

NETCENTRIC ORGANIZATION

David S. Alberts and Richard E. Hayes, *Power to the Edge: Command...Control... in the Information Age* (Washington, DC: Department of Defense, Command and Control Research Program (CCRP) Publication Series, 2003).

The evidence is in. E. Brynjolfsson and L.M. Hitt (2000) provide convincing proof that high-tech information technology (IT) networks can transform organizations. They show, however, that to realize IT's potential, it is not sufficient to invest in computer systems and software, one must also adopt a specific pattern of cognitive and social practices. Two of these practices are especially important: adopting digital processes and distributing decision-rights to front-line personnel. These practices distinguish effective networked organizations from more traditional bureaucracies.

By far the most ambitious IT project in the entire world is currently under way within the United States defense department – the construction of the Global Information Grid (GIG). When the GIG is complete, everyone in the American military will be able to communicate richly with everyone else. The GIG will integrate all defense communications and computer systems into a distributed network, spreading processing power across thousands of processors, servers, and routers located around the world. This network will allow the computers in the grid to exchange information, share workloads, and cooperatively process information. The computers that make up the network will be linked together via a communications system that automatically routes information from source(s) to destination(s) through any available medium or node using the Internet's open-systems standards and protocols. Like most high-tech organizations, the GIG will rely on quasi-market mechanisms to link customers and providers (sensors, weapons platforms, and intelligent agents, as well as people), and to ensure that users have access to the information and services (bandwidth, etc.) that they want when, where, and how they want it.

In *Power to the Edge*, David Alberts¹ and Richard Hayes articulate “a vision of DOD transformation and an approach to achieving it” (p. xix) that goes beyond the analysis of physical systems and informational arrangements to cognitive and social mechanisms. Their primary thesis is that an information age military (as opposed to an industrial age one) must make dramatic changes in its culture, architecture, decision-making processes, and operating routines. Moreover, they argue that these changes – expanding lateral information flows, increasing connectivity and interoperability, collaboration, and experimentation, forming and deploying small, agile, specialized combat teams, and devolving much (but not all) command authority downward – call for equally dramatic changes in the way military units are configured, trained, and equipped. In the absence of these changes, they imply that the massive investment required to install the GIG will be largely wasted.

Alberts directs the Pentagon's Command and Control Research Program, which has produced a series of reports dating back to the mid-1990s outlining the changes needed for the military to enter the information age (see text box). *Power to the Edge* reiterates

the conclusions of its predecessors, but goes much further in emphasizing the importance of flattening command hierarchies and of devolving power down to combat and logistic teams. At the same time that Alberts and Hayes call for the devolution of power to the edge, they are cognizant that authority, and accountability are essential features of any system of command and control. They insist, however, that it is possible to move from a “concept of command that is tied to an individual commander to a concept of command that is widely distributed.”

Rather than issuing detailed orders about what, when, where, and how to do it or even specifying objectives each unit is to achieve, and leaving the details to the units, Alberts and Hayes would have headquarters assign missions, but leave decisions about how missions are to be achieved to the units involved to workout for themselves – they refer to this decision-making process as self synchronization. They assert that effective self-synchronization requires headquarters to provide clear and consistent understandings of command intent, appropriate rules of engagement, and sufficient resources and then to get out of the way, unless asked for help. In addition, effective self-synchronization requires quality information, shared situational awareness; and competence at all levels of the task force and 360-degree trust – in information, subordinates, superiors, peers, and equipment.

The Network Centric Warfare concept of self-synchronizing forces is a statement of the requirement for massive improvements not only in flexibility but also in adaptability. The elements of such forces will need to be extremely competent and inspire confidence in the other force elements about that competence. They will also have to trust one another, recognizing the value of synergistic efforts and their ability to rely on one another to achieve them. They will need to be supported by networks that allow them not only to share information but also the tools that they need to develop situation awareness and situation understanding. They will also need to task reorganize on the fly. (p. 158)

Although Alberts and Hayes fail to reference this literature,² the organization they prescribe is essentially Brynjolfsson and Hitt’s digital or netcentric organization (see Table 1). I would note here that I do not doubt the fundamental workability of this vision, but I have some reservations about its feasibility. Moreover, these reservations have far less do with the American military than with the impediments to digital organization that obtain in most large-scale public organizations in the United States.

To folks who have learned about the military from old war movies, this may be a startling statement. To those more familiar with the modern American military, however, Alberts and Hayes can be understood as saying that the armed forces as a whole should look more like the Special Operations Command, with its joint headquarters, exercises and training, tactics and doctrine, its relatively high degree of interoperability and equipment standardization, and its tailored task forces, composed of units that are brought together to accomplish a given mission or accomplish specified objectives, and are then reorganized or reconfigured to take on new responsibilities. Further, Alberts and Hayes’ combat and logistics units would look like special forces units: relatively small, highly skilled, multi-disciplinary teams, with a lot of rank, but not many levels of command. This would be a big stretch, but almost by definition not an unthinkable one. I would also observe that the issues raised by this radically different vision of organizational culture

and design are more central to ongoing doctrinal argumentation and debate within the United States armed forces than they are in most federal and state departments and agencies. This volume is, if nothing else, evidence of that fact.

Table 1: Characteristics of Industrial Age and Information Age Organizations

Mass Military	Netcentric Military
Centralized expertise and coordination	Dispersed expertise and self coordination
Vertical integration and channeled communication	Horizontal integration and extensive communication
Large formations	Small formations
Many layers	Few layers
Specialized functional units	General purpose units
Extreme division of labor	Extensive cross-training
Narrow skill requirements	Broad skill requirements
Low training requirements	Very high training requirements
Mass and firepower	Speed and precision
Ponderous	Flexible/Agile
Sequential action and maneuver	Continuous action and maneuver
Heavy reliance on resources held in reserve to deal with the unexpected	Capacity to redeploy quickly
Limited situation awareness	High degree of shared situation awareness
Formal relations with subordinates, supporting units, and suppliers	Long-term, trust-based relationships
Low emphasis on social learning and information sharing	High emphasis on social learning and information sharing
Slow to adapt	Quick to adapt

The fundamental weakness of Alberts and Hayes’ vision lies in their failure to confront the institutional impediments to implementing it. They finesse the problem of getting from here to there via two critical assumptions. The first is that GIG will be constructed pretty much on time and on schedule. The second is that the American military will continue to experiment with netcentric warfare/organization, that its basic principles will be vindicated, and that this vindication will lead to consensus as to which practices matter, the recognition that these practices must be adopted together, as part of a complementary system, and, ultimately, to the willingness of people at the top of the uniformed services to put the digital organization into effect, even if that means sharing authority.

So far, development and deployment of the GIG is pretty much on schedule. This success largely reflects the military’s willingness and ability to lavish resources on what is essentially an unproven concept. Few if any other organizations could afford to be so extravagant. The one area in which the GIG is admittedly behind schedule is in protecting the space-based segment of the GIG from attack, especially its resiliency in the face of

information attack. This is not now a primarily a money problem. Rather, it seems that the military has so many platforms under development that there simply aren't enough skilled aerospace systems engineers to go around. Since many of the platforms under development reflect the assumptions of an earlier era, one might conclude that this constraint is merely a harbinger of more serious conflicts to come.

The simple fact of the matter is that the defense department's resource allocation process, like governmental budgetary processes in general, is incremental in nature. Existing budget processes are far better at preserving the human, material, and technological capacities of institutional arrangements and functional communities than at creating new ones. That conclusion holds *a fortiori* where it is necessary to scrap the old to bring into being the new. For the next few years, the American military can continue to pursue parallel tracks to the future, what Alberts and Hayes refer to as the modernization track versus the transformation track, but at some point migration paths from one track to the next must be put in place. Alberts and Hayes seem to agree, they argue that (224):

[C]apabilities are usually a product of DoD's stovepiped planning, budgeting, and acquisition processes (all of which are material-dominated) and a requirements process that is backward looking. While power is currently distributed, being vested in the Services and Agencies, this power topology is clearly antithetical to jointness and far from the warfighter edge. Over the years, there have been numerous attempts to improve the system to make it more joint and responsive to warfighters' needs. To date, these efforts have been only marginally successful because they have not fundamentally transformed these processes into edge-oriented ones. The adoption of an edge-oriented approach to the main function of DoD, the conduct of military operations, demands that these supporting processes be transformed as well.

In other words, given existing budgetary processes, it's not certain that we get from here to there. The Air Force, which has thought long and hard about the need to make the transition to a space and air force, still hasn't figured out how to change its resource allocation process to make it actually happen (Barzelay & Campbell 2003). What Alberts and Hayes propose looks a lot harder.

More significantly, the problem of organizing to exploit the power of the web is one that government organizations everywhere must eventually confront. Furthermore, in a recent, comprehensive assessment of administrative practices, Carolyn Heinrich and Larry Lynn (2005) conclusively demonstrate that government has been particularly resistant to the adoption of digital organization. They conclude that administrative practice is definitely not "shifting from hierarchical government toward greater reliance on horizontal, hybridized, and associational forms of governance." Indeed, they speculate that the American "system of constitutional authority ... is necessarily hierarchical."

I am somewhat less pessimistic than Heinrich and Lynn. My own research interests predispose me to believe that existing budgetary and financial reporting processes are the master decision-making institutions of American government. They are, to be sure, inherently flawed. Until they are fixed, it will be hard to get there from here (Thompson, 1994). But, comprehensive, annual cash budgets are not really part of the American system of constitutional authority. They could be and have been changed. Besides, smart

leaders can often improvise successful workarounds in the face of even the most obstinate institutional constraints (Barzelay & Thompson, 2006).

Endnotes

1. Dr. Alberts is Director, Research and Strategic Planning, Office of Assistant Secretary of Defense for Networks and Information Integration. Prior to this he was the Director of the Center for Advanced Concepts and Technology and the School of Information Warfare and Strategy at the National Defense University.

2. Indeed, as an anonymous reviewer perceptively observed: “The book is replete with unsubstantiated claims about organizational behavior with at best anecdotal evidence, but no case research or empirical evidence to support the assertions. (Chapter 7 is perhaps the best example.) While discovering the evidence themselves may not be vital, the authors’ fatal flaw is that neither do they rely on vast, relevant literatures. There are insufficient references to organizational theorists (how do you talk about organizational structures with only passing reference to Mintzberg?) and no reference to social network theorists, particularly those who study the public sector (one cannot find in the book mention of works by Agranoff, Meier, Milward, O’Toole, Provan, or Scott).”

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