

Branda Nowell¹ / Toddi Steelman²

Beyond ICS: How Should We Govern Complex Disasters in the United States?

¹ School of Public and International Affairs, North Carolina State University, Raleigh, NC, USA, E-mail: branda_nowell@ncsu.edu

² Nicholas School of the Environment, Duke University, Durham, NC, USA

Abstract:

The complexity of large-scale disasters requires governance structures that can integrate numerous responders quickly under often chaotic conditions. Complex disasters – by definition – span multiple jurisdictions and activate numerous response functions carried out by numerous legally autonomous public, nonprofit, and private actors. The command operating structure of the Incident Command System (ICS) is a hierarchical structure used to manage complex incidents. Increasingly, complex disasters are seen as networks of multiple actors. Improving our capacity to respond to large-scale, complex disasters requires moving beyond the “hierarchy versus networks” debate to understand the conditions under which governance structures can best serve disaster response goals. Understanding the capabilities and limitations of the governance structures embedded in our national policy tools and frameworks can enhance our ability to govern effectively in networked contexts. In this article, we suggest the need to shift focus to build greater capacity for hybrid and network governance approaches, including a more sophisticated understanding of the conditions under which these governance forms are most effective.

Keywords: ICS, network governance

DOI: 10.1515/jhsem-2018-0067

1 Incident Command Systems and Command Operating Structure

The challenges of managing large-scale, complex disasters such as Hurricanes Harvey, Maria, and Florence, and the wildfires of 2015, 2017 and 2018 highlight the criticality of improving our nation’s capability to prepare for, and respond to, catastrophic events. The complexity of large-scale disasters requires governance structures that can integrate numerous responders quickly under often chaotic conditions (Wenger, Quarantelli, and Dynes 1990).

The National Incident Management System (NIMS), the US Federal policy guidance for disaster response, formally embraces the Incident Command System (ICS) as the primary governance tool, or command organizational structure (COS), for managing complex disasters. However, the utility of COS for responding to the most severe incidents has come under considerable scrutiny. Critics point to publicized response failures, such as Katrina, to argue that the hierarchical nature of COS is ineffective in its complexity (Wenger, Quarantelli, and Dynes 1990; Comfort 2007; Birkland and DeYoung 2011).

Organizational science offers insights, discussed below, that can move the debate beyond the pros and cons of COS toward a productive policy discussion about what tools to use, when, and under what conditions.

ICS command structure emerged in the 1970s in response to large-scale wildfires in California (Auf der Heide 1989). It was designed to create a supraorganization capable of being managed by a single incident commander with the legal bureaucratic authority to align all responders under a common mission. Since that time, ICS has been elevated in importance as the cornerstone of effective incident management in the National Response Framework and accompanying National Incident Management System (NIMS) (Jensen and Waugh 2014).

We use the term COS to distinguish the ICS command structure from other policy tools bundled under the term ICS (Figure 1). The COS is comprised of the planning, finance, logistics, and operation functions associated with hierarchical command of an incident by an incident commander. ICS is further comprised of a broader set of tools and practical advice associated with working effectively in multi-organizational arrangements. In short, ICS is inclusive of, but not limited to, COS. However, COS is the foundation of ICS and the debate surrounding ICS focuses almost exclusively on the merits and limitations of COS (Moynihan 2009; Jensen and Waugh

Branda Nowell is the corresponding author.
©2019 Walter de Gruyter GmbH, Berlin/Boston.

2014; Jensen 2016). ICS has become synonymous with COS, contributing to the confusion of which specific governance tool is being discussed.

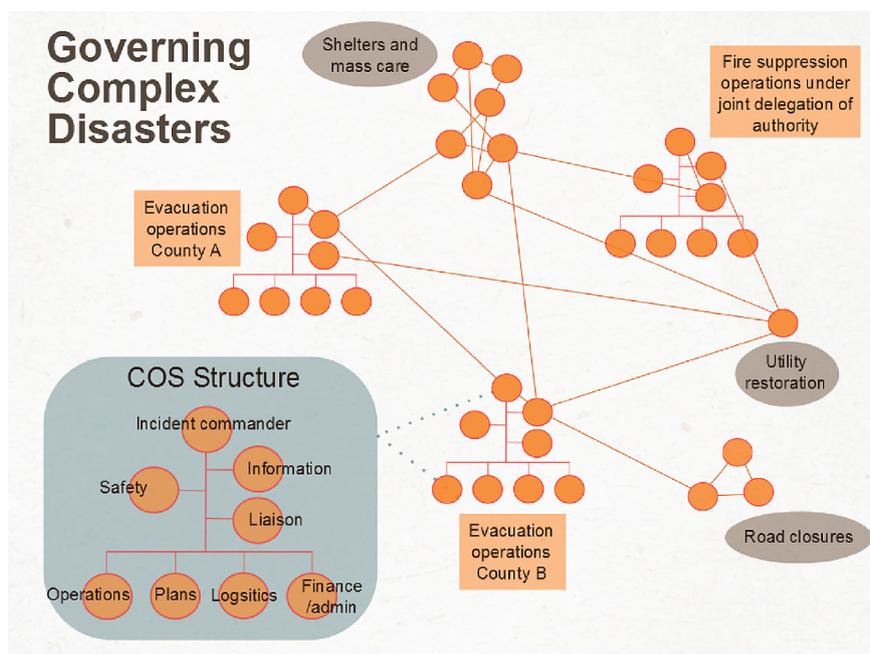


Figure 1: COS as a Component of Network Governance.

2 Governance Assumptions in Complex Disasters

During complex disasters, there is widespread recognition among both scholars and practitioners that incidents are collectively “managed” through an incident response network. This network includes the actions and interactions of a myriad of local, state, and federal agencies, private and nonprofit organizations, and unincorporated groups of local actors that are governed by a fragmented web of formal and informal relationships (Nowell and Steelman 2013). One point of view considers this messy collection of actors as the problem and looks to broad, more elaborate, implementation of COS as the solution (e.g. Hunt et al. 2014). Another views this as an inherent reality and points to more networked approaches as the preferred solution (McGuire and Schneck 2010). NIMS favors the former.

Improving our capacity to respond to catastrophic events requires moving beyond the “COS versus networks” debate to understand the conditions under which each policy tool is most useful, starting with a full understanding of the mechanism and context underlying each form of governance.

COS turns on a bureaucratic command structure. It starts with the leadership and direction of an incident commander who oversees an operational planning and implementation process organized around four core task areas – each with defined roles and responsibilities. As such, ICS is touted by supporters as an efficient and effective mechanism for integrating multiple agencies under a common organizational structure, “in essence, they are one organization and can be managed as such (Auf der Heide 1989, 157).

Firefighting is often used to illustrate COS’s potential. In the fire service, through a web of mutual aid agreements and resource ordering systems, thousands of personnel and equipment from local, state, federal, and international jurisdictions are routinely brought together into a unified operation that functions like a single organization under the direction of an incident commander and his/her command staff.

The appeal of this vision is readily apparent. However, its application rests on one crucial and frequently overlooked criterion: that there is a superordinate entity who has the legal authority to assume command over an incident. Complex disasters – by definition – span multiple jurisdictions and activate numerous response functions (e.g. road closures, evacuation, sheltering, mass care, public safety, utility restoration) carried out by numerous legally autonomous public, nonprofit, and private actors. Multiple jurisdictional areas can refer to agencies with differing jurisdictional responsibilities over different response functions or can refer to differing jurisdictional responsibilities over the same response function but in different geographic areas.

Put simply, fragmentation of authority is woven into our nation’s fabric by design. Absent of martial law, there is no superordinate entity that has the legal right to command all of the organizations, agencies, and groups who have formal and informal responsibilities to respond, in their own manner, during a disaster.

In light of this, it is not surprising that ICS has been evaluated in empirical research as most effective when implemented under conditions with clear limited geographic perimeters (which are more likely to have a lead agency in charge), minimal operational mandates, and a stable collection of response agencies with pre-defined arrangements and relationships that have, presumably, clarified jurisdictional issues in advance of the incident (Buck, Trainor, and Aguirre 2006; Jensen and Waugh 2014).

3 Hybrid and Network Structures of Governance

While COS will always be an important component of incident response, it may never be a sufficient policy tool for governing complex disasters. What, then, are the alternatives?

One alternative is a collection of what we refer to as hybrid governance tools. These include joint delegations of authority, unified command agreements, complexing, and area command as mechanisms for managing incidents involving multiple jurisdictions – often over large geographic areas. The goal of hybrid governance tools is to maintain the COS bureaucratic command structure in multi-jurisdictional situations by overlaying additional legal and bureaucratic layers on top of COS.

For example, in a unified command arrangement, the city fire chief and a county sheriff may serve as co-incident commanders, jointly managing evacuations and structure protection. However, this has inherent limitations in legality, scale, and configuration. In dynamic complex incidents with lots of administrators covering various functional and geographic areas, the viability of comprehensive hybrid structures break down (Buck, Trainor, and Aguirre 2006). Put simply, it will never be feasible to attain unified command with all involved.

The second alternative falls under the heading of what scholars refer to as network governance. The concept of governance is often conflated with legal frameworks and bureaucracy. However, governance aims to create stable expectations about collective behavior through the articulation, implementation, and enforcement of formal rules, as well as informal norms (Duit and Galanz 2008).

Legal frameworks and bureaucracy are important tools of governance in American society, but they are not the only tools available. How to govern in the context of complexity without the benefit of legal bureaucratic authority is a topic that has received a great deal of consideration in other disciplines. Boin and Hart (2003) observe that multi-organizational, trans-jurisdictional, polycentric response networks have become the norm in crisis response. This means that network governance tools, and the capacity to use them, need to become prevalent in our discussion related to managing complex disasters.

Both scholarly and practitioner communities are just beginning to explore the capabilities and potential of network governance arrangements. Multi-jurisdictional information sharing and decision-making meetings (e.g. cooperator meetings) are now commonplace in the management of complex disasters. However, research suggests that they tend to become overwhelmed and cumbersome as incident complexity increases (GAO 2008). More sophisticated tools of network governance – such as joint information centers, agency liaisons, and multi-agency coordination groups – hold promise but a great deal more is needed to build national awareness and training in how to work in a network governance context.

NIMS, which ostensibly is designed to facilitate coordination among all responders, is comprised of three components: ICS, Multiagency Coordination Systems (MACS), and Public Information Systems (U.S. Department of Homeland Security 2011). However, as it is currently operationalized, NIMS underleverages network governance approaches to complex disaster management. It continues to elevate COS as the primary policy tool for managing complex disasters, but fails to clearly articulate the boundary conditions under which COS and hybrid arrangements are viable (Figure 1). Adopting more systems-level thinking is required to build capacity for network governance.

4 Increasing National Capability to Manage Complex Disasters

Expanding our nation's capacity to effectively manage complex disasters entails strengthening our local, state, and federal capabilities. This requires, in part, understanding the capabilities and limitations of the governance structures embedded in our national policy tools and frameworks, and enhancing our ability to govern effectively in networked contexts. Research and organizational theory can lend insight into when COS, hybrid, and network governance structures are appropriate.

- **COS** is a very powerful tool. However, it is appropriate **ONLY** in operational domains wherein a superordinate authority exists to delegate commands to an incident commander. As such, COS should be viewed

as a policy tool for governing specific operations that are part of a complex incident. Whenever appropriate, it should be used, but it is never sufficient for complex incidents.

- **Hybrid governance** is appropriate for multi-jurisdictional operations involving more than one agency administrator where issues of joint action, coordination, and/or cost sharing are paramount. Because these governance mechanisms have legal *and* bureaucratic elements, they tend to require time to negotiate and are limited in the number and diversity of agency administrators/executives that may be governed in these arrangements.
- **Network governance** is appropriate for incident-level governance, superordinate to COS, hybrid, and other hierarchical governance structures. Network governance provides the mechanisms for facilitating information flow, coordinating efforts, and establishing rules and norms of engagement for an incident among legally autonomous responders. It is appropriate and necessary in any operational domain in which COS and hybrid structures are not feasible either due to the scope and jurisdictional autonomy of actors involved and/or the speed at which coordination must occur.

Governance across operational domains in complex incidences will always fundamentally be a task in network governance, rather than bureaucratic governance. Our historical pre-occupation with COS has limited our preparedness to manage the most complex of incidents. We now need to shift focus to build greater capacity for hybrid and network governance approaches, including a more sophisticated understanding of the conditions under which these governance forms are most effective.

The differentiation among COS, hybrid, and network governance structure types suggests the need to clearly discern: (1) which opportunities are best suited for bureaucratic and network governance arrangements; and (2) how to work effectively within the context of a COS, hybrid, or networked governance system.

A related challenge to increasing our national capability to respond to complex incidents is shifting the culture of the disaster response community away from its reliance on command and control. COS will never be a sufficient tool for governing an entire incident, and the more complex the disaster, the less viable command-based options will be. This may require a comprehensive shift in our language to reflect a more system-level perspective.

Acknowledgements

Insights from this paper are drawn from a research initiative led by Drs. Branda Nowell (North Carolina State University) and Toddi Steelman (Duke University) and are supported by funds from the National Science Foundation [CMMI-1161755] and the Joint Fire Science Program [L12AC20571]. See firechasers.ncsu.edu for more information. Special thanks to members of the Fire Chasers Project team and all the fire and emergency personnel who contributed their time and insights in support of this project. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the US Government. Mention of trade names or commercial products does not constitute their endorsement by the US Government.

References

- Auf der Heide, E. 1989. *Disaster Response: Principles of Preparation and Coordination*. St. Louis: CV Mosby.
- Birkland, T. A., and S. E. DeYoung. 2011. "Emergency Response, Doctrinal Confusion, and Federalism in the Deepwater Horizon Oil Spill." *Publius: The Journal of Federalism* 41 (3): 471–493. DOI: 10.1093/publius/pjr011.
- Boin, A., and P. T. Hart. 2003. "Public Leadership in Times of Crisis: Mission Impossible?" *Public Administration Review* 63 (5): 544–553.
- Buck, Dick A., Joseph E. Trainor, and Benigno E. Aguirre. 2006. "A Critical Evaluation of the Incident Command System and NIMS." *Journal of Homeland Security and Emergency Management* 3 (3): 29–56.
- Comfort, L. K. 2007. "Crisis Management in Hindsight: Cognition, Communication, Coordination, and Control." *Public Administration Review* 67 (s1): 189–197.
- Duit, A., and V. Galanz. 2008. "Governance and Complexity – Emerging Issues for Governance Theory Governance." *Governance: An International Journal of Policy, Administration, and Institutions* 21: 321–335.
- GAO. 2008. *National Disaster Response: FEMA Should Take Action to Improve Capacity and Coordination between Government and Voluntary Sectors*. Washington, DC: GAO.
- Hunt, S., K. Smith, H. Hamerton, and R. J. Sargisson. 2014. "An Incident Control Centre in Action: Response to the Rena Oil Spill in New Zealand." *Journal of Contingencies and Crisis Management* 22: 63–66.
- Jensen, J. 2016. "The Incident Command System: A Literature Review." *Disasters* 40 (1): 158–182.

- Jensen, J., and W. L. Waugh. 2014. "The United States' Experience with the Incident Command System: What We Think We Know and What We Need to Know More About." *Journal of Contingencies and Crisis Management* 22 (1): 5–17.
- McGuire, M., and D. Schneck. 2010. "What if Hurricane Katrina Hit in 2020? The Need for Strategic Management of Disasters." *Public Administration Review* 70 (s1): s201–s207.
- Moynihan, Donald P. 2009. "The Network Governance of Crisis Response: Case Studies of Incident Command Systems." *Journal of Public Administration Research and Theory* 19: 895–915.
- Nowell, Branda, and Toddi Steelman. 2013. "The Role of Responder Networks in Promoting Community Resilience." *Disaster Resiliency: Interdisciplinary Perspectives* 232–257.
- U.S. Department of Homeland Security. 2011. "National Incident Management System Training Program." September. Accessed May 26, 2016: http://www.fema.gov/pdf/emergency/nims/nims_training_program.pdf.
- Wenger, Dennis, E. L. Quarantelli, and Russell R. Dynes. 1990. "Is the Incident Command System a Plan for All Seasons and Emergency Situations?" *Hazard Monthly*, March 10.