Working Paper 100

Network Without Center?

A Case Study of an Organizational Network Responding to an Earthquake

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1998

Abstract

Using material on a recent earthquake in Afghanistan as well as insights from theories of disaster management and organizational networks, this paper looks into the effects that network organizations have for disaster management. The case study suggests that in networks without a strong center the initial response may be hampered, but organizational learning for later phases may be promoted.

Survivors reclaiming roof beams

Survivors recover roof beams, one of the most precious resources for rebuilding their villages so as to withstand extreme winter climes. The ability of the relief network to conserve its momentum from the response to the recovery phase is one of the issues that future research into such networks should address.

Contents

Introduction

Organizational networks have become abundant if not yet universal. Despite their multifaceted character - are they individuals cooperating on a task, organizations bound to each other by contracts, or elements of coherent knowledge that are networked? - there is considerable agreement that networks are on the way to becoming a dominant pattern of organization.

Networks fascinate researchers for more than one reason. For the sociologist, they seem to constitute a new form of societal aggregation in addition to the familiar domains of study such as interaction, organization, and society; in the indeterminacy of their substance they are not unlike social movements, which too tend to eschew firm categorizations

of their place in the social fabric. The knowledge worker takes networks for granted where the electronic media work efficiently, and the political scientist finds a guarantee of democracy in the wealth of networks that make up civil society.

However, in recent years, the concept of organizational network seems to have gained its most popular currency in the world of business. The reasons are plainly to be found in changes in the global economic environment (e.g., Miles and Snow, 1992). Global competition, forcing firms to cut costs through outsourcing and rapid technological change, has dramatically increased interdependencies among organizations, and networks in a variety of designs have been a response to those changes. These global changes are reflected in current themes of organizational learning, the assumption being that the "'learning organization' will be one of extended networking, ensuring that customers, suppliers, and alliance partners can be tapped continuously for new ideas and insights" (Prange, 1998, p. 1). In this view, the force that procreates novel types of social aggregation emanates from the growing turbulence in organizational environments and the desire to smoothen it by forming adaptive networks.

Networks have evolved in disaster management as well. Particularly in major humanitarian crises, the resources of any one large relief organization alone are not sufficient to mount an adequate response, and typically pluralities of responders assume the task together, often with far-reaching operational understandings in the field, while their headquarters continue to behave as competitors in the market for humanitarian funding. However, the language of these organizations is less hyped with network concepts than it is with business publication language, perhaps out of a sense of modesty that there is little in the way of good theory to explain the network behavior of humanitarians. Terminology apart, network thinking has been around in the humanitarian world for a while. Randolph Kent, the author of *Anatomy of Disaster Relief* (1987), may be one of its early pioneers (he actually used the term in the subtitle: *The International Network in Action*). These days a World Wide Web search using the keywords "network" and "humanitarian" quickly produces several dozen hits, returning some organizations, such as the "Relief and Rehabilitation Network" (a U.K.-based nongovernmental organization [NGO]), that include the word "network" programmatically in their name. Most of these, however, are research or advocacy groups, not responders at the disaster site. The fact that the Nobel Peace Prize for the campaign against anti-personnel mines went to a little known activist group with keen networking acumen, and not to any of the established jumbo agencies, in itself bespeaks the shift in effectiveness from stand-alones to network approaches.

As in business, disaster management has grown more acutely conscious of its turbulent environments. Issues of relief worker security in post-Cold War conflicts, unpredictable fluctuations of media interest, and humanitarian competition have come to the fore. Theoretical perspectives on humanitarian networks, however, remain largely confined to critical bureaucracy analyses. The dominance of government organizations in disaster management and the relatively stable core of big agencies in protracted humanitarian crises are likely responsible for that. The point of departure is the internal coordination at the time when disaster challenges the organizations (such as, infamously, when U.N. agencies fail to coordinate). Seminally, this intellectual tradition goes back to criticisms of the Weberian notion of bureaucracy (Tullock, 1965) and to the positive functions of conflict (Coser, 1956).

Bureaucratic malfunction and the effects of conflict have been studied for much longer than organizational networks (or, rather more correctly, than the emergent qualities of networks in our era). It is therefore tempting to transplant research and findings from organizational studies to the new domain of network study. In the disaster management field, hypotheses formed along the lines of Rosenthal et al.'s *Bureau-Politics of Crisis Management* (1991) should at least have some heuristic value even if they need more translation into the phenomenology of networked disaster response. For example, where these authors speak of "interagency tensions" (p. 211), one might see "conflict among networked organizations." They contend that such "interagency tensions may fulfill various positive functions: they put crisis agencies to the test; they serve to counteract 'groupthink' tendencies; they foster a certain degree of openness" (p. 211). Their key assertion concerns "polycentric approaches," disaster response organizations with more than one center of power. Such approaches have considerable "problem-solving potentialities" (p. 213) beyond what we might expect from traditional centralized power in emergencies. The variable "centralized vs. polycentric" can be used also to characterize different types of organizational networks. How does it affect the problem-solving performance of the network?

This paper explores such ideas by examining the response of a network of humanitarian organizations to a major

disaster - an earthquake in Afghanistan, or, in other words, a sudden-onset natural disaster embedded in a protracted humanitarian crisis. This intricate backdrop made for an organizational arrangement easy to characterize in terms of the variables that Rosenthal et al. specify for their model of crisis decision making ('t Hart, Rosenthal, and Kouzmin, 1993), since the major agencies involved in the Rostaq earthquake of February 4, 1998, had been running large programs in the country for many years and therefore were able to inform this research with detailed accounts of their pre-crisis structures and procedures (Benini, 1998; for a public document detailing the response, see Gentiloni et al., 1998).

Our central concern is with the operational prowess of the organizational network; for that is where the victims are effectively assisted or not. 't Hart et al. offer two specific hypotheses (p. 34) that are pertinent to the Rostaq situation:

- "If, in a crisis, the degree of perceived time pressure is high and the precrisis system authority structure mechanistic, operational crisis management will be characterized by *paralysis*."
- "If, in a crisis, the degree of perceived time pressure is high and the precrisis system authority structure pragmatic, operational crisis management will be characterized by *situational dominance*."

The hypotheses are pertinent because paralysis was indeed observed, side-by-side with stunning large-scale relief action. We need not dwell on whether time pressure was high (it was, after this severe earthquake in Afghan winter conditions), but the reader will want to know what "mechanistic vs. pragmatic authority structures" and "situational dominance" mean in this context.

The fact is that organizational networks mix the two types of authority structures more readily than unitarian organizations do. Whereas 't Hart et al. define mechanistic structures as "involving routine-oriented bureaucratic hierarchy and formal chains of command and communication" and pragmatic structures as "some form of matrix or project organization" (p. 33), we shall discover in the next section that the organizations in point relied on both types equally. They mobilized suboffices and field delegates who clearly were in line positions vis-à-vis their delegation heads. At the same time they would use both pre-existing and ad-hoc cross-cutting arrangements.

On the side of the dependent variable, situational dominance holds an intermediate place between routine response observing traditional formal rules of consultation and command on the one hand, and outright paralysis on the other. It abbreviates or bypasses many of the formal rules in favor of direct responses to a given situation. All of the three states occurred in the Rostaq action, sometimes concurrently. This varied response forces us to look not so much for unambiguous outcomes, but for trade-offs between elements of structure and partial outcomes for which a causal link can be detected.

Trade-offs are indeed important. Networks do not only have benefits, they also come with costs. In part, these are transaction costs that the coordination of several relief providers imposes beyond the cost of a unitarian provider. Ultimately these are footed by the donor community. Another type of cost concerns the comparative effectiveness of the assistance for the disaster victims. In many situations, this cost may go unaccounted. Since normal function, situational dominance, and paralysis can co-exist in networks, the relationship between the organizational arrangements, decision making, and outcomes follows a multivalued logic to a larger degree than it would in a one-to-one arrangement between provider and beneficiary. This case study of a complex networked response can but suggest some possibilities and consequences of such arrangements.

The Rostaq Earthquake: Disaster and Response

On February 4, 1998, an earthquake measuring 6.1 on the Richter scale devastated a number of villages surrounding the town of Rostaq in northern Afghanistan (for a collection of maps, see http://www.afghanistan.gmu.edu/MAPMENU.HTM). An estimated 2,223 persons were killed, and another 818 injured among a most severely affected population of 17,600. The disaster created a humanitarian challenge to which several organizations responded under excruciatingly difficult conditions due to weather and terrain. Moreover, for a remote, difficult-to-reach area like Rostaq, the disaster drew surprisingly high international media attention, with the number of foreign journalists surpassing that of aid workers during part of the critical mobilization period.

The victims belonged to agropastoralist mountain communities in a district then not much affected by direct violence in the ongoing civil war. The survivors were threatened by the cold of the Afghan winter, by the loss of their food stocks and cooking facilities, as well as by trauma and disease. Several thousand were evacuated to public buildings and to relatives in and near Rostaq town; others had to wait for days until their first contact with outside agents. Search and rescue was confined to what relatives and neighbors could do, often with their bare hands.

The main responders included the local authorities, the member organizations of the Red Cross/Red Crescent and United Nations families, as well as Doctors Without Borders Belgium. Smaller NGOs also arrived and made significant contributions as time went on; and while many donors responded quickly and generously, one of the important donor organizations in Afghanistan, the European Community Humanitarian Office (ECHO), had a direct operational involvement on site.

The initial humanitarian goal was to avert the threats to life and health. Subsequently, the return of displaced persons to their villages and, in variable measure for the organizations involved, rehabilitation assistance became guide posts for action. The relief proceeded in phases, some of which would overlap:

- Between February 6 and 14, the medical emergency was handled, with Doctors Without Borders, Belgium (MSF-B) leading the effort.
- From February 6 to March 1, resources were mobilized for emergency food and non-food aid. The major distribution activity took place between February 15 and March 4. An airdrop by the International Committee of the Red Cross (ICRC), starting on February 19, was the highlight of the period.
- After March 4, and until disaster struck again, the response continued in separate strands. The U.N. carried out an airlift, and later withdrew. The Red Cross/Red Crescent was present in Rostaq until April 24, shortly after the end of its distribution of handtools. After some turnover, a small NGO presence continued, focusing on rehabilitation programs, chiefly for village water supplies.

Rostaq is about 40 km southeast (on a direct line) of the river Amu Darya, which marks the border with Tadjikistan, and over 250 km from Kabul, the Afghanistan capital. Over the course of the first ten days after the earthquake, a number of logistics scenarios surfaced, posing difficult choices regarding security, distance, vehicles, routes, cost, stocks, suppliers, fuel, staff, and competing uses. Five major possibilities emerged, with highly varying degrees of knowledge about their efficacy, cost, and reliability:

- Road transport from depots within Afghanistan, some involving the crossing of military frontlines
- Airlifts to a nearby airfield and thence by road
- Airdrops from Pakistan
- Helicopter transport from Tadjikistan
- Road convoys from Tadjikistan, with river crossing

Eventually, the supplies were delivered via four of the five channels, whereas helicopters were used chiefly for distributing goods from Rostaq to the villages. By March 4, the quake survivors had received 708 metric tons of relief.

Decision making within and among the responding humanitarian organizations took place in a complex network that extended to three countries - Afghanistan, Pakistan, and Tadjikistan - as well as to headquarters in western capitals. Although all the major responders had been running important programs in Afghanistan prior to the Rostaq disaster, their areas of concentration were not always in close neighborhood. The ICRC, for example, had its hub in Kabul; the U.N. worked out of Islamabad; and within the ICRC and U.N. delegations in Afghanistan and Pakistan, only the World Food Programme (WFP) had a tradition of working closely with Tadjikistan. Moreover, within the U.N. system, the office that assumed the lead role - the Office for the Coordination of Humanitarian Affairs (UNOCHA) - had very little operational capability of its own. Table 1 lists the major responders together with their political and operational mainstays.

Table 1: Major responders

Organization	Headquarters	Afghanistan delegation center	Major logistics bases re: Rostaq disaster
ICRC	Geneva	Kabul	Mazar-I-Sharif (northern Afghanistan), Kabul, Peshawar (Pakistan)
International Federation of Red Cross and Red Crescent Societies	Geneva	Kabul	Mazar-I-Sharif (northern Afghanistan), various in Central Asia
UNOCHA	New York, Geneva	Islamabad	(none)
U.N. World Food Program	Rome	Islamabad	Faizabad (northeastern Afghanistan), Tadjikistan
Doctors Without Borders, Belgium	Brussels	(Formally:) Kabul, (de facto:) Mazar-I-Sharif (northern Afghanistan)	Taloqan (near Rostaq), Mazar-I-Sharif (northern Afghanistan)
European Community ECHO	Brussels	Kabul	(none)

In this multi-actor, multi-location arrangement, the ICRC stood out as having by the far largest operational capacity in Afghanistan, including an ongoing air operation out of Peshawar, its well-developed logistics base in Pakistan. Its operational leadership on the ground, therefore, came to be recognized almost naturally. However, the ICRC itself struggled with its internal complexities as a humanitarian organization to help war victims, but not routinely tuned to responding to fast-onset natural disasters, and having to allow for the interests of the wider Red Cross Movement. Rostaq was seen as the first test case of a recent high-level agreement on the division of labor within the movement; in shaping the response, the ICRC headquarters followed strategic considerations of which the field was barely aware in the initial stages. In Geneva, half a dozen different departments played a role in decision making. Critically, the Afghanistan and Tadjikistan delegations were supervised by different regional departments, and in the absence of a sufficiently empowered task force encompassing both of them, the Amu Darya River formed a barrier on mental maps in the first week after the disaster just as strongly as it created a physical one in the field.

In Kabul, and particularly in Islamabad, the ICRC, U.N. agencies, NGOs, donor and diplomatic representatives, as well as some of the media workers, followed a well-proven tradition of close information and resource sharing. This humanitarian intelligence symbiosis had a positive result for both preparedness and response. For example, the ECHO representatives in Kabul were appreciated for their in-depth country knowledge; it was their office that provided the first set of useful maps for Rostaq, and the inclusion of one of their expatriates in the first ICRC team flying from Kabul was instrumental to the quick release of EU funds in Brussels. However, the scenarios for joint action that key players in Kabul and Islamabad worked out through their close, trusting, and knowledgeable relationships were not all endorsed by their respective headquarters or, when acceptable, were agreed on too late to be useful. For example, on three occasions - a joint appeal to the donors, the handing-over of an aircraft contract from the ICRC to the U.N., and the request by the U.N. to use ICRC-chartered helicopters rather than hire them itself - "the U.N. and ICRC wanted to work together at the field level, and where it was logical to, but administratively, or institutionally, found it difficult to" (Longford, 1998, p. 43).

Closer to the disaster, the symbiosis between organizations became even more complete. In Rostaq, the concept of an

organizational boundary protecting the identity and internal configuration of the organization was almost meaningless. The dissolution of boundaries happened in various ways, by the mixing of relief teams, by the co-optation of representatives of other types of organizations such as journalists, by the sharing of authority with the coordinator from the government in daily coordination meetings, and by the far-reaching, flexible, and creative exchange of resources. For a while, this arrangement had serious repercussions on the organization of the work locally, while at the same time it may have accelerated donor decision making and may have ameliorated the media's initially not understanding why relief was slow in coming. There was very little in the way of an internal sphere for any of the relief organizations.

Local government banner

A banner hoisted by the local authorities in Rostaq shows their eagerness to reach out to the foreign, largely English-speaking, relief community.

Less than a week after the disaster, more than thirty western journalists, including five TV crews, arrived in Rostaq via Moscow and Dushanbe, Tadjikistan. Virtually at the same moment, the weather turned against the relief workers, miring their trucks in snow and mud for several days. The media presence created enormous pressure for the agencies to be seen doing something; at the same time, the complexities of their situation and arrangements, with different geographical hubs, incongruence between political mandates and operational capacity, and divergent headquarters and field perspectives, amplified the coordination problems. Several initiatives were taken concurrently in order to get the relief moving, overland from northern Afghanistan, from Kabul through the Hindu Kush, and from Dushanbe across the Amu Darya, as well as by air using local carriers from Pakistan.

The relief agencies did succeed in sending some trucks, and part of the decision complexities were simplified by an effective division of labor - the U.N. taking care of food; the Red Cross and Red Crescent, non-food items (chiefly tents, blankets and cooking sets); and Doctors Without Borders, medical needs. The coordination of these initiatives, however, absorbed considerable managerial attention while only modest quantities of goods were reaching the victims. Equally disturbing, the search for a viable joint U.N./ICRC airdrop from Pakistan delayed such logistical alternatives as using a long-time western partner firm for airdrops and renting helicopters from Tadjikistan.

A week after the disaster, the paralysis became untenable. The ICRC opted out of its common approach with the U.N. agencies and commissioned a U.S.-American carrier. The first goods were dropped over Rostaq on February 19, two and a half weeks after the disaster, and one day before the first WFP overland convoy arrived from Tadjikistan. Although airdropping was 60 times more expensive than overland transport, the operation gave the relief community renewed stability and direction. Learning processes accelerated. The ICRC proved strongest at logistics, orchestrating the airdrop brilliantly, and supplementing distribution logistics with large donkey caravans. U.N. and NGO workers increasingly contributed local knowledge, analysis of the relief process, and documentation. This is best illustrated by the way the agencies dealt with a collection of village societies with which they never became very familiar. Unable to penetrate the devastated communities to the level of individual clients (except for medical relief), the agencies determined the difficult-to-ascertain needs through a system of village categorization. Admittedly coarse, these foreign definitions were accepted with surprisingly mild resistance. The voice of Afghan collaborators became increasingly heard, and at their suggestion, relief goods were distributed through mosque committees rather than individual village commanders, guaranteeing a measure of popular control.

Looked at together, the multiple small beginnings, the decisional paralysis, the liberation of forces by an expensive, high-tech choice, and the subsequent evolution of the relief action towards an eventual rehabilitation phase left a particular signature on the Rostaq response. This is demonstrated clearly in the response "delay structure." Using a phase scheme proposed by Comfort (1989), Table 2 details the time that elapsed from the disaster event until certain functions were fulfilled.

Table 2: Rostaq earthquake response: *Delay structure*

Rostaq earthquake response: *Delay structure*	

Function	Days after disaster
Notification of key event	
News breaks of quake	2
ICRC Kabul starts crisis cell	2
Assessment of needs	
First expatriate team reaches Rostaq (Doctors Without Borders)	3
Village categorization leads to first comprehensive needs estimate	17
Mobilization of resources	
ICRC, with Federation, launches appeal	9
Major delivery mode (ICRC's own airdrop) decided	9
First ICRC airdrop	15
First WFP convoy arrives from Tadjikistan	16
Performance of tasks	
First Doctors Without Borders and Afghan Red Crescent activity for victims	4
First ICRC trucks reach villages	11
Feedback on performance	
Surgical crisis is over	10
Emergency phase is over	27

Source: Benini, 1998, p. 55

A number of anomalies stand out. It took four weeks to complete the emergency assistance. The isolation of Rostaq is readily apparent in the fact that news of the disaster reached the agencies only after two days. In large measure, geography and weather accounted for this long period of time, but initial coordination difficulties added to it. By far most the striking deviation from what one would expect in the way of a normal response timetable, however, concerns the needs assessment. Although the area to be surveyed was relatively small, the relief community took two and a half weeks to come up with a comprehensive needs estimate.

Several factors delalyed the assessment. Although the organizations present in Rostaq took part in daily coordination meetings, several of them started damage assessments in the villages on their own. The aid workers involved had to distribute their time and energies among many competing duties. Although one of the NGOs had working contracts with the local schools, nobody had the circumspection to form what the military would call "light reconnaissance teams," composed of expatriates, translators, teachers, and village guides, and assign each of them a sector to be surveyed in a uniform format. Instead, the government coordinator, fed up with the haphazard partial reports from village visits, opposed any further assessment activity for a while. The pieces needed for a systematic assessment would not fall into place until about two weeks later when the ICRC received its first helicopters from Tadjikistan, and a U.N. disaster specialist with good survey skills arrived.

Not only did the local authorities use communication strategies to become part of the organizational network spearheading the relief, but, on the other side, the foreign organizations also made special efforts to explain their presence and work, as seen in this bilingual signboard. This NGO, while arriving late in the response phase of the disaster, was one of the few who stayed on to support recovery

NGO signboard

projects.

In the second half of February, the relief action became much more secure and stable, its rhythm being paced by the ICRC airdrop and by road convoys crossing the Afghan-Tadjik border. In addition, a few new players arrived across the border, including a high-powered Russian government emergency response team. But they were either short-lived or integrated into the total effort.
On the ground, distributions were effectively targeted to communities with the greatest needs, and most displaced persons returned to their villages. After the emergency phase was over, the networked response quickly unraveled. The agencies' attention was diverted by other developments, notably a dramatic security evacuation of aid workers elsewhere in Afghanistan. As already mentioned, only some minor elements of the relief operation continued separately.

On May 2, another, even worse earthquake struck the same region. This time, the international agencies responded in more coordinated ways. Helicopters were quickly procured for needs assessments and relief deliveries; the Swiss Disaster Corps was brought in to connect all activity centers with telecommunication; and Islamabad was made the command center for both the U.N. and ICRC. The relief community had learned some lessons from its earlier experience.

Discussion

The networked response during the emergency phase of February and March 1998 manifested characteristics that were clearly different from the response of a unitarian organization. Its dynamics were special in all dimensions - temporal, social, as well as substantive.

Temporal

Contrary to the expectation of continuity and steadfastness inherent in the ideal of a Weberian bureaucracy, the network partners followed a process with highly variable speed and intensity. The slow initial phase, much hampered by the multi-actor, multi-location decision arrangement, was followed by a time of much greater effectiveness - highlighted by the ICRC airdrop - with intense, very focused activity on which all participants were able to align themselves. That, in turn, gave way to an end phase in which energy and attention collapsed almost completely. The major players withdrew from the devastated communities at the time of the belated U.N. airlift and of a tools distribution effort.

Social

Similarly, the social connections within the network were of unequal strength. The coordination meetings in Rostaq did ensure that all the organizations - big and small - felt they were partners, but those organizations did not all look to each other as equally important sources of direction and support. While the ICRC's operational leadership remained uncontested, it did not very much trust, nor enjoy the trust of, the smaller NGOs. These, seeing the ICRC's close relationship with the ECHO representative as a threat to their funding, kept their reserve vis-à-vis the strong lead organization. As a result, when moving into the rehabilitation phase, the ICRC did not have an effective NGO interface

to support recovery projects in the destroyed villages. All the same, the loose coupling did have some positive effects. It allowed the U.N./NGO cooperation to produce innovations in relief accounting and village-side distributions that mitigated ICRC deficiencies on the assessment/distribution side, while the ICRC maintained superior performance in logistics and supplies. The graph below of sociometric choices affirms both the leadership position of the Red Cross (chosen most often) and the intermediary role of the U.N. (choosing others most often).

Figure 1: Looking to others as most important partners

Sociometric graph

Source: Benini, 1998, p. 34, based on 238 sociometric choices elicited in interviews with members

Substantive

In the substantive dimension, the dynamics of the Rostaq response network were such that it lost much of the brief window of opportunity immediately following the earthquake to undertake life-saving measures. The ICRC and UNOCHA delegations instantly mobilized when the news of the disaster broke, but by the time the first relief workers reached the villages, several days had gone by. The decision not to undertake search and rescue therefore was correct, because it was too late for such actions. Still thousands of survivors were holding out in open air or makeshift shelters. Help for their immediate survival was limited to what the first few trucks brought in; for, as mentioned above, on top of the slow notification and the bad roads paralysis in finding an effective air carrier mired the action.

The response therefore concentrated on the next goal of assisting survivors to return to, and withstand the rigors of the Afghan winter in their villages. These quality-of-life measures, once adopted, were carried out on an emergency footing - the responsders preferring a speedier, and costlier, airdrop to inexpensive, but unpredictable, road convoys. This process manifested the well-known trade-offs between the number of decision-making partners and speed, as well as between reliability and cost. In a model calculation comparing Rostaq fatalities against those of another earthquake of very similar local circumstances, but faster response (Erzurum-Kars, Turkey, 1983, as described by Mitchell, 1985), I calculated an excess mortality of about 700 incurred by the Rostaq communities due to the rate of the response in February 1998 and the institutional environment in which it took place. However, such comparisons have to be taken with more than one grain of salt, and it is only fair to stress that the relief did save countless other lives.

Taken together, the temporal, social, and substantive dimensions demonstrate a highly variable performance, but nevertheless one that achieved overall goals to a surprisingly high degree, given the adversity of nature and the complexity of the responder network. The concurrence of effective normal routines, situational dominance, and paralysis was apparent not only in the grand picture, but also in operational details. An instructive example is provided by the U.N. Disaster Assessment and Coordination (UNDAC) team.

U.N. regulations provide for such teams to be sent to major disaster areas to assist the resident offices in their response. However, the team for the Rostaq earthquake was delayed by U.N. internal bureau politics and was eventually limited to work in Pakistan and in Rostaq, the Tadjikistan offices rejecting the need for assistance (paralysis). When the Finnish UNDAC team member arrived in Rostaq twelve days after the disaster, he set up a reporting system that greatly facilitated distribution planning (effective routine). He also introduced a coarse, but very helpful village categorization scheme, which was adapted to the degree of complexity that distribution planners could handle (situational dominance), and which became the basis for the first complete needs assessment.

Returning to the centralization thesis of 't Hart et al., the Rostaq experience provides qualified support to the thesis that under crisis conditions decision making does not necessarily become more centralized. In fact, the network that

addressed the February 1998 Afghan earthquake did not spontaneously centralize. Although team leaders were appointed for the relief workers in Rostaq, and task forces were formed in some agency headquarters, the networked organizations remained without a clearly recognizable center. This was true particularly during the first week after the disaster, and was true of operations within large organizations having several offices in the region as well as of the interplay among them. For example, within the ICRC the communication network was not free of inconsistencies, with the headquarters' Afghanistan desk speaking with Kabul and Islamabad, but not with Dushanbe, the relief department with Kabul and Dushanbe, but not Islamabad, and both having insufficient contact with the Tadjikistan desk. Between the ICRC and the U.N., uncertainty occurred at several points of close contact and information exchange, such as when U.N. offices in Islamabad each favored a different logistical arrangement, and the ICRC then received mixed signals from them. Such uncertainties would amplify each other across organizational boundaries, and the resulting oscillations were difficult to dampen. While decision makers were reeling with high uncertainty, there was no call to centralize. Also the shape of the response did not "involve direct operational leadership on the part of top-level officers" ('t Hart et al., 1993, p. 18). For example, early in the crisis, the ICRC could have sent to Rostaq a senior member of its Afghanistan delegation who happened to be in the northern part of the country. It chose not to do so. Instead, it left the on-site command in the hands of its trusted local field delegate, immediately reinforced with specialists from Kabul. Similarly, at the country level, the network engendered a helpful division of labor among the major responders; in the ICRC and Federation headquarters, the deskmen remained in charge, with higher echelons trouble-shooting through occasional meetings as needed.

Our support for the position of 't Hart et al. is qualified, however. The qualification concerns the effectiveness of a decentralized response. In the Rostaq earthquake, the system of partially, and sometimes inconsistently, networked players, without a clear center, resulted in a fair number of scenarios being played out in parallel, often involving considerable local knowledge and individual creativity. It did not, however, pursue one major scenario that the combined effort could have brought to fruition. This happened only when the ICRC defected from the coalition with the U.N. and decided to go it alone for the airdrop. In other words, using the terminology of evolution with its three constituent functions: "variation," "selection," and "retention," such a system may be good at creating variants, but it does a poor job selecting from them and retaining the selected options. The network without center traded lower effectiveness during the early life-saving window for higher effectiveness during the subsequent quality-of-life window. It achieved the latter success thanks to the greater scope that it provided for learning than a centralized arrangement would have.

Finally, a counterintuitive finding concerning the levels of coordination and cooperation deserves note here. By now it should be clear that the response network was struggling with very serious problems of coordination, particularly during the first ten days after the disaster. Moreover, psychologically, the situation was tense. Frustrations ran high in Rostaq and elsewhere, until the first airdrop on February 19 instilled a general feeling of breakthrough. Surprisingly, then, interviewees consistently described cooperation among the organizations as intense and constructive in all phases. They did experience a fair level of conflict whenever one organization rejected other organizations' expectations, or when politics or technical factors thwarted joint projects, but the conflicts apparently did not reduce the high levels of common planning and resource exchange. I cannot fully explain this paradox. An obvious factor that facilitated cooperation was the high level of shared values and country knowledge across responders. That promoted good preprogramming decisions, but more was needed for this good cooperation to withstand the strains of conflict and coordination. One assumption is that networks without a strong leader offer their members areas of indifference that buffer cooperative arrangements against potential escalating conflict. A possible example is suggested by the reaction that a small NGO received to its diverse contributions in Rostaq. Severely criticized for using scarce transport to carry coal to villages (i.e., an area of organizational conflict), this group was allowed to bury animal carcasses (an area of indifference) and was highly appreciated for its repairs of the roads that relief trucks had to negotiate (area of positive cooperation). A more unified command structure might have focused on the conflicting behavior, thereby also eliminating niches for positive cooperation. More decentralized regimes, one may speculate, are better able to support cooperation in the face of coordination conundrums.

Conclusion

Theory about the behavior of organizational networks in disaster management borrows from two traditions. Some

theories of networks derive from theories of environmental turbulence. While increasing turbulence is claimed as an almost secular trend in many organized fields of life, it applies to disasters almost by definition. From an economic perspective, networks respond to transaction cost concerns. In the humanitarian world, too, the question "Make or buy? " can be asked. The coexistence of a few major operational agencies with a host of small NGOs subcontracted by donors seems to repeat the response already familiar from the world of business. If we have not seen this pattern very widely developed in Rostaq, it had more to do with season and geographical isolation than with intrinsic limitations of humanitarian networks. The massive descent of the media, however, was a turbulent event of the first order. Future theory development along this line should attempt to form more specific hypotheses about the relationship between the granularity and speed of changes in the environment and the behavior of networked disaster responders.

The other tradition from which network theory derives and built upon in this paper is the more inward-looking study of bureaucracy, concerned with the capacity to coordinate and learn; and reviewed, with a particular eye to government disaster management, in the studies by Rosenthal et al. (1991) and 't Hart et al (1993). When elevated to the level of organizational networks, the language in which such theories are developed may yet have to be invented. It must take care of the possibility that modes of behavior of which unitarian organizations are capable one at a time may be present among several of them concurrently. This case study has demonstrated that this can be true in the area of operational decision making, but such multi-faceted behavior can also occur in other areas. Moreover, such situations are attributable not to the individual member organization in the network, but to the network as a whole. This is particularly true of organizational learning. The evolution of a multi-mode transport system, stretching from the C-130 airdrop to donkey caravans, was an achievement resulting from a learning process in which all were teachers and students alike, and similarly the more aggressive use of helicopters evolved from the first to the second Rostaq earthquake response through the network of participating organizations. This interorganizational quality of learning has been established also for other human endeavors, such as in biotechnology (Powell et al., 1996). In disaster management, more research may be warranted into the quality of learning, particularly the degree of retention of lessons learned as a function of organizational and personnel turnover in networks. Researchers should also devote attention to the notoriously difficult transition from response to recovery.

This paper is entitled *Network Without Center?* The network in point was a temporary alliance among a pool of partners each capable of contributing something valuable to a short-term project. It was a dynamic network, with most partners recruited within days of the disaster, and starting to disband after less than two months (and eventually reactivated by a second quake). Miles and Snow believe that the operating logic of a dynamic network is linked to that of the divisionalized firm, with its "combination of central evaluation and local operating autonomy" (p. 66). However, in this case, there was no one and sole center of evaluation. Although one may see a weak parallel between the prominent role that one of the donor agencies played in the response and the role of corporate management as an investment banker for growth and redirection, this would be a far-fetched comparison. Essentially, during the response to the first quake, the network was without a center - and it worked. The decentralized form is not a given, however. Strategically, the leadership of the larger humanitarian agencies have some discretion (though limited) over the form of network arrangements. They should use it in an awareness of both costs and benefits that their options carry.

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This is a working paper. The author appreciates any comments readers may wish to provide. They can be e-mailed to abenini@dclink.com.

September 16, 1998