergovernmental organizations from a concern about the sanctity of sovereignty to a concern about the enforcement of universal norms. This can be viewed cynically or hopefully, through the lens of empire or enlightenment. Certainly not all governments embrace such a shift (ironically, the United States is foremost among the obstructionists while also one of the greatest proselytizers of universal principles), but an agenda that prioritizes humanitarian, environmental, and even economic justice issues has established itself as a global discourse. NGOs were in the forefront in the shift from sovereign sanctity to universal norms, particularly in the realms of the environment and human rights. The stunning successes of Doctors Without Borders and the Campaign to Ban Landmines, both of which won the Nobel Peace Prize, gave NGOs publicity and legitimacy that far surpassed previous efforts. From a different angle, the anti-WTO protests in Seattle and similar “antiglobalization” protests from Ottawa to Prague criticized the distributed modes of production and called attention to the new forms of connectedness under globalization. In an intriguingly isomorphic fashion the protesters, especially the more radical of them, also used a distributed logic to achieve their seeming chaotic but well-orchestrated effect: the weird coalitions of the antiglobalization movement, as Katharine Viner (2000) notes, are also wired coalitions.

It is not only protesters, however, that use distributed logic, which can be seen in the networks formed in support of a variety of causes, such as humanitarian relief efforts for earthquake and war victims, preserving the

Arctic wildlife reservation from oil drilling, or pressing for minority rights. This is the second shift: from decentralized to distributed structures. Decentralized governing structures emerged to (over)compensate for the inability of centralized forms of government and market to efficiently provide the resources or results deemed necessary for the good life, resulting in privatization or political structures such as subsidiarity and devolution. Decentralized production enabled capital to increase its mobility. But decentralization is an effect. Distribution, on the other hand, is the capacity for a collective actor to act strategically based on an emergent effect of the patterns of association and not on the basis of a single person alone, or even a network of humans (Hutchins 1995; Suchman 1987; Law and Hassard 1999; Girard and Stark 2002). Adopting a distributed structure does not mean that competition between, or hierarchy within, NGOs has disappeared. But the isolation of NGOs diminishes as networks become increasingly standard operating procedure, especially when linked by the Internet, as most of them are. This allows the leveraging of knowledge across multiple logics and ordering principles, creating new opportunities and conundrums, including the thorny problem of how to make *networks* accountable.¹⁰

This leveraging of knowledge through distributed cognition allows NGOs to engage in translation as one of their major functions.¹¹ However, since (as Latour reminds us) a site of translation is always also a misunderstanding, it is where negotiations of meaning take place. NGOs occupy a particularly strategic position in this regard: they work upward with governments and corporations (e.g., through lobbying, media campaigns, protest, and participation in policy processes) and downward with local and marginalized populations (e.g., through in-country projects, training, regranting and consciousness raising). They thus are in a position to embody *the tension* between diffusion and translation. This corresponds to a third shift, this time in the analytical methodology that informs (social) scientific development from what Latour identified as a diffusion model to a model of translation (Latour 1986: 266–69). The diffusion model is a model of inertia and friction, where changes are explained by theorizing about what retards or accelerates an order or object's trajectory—for example, the idea of the nation-state as a stable, given combination of traits and territory whose trajectory can be explained by a mixture of hard times that slow down its progress (perhaps

¹⁰ Because authority is distributed, accountability becomes highly problematic, especially when thought of in the juridical sense of locating responsibility in a figure or specific institution of authority. See Stark and Bruszt (1998).

¹¹ Compare the concept of translation with Fox and Brown's (1998) "bridging individuals."

covetous neighbors who invade their territory) or good times that speed it up (such as economic boom, or the nation-state's own military conquests).¹² The nation is merely transmitted from one generation to the next with a rich history of (and potential for future) friction. A translation model dispenses with inertia and sees an object or order as being continuously transformed by the actors themselves who engage in continuous reinterpretation.¹³ In more fashionable terms, a translation model could be seen as a process akin to social construction, where, since translation is also always a misunderstanding, the translation site is also the site of interpretation, contention, and renegotiation.

These shifts are harbingers of a new geography of association that involves negotiations across ordering principles and multiple logics (Stark and Bruzst 1998: 109–36). As Charles Sabel (1992) points out in his study of economic developmental associations, no state can possibly have knowledge superior to that of economic actors or coordinate restructuring better than regional developmental associations—it is the associations, not the states, that do the developing. Likewise, as NGOs become deliberative associations, they can play a greater role in both *development* (in the traditional sense) and *developing* global, regional, and national structures and institutions. This is because deliberative associations lead to new associations, both in the literal sense of new networks and the figurative sense of a mental connection between ideas.¹⁴

An example of how NGOs engendered deliberative associations that changed them from information brokers to knowledge facilitators is the story of development NGOs in India. As Bishwapriya Sanyal (1994: 37)

¹² See here Appadurai's (2000) notion of process geographies and trait geographies, and Stephen Toulmin's (1990) notion of a Newtonian image of power exerted with a central force through sovereign agencies.

¹³ Latour (1986: 266–67) uses the example of rugby players and a rugby ball: "The initial force of the first in the chain is no more important than that of the second, or the fortieth, or of the four hundredth person. Consequently, it is clear that the energy cannot be hoarded or capitalized; if you want the token to move on you have to find fresh sources of energy all the time; you can never rest on what you did before, no more than rugby players can rest for the whole game after the *first* player has given the ball its *first kick*." Latour's preference for a translation model is that it allows power to be seen as a consequence and not a cause of collective action, a point we will return to later.

¹⁴ The "antiglobalization" movement that emerged from the protests in Seattle is an example of how a rally of disparate agendas morphed into a community of deliberative associations where the lines between environment, economic development, and human rights increasingly blurred. A much smaller-scale example of an associative solution is a Roma Rights organization in Hungary, which began solely by trying to link disparate organizations and individuals to each other. As a result of the subsequent interaction, the one-time clients moved from being serviced by the organization to claiming the organization as their own, eventually becoming involved in its governance. From its origins as an information broker, the organization transformed into a knowledge community (Bach and Stark 2002).

explains, NGOs in India were privileged in the 1970s as “the most appropriate catalytic agent for fostering development from below because their organizational priorities and procedures are diametrically opposed to those of the institutions at ‘the top.’” To fulfill this *avant garde* role, NGOs valorized a form of pseudo-autarky for two negative reasons and one positive reason: Collaboration with the state was ruled out because it was seen as leading to control or cooptation, while collaboration with the market would poison community solidarity bondings. In both cases legitimacy and effectiveness were thought to suffer. These were negative reasons for maintaining independence. A positive reason was that the principles of self-sufficiency, self-reliance, and social innovation would become the motor for self-reproduction. The basic analytic unit was the isolated NGO engaged in a form of autopoiesis. There was indeed a self-generating quality to this approach, but what it generated was isolation and contradictions. NGOs competed fiercely with each other for money and avoided forming institutional linkages with government, the commercial sector, or even other NGOs. The lack of institutional support doomed all but the smallest projects and precluded replication or expansion. When they began to fall apart as a result of these incapacities, it only intensified competitiveness and isolation and made a mockery of the attempt to create a broad base “from below” (Sanyal 1994).

The relative success and high growth of NGOs in the latter part of the 1980s and especially the 1990s can be attributed not only, or even primarily, to increased externalities, but to the NGOs’ shift from self-imposed isolation to collaboration. NGOs moved to collaboration as they began to recognize that success, when it happened, came because they were already engaging in semiconscious forms of collaboration that went unacknowledged. For example, NGOs’ own leaders were drawn from an elite with informal linkages to all the types of institutions—banks, bureaucracies, and parties—that form the “top.” Sanyal (1994: 45) gives the example of the founders of the Grameen Bank, Drs. Yunus and Latifee, who are mythologized as visionaries whose efforts resulted in this paradigmatic development from below. They doubtless possessed great vision, but, as Sanyal points out, they also had an institutional association with the top university that provided both salary and legitimacy, and Yunus’s efforts to convince the bank to make loans were made not on the strength of his grassroots organizing ability but because of his family’s long-standing relationship as a major depositor. As the project expanded and became the famous Grameen Bank, it was on the firm basis of a tripartite alliance among NGOs, government, and market institutions.¹⁵

¹⁵ See also Sanyal’s (1994) accounts of the Bangladeshi NGO Proshika, and the Indian NGO SEWA (Self-Employed Women’s Association).

The need to be self-sustaining caused conflicts within NGOs because of the siren call of alliances with the market as a source of generating independent income, especially as foundations began to require better accountability and plans for sustainability. Over the last fifteen years, in the search for self-sustainability some NGOs have indeed turned to income-generation alternatives that mimic commercial enterprises. For example the “dot-corg” dual enterprise model combines social and business ventures, separating revenue generation from the NGOs’ social mission and evaluating it according to business metrics. There is also a minority of NGOs who, from early on, set their long-term goal as evolution into a socially oriented, for-profit venture, such as many Internet Service Providers in Eastern Europe who began as nonprofits and grew into viable businesses (Peizer 2000). When you consider the early resistance of NGOs to allying themselves too closely with the market, it is striking (or even shocking) to watch partnerships emerge such as CARE-Starbucks (Lindenberg and Bryant 2001: 164–65; Austin 2000; and, for a critique, Gereffi et. al 2001) or the “Libraries Online Partnership” between Microsoft Corporation and the nonprofit American Library Association (Sagawa and Segal 2000).¹⁶

Alliances with the market certainly do open new forms of sustainability and even synergy and cannot be dismissed out of hand. If NGOs reject cooperation with state and market forces too completely, they risk slipping into an exclusively oppositional role with diminished opportunities for agenda-setting (though some may relish precisely this oppositional role). Yet the benefits of collaboration do not mean that old problems of cooptation have disappeared—on the contrary, they may even be exacerbated by the new hybrid forms. The values of the market and of the non-profit world remain antagonistic. As NGOs spread their accountability unevenly among constituents, board members, donors, and the public, they find themselves faced with a proliferation of performance criteria that catches them between the value systems of business (efficiency, solvency) and social mission (adherence to principles, ideological agenda) (Edwards and Hulme 1996b). In the best case they may exploit these contradictions, but the danger is real that actors who are accountable according to many principles become accountable to none (Stark 2001).¹⁷

Most importantly, success for NGOs came less from developing innovative ideas than from basing their efforts “on relatively old ideas which

¹⁶ Of course Microsoft and Starbucks were themselves once upon a time anti-establishment upstarts. On the phenomenon of voluntary-commercial cooperation and its attendant challenges, see Edwards and Hulme (1996a) and Bendell (2000).

¹⁷ Because the state and market themselves are not static but are undergoing fundamental changes, an even bigger problem may be distinguishing cooperation from co-optation in certain cases (Bach and Stark 2002).

may have been tried, even by the government, in another context. . . . Successful NGOs did not pursue only a decentralized approach . . . their success was due to a skilful blending of centralization and decentralization of decisions, cooperation and competitiveness" (Sanyal 1994: 43). In other words, successful NGOs used logics that are distributed and recombinatory.

Conclusion

When we employ analytical concepts that bridge the society/technology divide, NGOs appear as a molecular technology, a large, self-organizing community of deliberative associations (Latour 1991; Levy 1997: 41). They translate (i.e., misunderstand, interpret, and renegotiate) between multiple logics, such as indigenous peoples and government bureaucrats. They also translate between an older spatio-temporal order (the cold war, the sovereign state system, Fordism, etc.) and what we have provisionally marked as an associative space. This space is transforming what Agnew calls the field-of-forces model of political power based on a spatiality of political power frozen into state territorial units (Agnew 2002). The geography of association rests on a different epistemological premise than the dyadic conception of power that hypostasizes the sovereign nation-state—associations are based on recombinant principles derived from social network theory rather than billiard ball models of classic international relations theory.

As we described above, knowledge communities assume a central place in the geographies of association as circuits of social (re)production at the local and global level. NGOs can be significant in this regard because their liminal role between local, national, and global situates them strategically within the technospatial: the technologically mediated social and material orders that are defined by new boundaries of place and technosocial practices. For instance, the mix of face-to-face and virtual interaction now standard within and between many NGOs blurs the line between serendipitous and intentional contact, turning what were once primarily disjunctive interactions into contiguous experiences. This is happening in a context where interactive (especially mobile) technologies are changing our notions of personal and social space.¹⁸ The recombinatory aspects of

¹⁸ See Ito and Okabe (2003) for an empirical study of the way mobile technology alters the sense of place, including a discussion of serendipitous and intentional contact and co-presence among Tokyo mobile phone users. Ito and Okabe refer to "technosocial situations" to describe the situations where boundary-spanning technologies restructure social identity and practice.

the term “association” that we highlighted in this chapter can thus acquire at least three additional salient meanings: NGOs as part of a shifting landscape of reputation (“by association”), as part of a network of more or less formal societies (associations in the German sense of *gesellschaften*), and embedded in a field of technosocial practices that privilege nonlinearity (as in “associative thinking”).

It would be a mistake, however, to assume that associative spaces predetermine any a priori normative outcome for NGOs—as mentioned earlier, the problems of accountability alone present substantial challenges to future development. How are alliances, much less networks, to be held accountable? As NGOs move from confronting businesses to partnering with them, how will this affect their justificatory claims to representing civil society? Could not NGOs operate nefariously as the moral instruments of a new global society of control precisely *because* they are networked, molecular structures, functioning as “the capillary ends of the contemporary networks of power” (Hardt and Negri 2000: 313)? In the growing literature NGOs appear alternatively as an incipient global civil society, functional equivalents of democracy, as tools of the ruling class, or as the vanguard for globalization from below (Warkentin 2001; Roseau 1998; Falk 1999; Appadurai 2000). NGOs are diverse enough to incorporate all these contradictory interpretations, yet too often the discussion proceeds as if NGOs’ form were given and only their effect remains to be worked out. In the new geography of association, NGOs’ most striking function is their renegotiation of the justificatory regimes upon which the global spatio-temporal order is based. In this uncertain process they will continue to assume an increasingly central and controversial role as co-constituents of the organization of global political space.

References

- Agnew, John A. 2002. *Making Political Geography*. London: Arnold; New York: Oxford University Press.
- Appadurai, Arjun. 2000. Grassroots Globalization and the Research Imagination. *Public Culture* 12(1): 1–21.
- Austin, J. 2000. *The Collaboration Challenge*. San Francisco: Jossey-Bass.
- Bach, Jonathan, and David Stark. 2002. Innovative Ambiguities: NGOs Use of Interactive Technology in Eastern Europe. *Studies in International and Comparative Development* 37(2): 3–23.
- Bendall, J. 2000. *Terms for Endearment: Business, NGOs and Sustainable Development*. Sheffield: Greenleaf.
- Beunza, Daniel, and David Stark. 2003. The Organization of Responsiveness: Innovation and Recovery in the Trading Rooms of Lower Manhattan. *Socio-Economic Review* 1(2): 135–64.

- Burt, Ronald. 1992. *Structural Holes*. Cambridge: Harvard University Press.
- Callon, Michel. 1998. *The Laws of the Markets*. Oxford: Blackwell Publishers.
- Castells, Manuel. 1999. *The Network Society*. London: Blackwell.
- Contractor, Noshir. 2000. Social Network Formulations of Knowledge and Distributed Intelligence: Using Computational Models to Extend and Integrate Theories of Transactive Memory and Public Goods. Paper presented at workshop on Heterarchies: Distributed Intelligence and the Organization of Diversity. Santa Fe, NM.
- Contractor, Noshir, et al. 1998. IKNOW: A Tool to Assist and Study the Creation, Maintenance, and Dissolution of Knowledge Networks. In *Community Computing and Support Systems, Lecture Notes in Computer Science 1519*, edited by T. Ishida, 210–17. Berlin: Springer Verlag.
- Cruikshank, Barbara. 1999. *The Will to Empower*. Ithaca: Cornell University Press.
- Deleuze, Gilles, and Felix Guattari. 1987. *A Thousand Plateaus*. Minneapolis: University of Minnesota Press.
- Edwards, Michael, and David Hulme, eds. 1996a. *Too Close for Comfort: NGOs, States and Donors*. London: Earthscan Press.
- . 1996b. *Beyond the Magic Bullet: NGO Performance and Accountability in the Post Cold War World*. West Hartford, CT: Kumarian Press.
- Falk, Richard. 1999. *Predatory Globalization*. Oxford: Polity Press.
- Fox, Jonathan A., and L. David Brown. 1998. *The Struggle for Accountability: The World Bank, NGOs, and Grassroots Movements*. Cambridge: MIT Press.
- Gereffi, Gary, Ronie Garcia-Johnson, and Erika Sasser. 2001. "The NGO-Industrial Complex." *Foreign Policy* 125:56–65.
- Girard, Monique, and David Stark. 2002. Distributing Intelligence and Organizing Diversity in New Media Projects. *Environment and Planning A* 34(11): 1927–49.
- Gladwell, Malcolm. 1999. The Science of the Sleeper. *The New Yorker*. October 4, 1999. Available at http://www.gladwell.com/1999/1999_10_04_a_sleeper.htm.
- Greider, William. 2000. Global Agenda: After the WTO Protest in Seattle, It's Time to Go on the Offensive. Here's How. *The Nation*. January 31.
- Hardt, Michael, and Antonio Negri. 2000. *Empire*. Cambridge: Harvard University Press.
- Hutchins, Edwin. 1995. *Cognition in the Wild*. Cambridge: MIT Press.
- Ito, Mizuko, and Daisuke Okabe. 2003. Technosocial Situations: Emergent Structurings of Mobile Email Use. Available at <http://www.itofisher.com/PEOPLE/mito/mobileemail.pdf>.
- Johnson, Stephen. 1997. *Interface Culture: How New Technology Transforms the Way We Create and Communicate*. San Francisco: HarperCollins.
- Jordan, Ken, et al. 2003. The Augmented Social Network: Building Identity and Trust into the Next-Generation Internet. New York: The Link Tank.
- Latour, Bruno. 1986. Powers of Association. In *Power, Action, and Belief: A New Sociology of Knowledge*, edited by J. Law, 264–80. New York: Routledge.
- . 1987. *Science in Action. How to Follow Scientists and Engineers through Society*. Milton Keynes: Open University Press.

- . 1991. Society Is Technology Made Durable. In *A Sociology of Monsters: Essays on Power, Technology, and Domination*, edited by J. Law, 103–31. New York: Routledge.
- Law, John, and John Hassard, eds. 1999. *Actor Network Theory and After*. Oxford: Blackwell.
- Levy, Pierre. 1997. *Collective Intelligence*. New York: Plenum Trade.
- Lewis, Ellen. 2001. Red Alert. London: *The Guardian*. November 26.
- Lindenberg, Marc, and Coralie Bryant. 2001. *Going Global*. Bloomfield, CT: Kumarian Press.
- Neff, Gina, and David Stark. 2003. Permanently Beta: Responsive Organization in the Internet Era. In *Society Online: The Internet in Context*, edited by Phillip E. N. Howard and S. Jones. Thousand Oaks, CA: Sage.
- O'Mahoney, Siobhan, and Stephen R. Barley. 1999. Do Digital Telecommunications Affect Work and Organization? *Research in Organizational Behavior* 21:125–61.
- Peizer, Jonathan. 2000. Sustainable Development in the Digital Age. New York: Media Channel. Available at <http://www.mediachannel.org/views/oped/values.shtml>.
- Rosenau, James. 1998. Governance and Diplomacy in a Globalizing World. In *Reimagining Political Community*, edited by D. Archibugi, D. Held, and M. Köhler. Stanford: Stanford University Press.
- Ruggie, John. 1993. Territoriality and Beyond: Problematizing Modernity in International Relations. *International Organization* 47(1): 139–74.
- Sabel, Charles. 1992. Studied Trust: Building New Forms of Cooperation in a Volatile Economy. In *Industrial Districts and Local Economic Regeneration*, edited by F. Pyke and W. Sengenberger, 215–49. Geneva: International Labor Organization.
- Sagawa, Shirley, and Eli Segal. 2000. *Common Interest Common Good: Creating Value through Business and Social Sector Partnerships*. Cambridge: Harvard Business School Press.
- Sanyal, Bishwapriya. 1994. *Cooperative Autonomy: The Dialectic of State-NGOs Relationship in Developing Countries*. Geneva: International Labor Organization.
- Sassen, Saskia. 1998. *Globalization and Its Discontents: Essays on the New Mobility of People and Money*. New York: New Press.
- . 1999. *Losing Control? Sovereignty in an Age of Globalization*. New York: Columbia University Press.
- Stark, David. 2001. Ambiguous Assets for Uncertain Environments: Heterarchy in Postsocialist Firms. In *The Twenty-First-Century Firm: Changing Economic Organization in International Perspective*, edited by P. DiMaggio, 69–104. Princeton: Princeton University Press.
- Stark, David, and Laszlo Bruzst. 1998. *Postsocialist Pathways: Transforming Politics and Property in East Central Europe*. Cambridge: Cambridge University Press.
- Strange, Susan. 1996. *The Retreat of the State: The Diffusion of Power in the World Economy*. Cambridge: Cambridge University Press.

- Suchman, Lucy. 1987. *Plans and Situated Actions: The Problem of Human-Machine Communication*. Cambridge: Cambridge University Press.
- Toulmin, Stephen. 1990. *Cosmopolis: The Hidden Agenda of Modernity*. Chicago: University of Chicago Press.
- . 1994. The Role of Transnational NGOs in Global Affairs. Paper presented to the conference on The UN and Japan in an Age of Globalization, Peace Research Institute, International Christian University, Tokyo.
- Viner, Katharine. 2000. "Luddites" We Should Not Ignore: Instead of Vilifying the Prague Protesters, We Could Learn from Them. London: *The Guardian*. September 29.
- Warkentin, Craig. 2001. *Reshaping World Politics: NGOs, the Internet and Global Civil Society*. New York: Rowman and Littlefield.
- West, Paige. 2001. Environmental NGOs and the Nature of Ethnographic Inquiry. *Social Analysis* 45(2): 55-77.
- Wittenburg, Kent, et al. 1998. Group Asynchronous Browsing on the World Wide Web. Available at <http://www.w3.org/Conferences/WWW4/Papers/98/>.

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IT and New Architectures
in the Global Realm

Edited by

Robert Latham and Saskia Sassen

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