Paradoxes of power: the separation of knowledge and authority in international disaster relief work

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Keywords

Authority, Knowledge, Decision making, Training, Disasters

Abstract

One of the most obvious problems for those involved with disaster relief work is coordination with other teams in the field, with headquarters, with the mother organization in the home country and having to deal with unanticipated situations. The central dilemma appears to be this: disaster relief workers either have the knowledge to know what to do or the authority to do it. Seldom, however, are the local knowledge of what to do and the authority to do it located in the same person. This mismatch creates instability which generates pressure for change. Such change occurs through what we describe as "renegotiations of authority" – where people or teams who are not officially in charge take authority to act, because they know what to do and how urgent it is to do it. This paper presents the concept of renegotiations of authority through cycles of breaking down qualitative data obtained from disaster workers from multiple organizations and countries.

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Disaster Prevention and Management
Volume 12 · Number 4 · 2003 · pp. 312-318
 · ISSN 0965-3562
DOI 10.1108/09653560310493123

Why is coordination in disaster relief work difficult?

What makes coordination in international disaster relief work difficult, and why does new technology not necessarily help? This was the compound question at the outset of the research project we describe here. The question is based on an assumption: coordination difficulties in international disaster relief work are primarily about "getting in touch with one another". Dynes (1989), for example, highlights how collection and distribution of information can help relief workers explore and exploit available action alternatives. This would mean that anything that helps people in the field (team members, team leaders, representatives of aid organizations) "get in touch" better or quicker (or that lets them get in touch at all in the first place) should improve their work. It does not (Suparamaniam, 2003). This assumption, that the provision of access (either to people or computer systems) is key to solving coordination problems, is not unique to this field (e.g. Dekker and Hollnagel, 1999).

For three years, we endeavored to understand the coordination difficulties as experienced by relief workers in the field and inside mother organizations at home. We participated in formal and informal meetings at all levels of disaster relief organizations, attended local and international training exercises and disaster simulations, and reviewed considerable archival material. We interviewed over 150 relief workers and managers, and ended up with thousands of pages of field notes and transcripts. We wanted to make authentic contact with the perspectives and experiences of those involved with the work of our interest; we needed a way to view their world from the inside out; a way to see the daily pressures, trade-offs and constraints through the eyes of those confronted by them. The more we learned, the more we had to find out: besides raw data, informant statements were a consistent encouragement to go deeper into the world of disaster relief work to discover how people relied on social means of constructing action and meaning. Our analysis ended up being cyclical: more findings would demand more analysis, which would prompt further findings. There was a constant interplay between data, analysis and theory. Where existing theory was

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lacking, we generated and tested new concepts; where data were confounding, we turned to theory to map, compare and contrast (see Strauss, 1987).

Our initial findings on coordination difficulties were not about new technology at all. Instead, our efforts told us rather quickly that the military command-and-control model, described and critiqued by Dynes (1989) as unfit for disaster relief, is alive and well. There is still no evidence of a greater awareness of the value of "*auftragstaktik*" (or management by objectives, see also Rosenberg, 1998), which would delegate considerable executive authority and degrees of freedom to low-level team leaders as long as an agreed goal or set of goals is met. Despite Dynes' suggestions to shift from "command" to "coordination", and from "control" to "cooperation", and more recent research into the same types of problems (e.g. Snook, 2000), there is little evidence of an increased understanding that disaster relief work is not the same as responding to military contingencies. As a result, the organization of relief work is often still based on false assumptions and misdirected efforts. Much time is spent on documenting and emphasizing authority relationships; it is assumed that decision making and authority should be centralized; plans are over-specified which leads to incomplete knowledge and immediate drift from formal plans and procedures once workers enter the field; and communication is assumed to be downward only: the top of the structure knows what must be done (Dynes, 1989; Suparamaniam, 2003).

Our research justifies Dynes' (1989) skepticism of these assumptions. Those at the top do not typically know what to do. In fact, one of our central observations is a dissociation of knowledge and authority – creating a paradox of power. People in disaster relief either have the knowledge to know what to do (because they are there, locally, in the field, but they lack the authority to decide on implementation), or people have the authority to do it (but then lack the knowledge). Knowledge and authority are rarely located in the same actor. Interestingly, efforts to coordinate the one with knowledge and the one with authority do not seem to solve much of this central dilemma.

Coordination is difficult but often successful

Deference to protocol, procedure and hierarchy is partly a result of the background of many disaster relief workers (indeed, military) – something that will even increase with shifts in military roles from fighting wars to dealing with disasters. But we also found another powerful ingredient in the hysteresis. The implementation of unplanned action and use of unplanned resources (certainly from elsewhere) is almost never unproblematic, despite compelling local convictions that such help may be critical. Disaster relief work is also about spending and controlling separate national budgets; about protecting or bolstering national reputations; about making political statements or investing in diplomatic capital. Such higher-level constraints on decision making (i.e. sensitivity to political, financial, or diplomatic implications of decisions), the subtleties of which may elude local team leaders, demand bureaucratic accountability (see Vaughan, 1996) and centralization (Mintzberg, 1979).

But our research is not just a story about the relentless hysteresis of complex systems; it does not just confirm the basic irrationality of organizations (e.g. March and Olson, 1979), or coincide with sociological characterizations of the immoral calculation by hierarchies and power structures (Vaughan, 1996), nor does it just re-invent the vaunted introduction and subsequent veiled discard of highly praised technologies that end up not helping at all (Woods *et al.*, 1994). We found that people, especially team leaders in the field, often make their missions work anyway – in spite of the adversity, the difficulty; despite the countervailing pressures of procedure and protocol.

The interesting question, then, is not just why coordination in international disaster relief work is difficult. In this respect, the data we gathered from field missions, exercises and simulations (Suparamaniam, 2003) can be reconciled with existing theories on contextual constraints and difficulties surrounding real decision making, such as surprises (e.g. Weick and Sutcliffe, 2001), dynamics, and uncertainty (Orasanu and Connolly, 1993; Zsambok and Klein, 1997). Demands for making decisions and taking action (and thus for coordination) go up with the tempo and criticality of operations (see

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Woods *et al.*, 2002). The interesting question, really, is how international disaster relief missions' outcomes are often successful, despite the odds that are overwhelmingly stacked against local actors. Attention to such a question is consistent with interest in sources of "robustness" (Woods and Cook, 2002) or "grace" of human performance under severe pressure (see also Weick, 1987; Rochlin, 1999). What role does interpersonal coordination play in creating such success; in exhibiting such robustness? Naturalistic decision theory sheds light on the local, individual mechanisms that determine successful decision performance under limited resources and uncertainty, adding the concept of "team mind" (Klein, 1998) as one of the interpersonal sources available to decision makers. This overlaps with notions of distributed cognition (e.g. Hollan *et al.*, 2000), where decision makers draw on and integrate resources outside their own minds – including other people – to perform successfully. Both approaches, however, see the constitution of the team (or distributed cognitive architecture) as essentially non-problematic. The process of forming the distributed architecture is less interesting than modeling how the architecture is used once it has been formed.

Rochlin (1989) comes closer to the formative mechanisms in his description of informal organizational networking as a strategy to avoid crises on naval aircraft carriers. It covers the spontaneous, informal creation of teams whose composition is made to map onto the functional demands of the problem to be solved. In Rochlin's observations, organizational hierarchies agreed with the relevance of such informal work, and indeed, *ad hoc* teams' operational success appeared possible in large part because of their unproblematic relationship with formal organizational and command structures. Also, the teams were co-located (on the same ship); members (though differing in rank and functional specialization) shared a common navy indoctrination and participated in teams willingly. International disaster relief work, in contrast, is governed by less coherent, more distributed and occasionally competitive formal hierarchies that hardly know, understand or acknowledge the existence of such informal local networking – let alone condone or encourage it. Informal teams do not often share a common indoctrination (or even mother tongue), members are not necessarily co-located (they may be in the same country), and may be recruited against their explicit will or against their better political judgment. Finally, informal teams in international disaster relief work do not form to avoid crises, but to deal with crises that have already happened.

Renegotiation of authority

The separation of authority and knowledge in international disaster relief work creates a tension, an imbalance. Imbalance creates pressure for change. Such change can go two ways. Either knowledge goes where authority resides, or authority goes where knowledge resides. We found out that getting knowledge to the seat of authority is difficult. Team leaders often do not even know who has formal authority to decide over the particular problem at hand: they do not know whom to ask. And even if they (think they) do, their request may be forwarded to other levels, participants or agencies. The dispersed nature of relief work (different countries, governments, head offices, mother organizations), and mechanisms of bureaucratic accountability that tend to shift issues higher and higher before decisions are made, make the location of authority for every particular problem unstable – except that such authority does not lie at field level. Planners may have assumed authority on the part of organizations or people who in fact have no formal mandate at all (Dynes, 1989). The trajectories along which authority travels before action is finally taken can sometimes be profoundly puzzling.

The opposite way, of getting authority to where knowledge is, is relied on much more often. Compelled to act eventually (or immediately), local team leaders frequently take charge even where no formal authority is mandated to them. This typically occurs through a process of mutual adjustment that involves a "flattening" or apparent disregard of formal hierarchy, not unlike that described in contingency theory (e.g. Mintzberg, 1979). "Taking charge", however, hides a number of different adjustments that are made in such situations. Indeed, knowledge of local problem demands is necessary but not

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sufficient as a basis for "taking charge". Local availability of resources such as equipment (e.g. trucks, food, medical supplies, tents), personnel (manpower), or expertise (functional specialization) is a major determinant for the direction in which authority eventually moves. Knowing what to do is one thing; being able to carry the actions out may be quite another. Knowledge and resources to act on that knowledge may not be co-located in the same team leader either: further negotiations with other team leaders may be necessary to coordinate the understanding of problem demands with the delivery of resources to deal with those demands. In these cases, partial authority for implementing actions and directing operations can shift to the one who actually has the resources, away somewhat from the one who had initial knowledge of what should be done. Such negotiations, however, typically play out at field level and appear possible largely by processes of mutual adjustment without much constraint from higher-order goals or imperatives. While solving local problems, the migration of authority also creates problems. These problems are often related to the lack of preparation of team leaders for the possibilities of this imbalance (between knowledge and authority); the emphasis on procedure and protocol, and the affective way in which authority is renegotiated. We discuss these problems below. Finally we return to one of the questions that inspired our research: why does new technology not always help? Here we have to turn to issues of trust (building it through technical media may be difficult) and data overload (more technology means more data, not necessarily all of it meaningful).

Training and preparation, procedure and protocol

Moving authority to the location of knowledge and resources is an adjustment that is hardly ever officially acknowledged. It is not trained for, nor are the reasons or practical need for such migrations of authority officially discussed in the preparation of team leaders. Training rarely touches on the possibility of conflict between demands for local action and global interests held by stakeholders further up in hierarchies. In fact, the professional indoctrination of those who become team leaders (e.g. rescue services or military personnel) as well as the training that prepares them for field work, stresses allegiance to distant supervisors and their higher-order goals (see Shattuck and Woods, 2000). The superordination of larger, global concerns makes sense from the perspective of those tasked with organizing relief work. Without political backing, without the requisite diplomatic leverage, without financial resources, there would be no basis for relief work in the first place, so sensitivity to these aspects (and to not squandering them) is understandable.

Training also emphasizes adherence to formal procedure and protocol (see Snook, 2000). Such preparation initially makes sense because team leaders may not know their team members, and team leaders may themselves have little experience in the field. It ensures a measure of order and predictability, which in turn can generate a form of "common ground": a stable basis on which to form expectations about the actions, intentions and competencies of other participants (see Dekker, 2000). Commercial aviation similarly relies on procedure and protocol since crew members, especially in larger carriers, rarely know each other. Knowing what the other will and can do is based predominantly on procedure, protocol, a priori role divisions (pilot-flying and pilot-not-flying) and formal command structure (captain-first officer relationship). In international disaster relief work, however (and quite to the contrary of commercial flying), unpredictability is quite common. Reliance on procedures and formal hierarchical protocol quickly becomes brittle in the face of novelty and surprise (Dekker, 2003). Indeed, while team leaders and team members appear to use procedures and protocol as a dominant resource for action in the beginning of missions, increasing experience with one another, and with the typical problems will make them less reliant on pre-specified guidance. Practical experience (both with each other, and with typical problems) gradually supplants "the book" and the official command structure as a resource for action.

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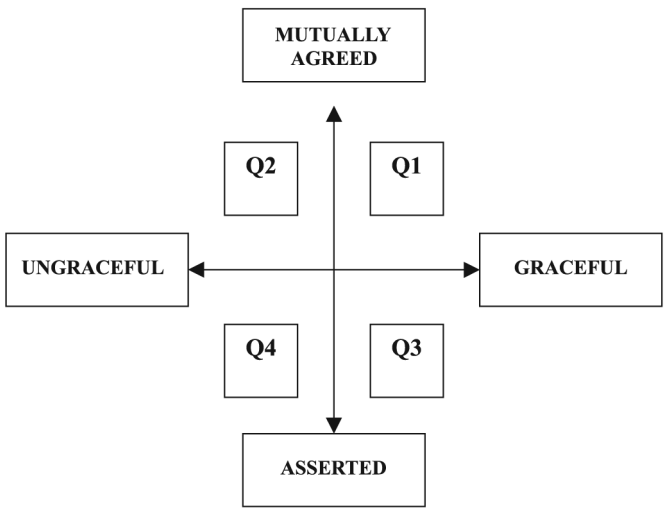
Different ways to renegotiate authority

Authority is renegotiated in a number of ways and styles, some of which go down better with relief participants and organizational members than others. In some circumstances, renegotiations would work without hurting feelings (so to say) and sometimes it would not. Two broad avenues were covered where there was a certain gracefulness associated with the renegotiation, or such a grace could be lacking, or at least judged to be lacking by the aggrieved party. Another broad dimension was the degree of mutuality where both parties are equally involved or asserted where it is conducted by one party without much involvement from the other. When authority is asserted, there is little involvement from the party who has to surrender authority. Such assertions, however, may still happen with a certain grace (see Figure 1).

Themes of common ground and experience are consistent with findings from other domains where authority sometimes has to migrate to manage challenging or safety critical situations where prior protocols do not provide support. It is also clear that training, experience and common ground are factors that lack grace and assertiveness in renegotiations of authority. In other words, the more training, the more experience, and the more common ground, the easier it becomes for people to renegotiate authority, to let authority go, or to assume it when necessary. Training is good, and prior protocols are good, but even these are subsumed by experience and common ground. If people know the typical challenges, and if they know the people they are dealing with (and know how these people will react), then renegotiating authority becomes much easier. While no amount of training can substitute for such an accumulation of experience and common ground, it still begs the interesting question of how can we "cheat" the build up of experience, by making people experience these types of situations in advance of actual work. This same question dominates naturalistic decision-making research: you cannot make people experienced – they have to do that themselves (see e.g. Zsambok and Klein, 1997). But training can be mapped onto the experience as much as possible: people can be trained by borrowing from their practical future and give them as much "experience" before they actually start accruing real experience.

Figure 1 Negotiating authority



New technology: capabilities and complexities

In order to renegotiate authority, or sometimes even to realize that authority needs to be renegotiated, people need to coordinate. They need to coordinate across distances and across organizations, teams and countries. Communications technology (e.g. e-mail, faxes, telephones) assists as the medium for these interactions. Here the question was on how technology augmented coordination. Our data pointed to a paradox: a mismatch in which technology both augmented coordination but also caused difficulties that interfered with coordination. Technology and human work in other work domains (e.g. Dekker and Hollnagel, 1999) often show a similar tension between delivering benefits and creating problems at the same time. Technology is often introduced on the back of promises of quantitative benefits and with the idea that there is a "technological fix" for whatever problems there are with coordination.

Communication technology that helps relief workers coordinate cannot in itself not deal with issues of hierarchy, goal conflicts or authority dislocation. Indeed, technology can speed up coordination but may in fact create data overload. It can help create common ground, but trust in each other (a critical component of teamwork) requires more than contact through a radio or other technological aid. Building trust through technical media

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may be difficult and produce data overload (more technology means more data) where not necessarily all of it may be meaningful. The idea of information that can or cannot be "trusted" is consistent with meaning in the sense in which ecological psychologists use it (e.g. Zsambok and Klein, 1997; Vicente, 1999; Flach, 2000). Meaning lies not in the data but in the relationships of data to interests and expectations (Suparamaniam, 2003). In addition to trust in meaning, another aspect of trust via technology included the distance of the person giving commands or information. Our informants were distrustful of data that were transmitted via the various technology aids and had difficulties communicating during coordination. In studies conducted on command and control performance, similar problems were found with teams in dispersed locations who had difficulties communicating during coordination via electronic means due to the lack of trust in the information shared.

Finally, getting the one with knowledge in touch with the one with authority does not resolve the likely tension between the two agendas driving each party (one confronted with immediate, local goals; the other governed by larger, global concerns). Nor does it address the fundamental problem of under-specification (provided communication technology works in the first place): formal hierarchies' understanding of what is going on locally is limited to what can be pushed through the narrow channel of an e-mail, radio message, telephone conversation, or fax. This is not quite the same as "being there".

Conclusion

So why is coordination in international disaster relief work difficult? Perhaps the most foundational reason is that coordination in international disaster relief work is not just coordination. It is renegotiation. Coordination is often renegotiation of authority – of who has the say in what gets done. Coordination is often renegotiation of earlier established work rules, procedures. Coordination is often renegotiation of earlier established structures, hierarchies, and formalities. It is renegotiation, in other words, of the ground rules of what makes international disaster relief organizations into what they are: distributed, hierarchical, rule-bound, and politically constrained. Coordination is difficult because it can come down to the renegotiation of the very things that members higher up in the organizational hierarchies hold dear: reputations, political interests, and financial commitments. Coordination is not difficult because people cannot get in touch with each other (in fact, coordination is sometimes difficult precisely because people can get in touch with one another – creating clutter and data overload). In the final analysis, coordination in international disaster relief work is difficult because it is inevitably about more than the problem at hand. It is about hierarchies, political constraints, structure, and rules. And it is about experience, local knowledge and the acute sense of having to act, having to do something that disaster relief workers in the field are confronted with when met by fellow human beings in need.

Summarizing, our key findings are as follows:

- Much of international disaster relief is still planned and organized according to military-style command and control. There is an emphasis on centralized authority, adherence to procedure and protocol and over-specification of plans.
- This has to do not only with the background of those involved in international disaster relief work, but with the need to be sensitive to higher-order goals (political, financial, diplomatic) that need to be satisfied to make relief work possible in the first place. This demands bureaucratic accountability and resists formal downward delegation of authority.
- The result is a paradox of power: knowledge of what to do and authority to do it rarely coincide in the same person. This imbalance continually creates pressure for change.
- Confronted with acute problems to solve, local team leaders engage in a renegotiation of authority. Because of the imbalance, authority migrates: mostly to where the resources are that can meet the problem demands identified by the team leader.
- As time in the field accrues, team member experience with each other and with typical problems gets to supplant procedure and protocol as resources for action.

- Authority can be renegotiated in a number of ways and styles, some of which go down better with relief participants and organizational members than others.
- New communication technology that helps relief workers coordinate cannot in itself not deal with issues of hierarchy, goal conflicts or authority dislocation. New technology can even add problems in the form of data overload and a lack of trust.

References

Dekker, S. (2003), "Failure to adapt or adaptations that fail: contrasting models on procedures and safety", *Applied Ergonomics*, Vol. 34 No. 3, pp. 233-8.

Dekker, S.W.A. (2000), "Crew situation awareness in high-tech settings: tactics for research into an ill-defined phenomenon", *Journal of Transportation Human Factors*, Vol. 2 No. 1, pp. 49-61.

Dekker, S.W.A. and Hollnagel, E. (1999), *Coping with Complexity*, Ashgate, Aldershot.

Dynes, R. (1989), "Emergency planning: false assumptions and inappropriate analogies", *Proceedings of the World Bank Workshop on Risk Management and Safety Control, 1989*, Rescue Services Board, Karlstad.

Flach, J.M. (2000), "Discovering situated meaning: an ecological approach to task analysis", in Shraagen, J.M., Chipman, S.F. and Shalin, V.J. (Eds), *Cognitive Task Analysis*, Erlbaum, Mahwah, NJ, pp. 87-100.

Hollan, J., Hutchins, E. and Kirsh, D. (2000), "Distributed cognition: toward a new foundation for human-computer interaction research", *ACM Trasactions on Computer-Human Interaction*, Vol. 7, June, pp. 174-96.

Klein, G.A. (1998), *Sources of Power: How People Make Decisions*, MIT Press, Cambridge, MA.

March, J.G. and Olson, J.P. (1979), *Ambiguity and Choice in Organizations*, Universitetsförlaget, Bergen.

Mintzberg, H. (1979), *The Structuring of Organizations*, Prentice-Hall, Englewood Cliffs, NJ.

Orasanu, J. and Connolly, T. (1993), "The re-invention of decision-making", in Klein, G.A., Orasanu, J., Calderwood, R. and Zsambok, C. (Eds), *Decision Making in Action: Models and Methods*, Ablex, Norwood, NJ, pp. 3-20.

Rochlin, G.I. (1989), "Informal organizational networking as a crisis-avoidance strategy: US naval flight operations as a case study", *Industrial Crisis Quarterly*, Vol. 3, pp. 159-76.

Rochlin, R.I. (1999), "Safe operation as a social construct", *Ergonomics*, Vol. 42 No. 11, pp. 1549-60.

Rosenberg, T. (1998), *Risk and Quality Management for Safety at a Local Level*, Royal Institute of Technology, Stockholm.

Shattuck, L.G. and Woods, D.D. (1997), "Communication of intent in distributed supervisory control systems", *Proceedings of the Human Factors and Ergonomics Society 41st Annual Meeting, Albuquerque*, NM, pp. 259-68.

Snook, S.A. (2000), *Friendly Fire: The Accidental Shootdown of US Blackhawks over Northern Iraq*, Princeton University Press, Princeton, NJ.

Strauss, A.L. (1987), *Qualitative Analysis for Social Scientist*, Cambridge University Press, Cambridge.

Suparamaniam, N. (2003), "Renegotiation of authority", Dissertation No. 830, Unitryck Publications, Linköpings Institute of Technology, Linköping, Sweden.

Vaughan, D. (1996), *The Challenger Launch Decision: Risky Technology, Culture and Deviance at NASA*, University of Chicago Press, Chicago, IL.

Vicente, K. (1999), *Cognitive Work Analysis: Toward Safe, Productive, and Healthy Computer-based Work*, Lawrence Erlbaum, Mahwah, NJ.

Weick, K.E. (1987), "Organizational culture as a source of high reliability", *California Management Review*, Vol. 29 No. 2, pp. 112-27.

Weick, K.E. and Sutcliffe, K.M. (2001), *Managing the Unexpected: Assuring High Performance in an Age of Complexity*, Jossey-Bass, San Francisco, CA.

Woods, D.D. and Cook, R.I. (2002), "Nine steps to move forward from error", *Cognition, Technology and Work*, Vol. 4, pp. 137-44.

Woods, D.D., Patterson, E.S. and Roth, E.M. (2002), "Can we ever escape from data overload? A cognitive systems diagnosis", *Cognition, Technology and Work*, Vol. 4 No. 1, pp. 22-36.

Zsambok, C. and Klein, G.A. (Eds) (1997), *Naturalistic Decision Making*, Lawrence Erlbaum, Mahwah, NJ.