Scientist, Politician, and Bureaucrat Subcultures as Barriers to Information-Sharing in Government Agencies

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Abstract

This paper is based on an exploratory, interdisciplinary study of issues related to information-sharing within and across three public agencies. We build on Schein's (1996) work to identify three subcultures within the public sector (bureaucrat, politician and scientist).. We propose four types of systems (social, constituency, technical and organizational) related to the information and decision-making needs and processes within subcultures. We use two cases from the study to illustrate some key points about information-sharing across sub-cultures, and close with four challenges in need of further study to enhance the abilities within the public sector to appropriately and effectively share information.

Introduction

New and existing information systems have significant potential to help government agencies address complex societal problems, but such systems are often stymied in their implementations and only partially able to deliver on their full promise. Traditional wisdom points to cultural differences between government agencies and a resulting lack of trust as key barriers to information sharing. A less well-understood barrier to information sharing lies in the occupational subcultures found within agencies. These subcultures grow out of the occupational communities (e.g. scientists, planners) from which they draw their members rather than the history of anagency. The information-sharing needs and behaviors in an agency are driven as much by the characteristics of these subcultures as by the overall agency culture.

In thinking of information-sharing as a value chain, it is important to recognize that each subculture tends to collect and request different kinds of information, use different systems for interpreting such information, and produce different types of information to suit its purposes. Information technologies will be of limited help until these different practices are recognized and efforts are made to communicate and coordinate needs for information within and across these subculture boundaries. Building on Schein's (1996) observations about occupational subcultural differences in private sector organizations and their dampening effect on organizational learning and innovation, we offer a conceptual framework for thinking about public sector intra-agency information sharing.

The framework emerged in part from an exploratory study of facilitators and inhibitors to information sharing across federal agency boundaries.[1] The study was part of an interdisciplinary project bringing together computer scientists, environmental scientists and organizational scientists to create a forest information portal to facilitate access to scientific knowledge about forests in order to enable better natural resource management decisions. The study used theoretical sampling to identify a cross-section of key informants within three federal agencies with distinct roles in natural resource management: U. S. Department of Agriculture Forest Service, the U. S. Department of the Interior Bureau of Land Management, and the U. S. Department of the Interior Fish and Wildlife Service. Methods included analysis of archival documents and critical incidents interviews about informants' past experiences with information sharing across agency, expertise, and hierarchical boundaries.

Public Sector Subcultures: Bureaucrat, Politician, and Scientist

The notion of organizational culture has its roots in social anthropology. A culture is "a set of basic tacit assumptions about how the world is and ought to be that a group of people share and that determines their perceptions, thoughts, feelings, and, to some degree, their overt behavior." (Schein, 1996, p. 12) Different cultures emerge within organizations that reflect the differing experiences of individuals at different levels within the authority hierarchy (for example, senior executive culture in contrast with operator culture) and by the different functional specialties within the organization (for example, engineering culture in contrast with accounting culture or sales culture).

Cultural differences between and within organizations act as a barrier to effective communication and sharing of information needed for decision-making. If individuals do not understand and trust one another, they are less inclined to a free sharing of information, even information that may be relevant and necessary to the successful management of the organization as a whole. Schein (1996) argues that mismatches between three subcultures within private sector organizations (operator, engineering, and executive cultures) make it difficult to sustain and diffuse organizational learning and innovation.

In contrast, the public sector brings together different occupational subcultures and world views (see Figure 1). Governments in democratic societies are, paradoxically, simultaneously:

- democratic systems in which the political majority is charged with exercising responsible stewardship of public resources in the interest of society as a whole, attempting to balance competing claims and protect fundamental interests of political minorities;

- political arenas in which people with competing interests negotiate publicly and scheme privately over desirable allocations of scarce resources, trying to achieve outcomes to benefit particular group interests; and

- scientific crucibles through which new knowledge is generated, with government as the largest and most influential producer, financier, and consumer of scientific research.
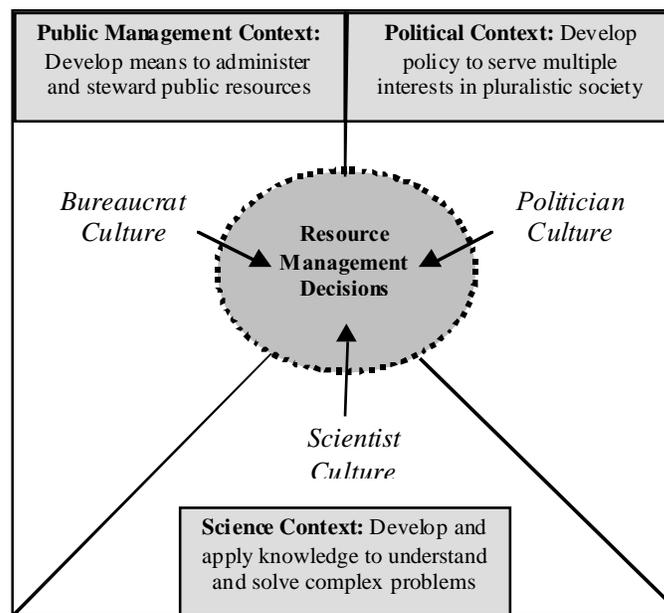

Figure 1: Public Sector Organization Subcultures and Decision-Making in a Democracy

We turn now to look at each of these three organizational subcultures within public sector organizations as dominant influences on decision-making processes. The **bureaucrat subculture** is the culture of the public servants who manage the day-to-day operations of public services and make decisions about the allocation of public resources. Bureaucrats build and maintain systems of public service, with a focus on how operations can be made more efficient and how public resources can best be used. There is an explicit assumption of non-partisanship and a sense of being entrusted with responsibility for public resources. A the same time bureaucrats work within the reality of organizations that are funded through partisan legislative appropriation and charged with designing and implementing rules and regulations in support of a partisan executive-branch who generally appoints the most senior manager of agency. Thus, bureaucrats must enforce laws and regulations that reflect changing political preferences and biases.

The **politician subculture** is embodied by the appointed leaders who manage the political processes and tensions inherent in enacting directives from the three branches of government, managing on behalf of various interests and the public good, and providing leadership within their agencies. In a pluralistic society where different groups have competing, often irreconcilable interests, politicians are charged with choosing which public interests are served. Members of this subculture operate at the level of policy, a long-term investment, even as they may serve at the whim of the ever-changing executive branch. Advocacy, negotiation and compromise are the primary processes by which public resources are allocated. The question of who benefits and who loses cannot be ignored within the politician subculture.

The **scientist subculture** links together scientists and other technical specialists in public organizations with other members of their world-wide occupational community and reference group. Similar education, socialization and training together with far-reaching labor markets enable scientists to hold values, beliefs, and assumptions that often have more in common with fellow scientists around the world than with bureaucrats or politicians in the same agency. The characteristic scientist worldview relies on the scientific method of selecting, collecting, and analyzing data in order to understand underlying processes and phenomena, build upon existing knowledge and seek improved solutions to societal problems. Public sector scientists operate within this subculture and as a member of a particular discipline, but also must work within current regulations, laws and agency mandates.

Members of different subcultures tend to view the world from distinct points of view. These mental models influence perceptions by determining which aspects of the world around us are attended to and which slip by unnoticed. Individuals are often not aware of their mental models or of the degree to which others might see the same situation differently. One's mental model is often experienced as "the way the world is," based on deeply held assumptions bolstered by past experience. The differing values, world-views, and mental models of each subculture can make information-sharing across subcultures difficult. Individuals in one subculture are less likely to know what information others might need from them, to trust the quality of the information received from members of other subcultures or to know how to frame requests for information in a way that would result in a satisfactory response.

We hypothesize that these differences also are a result of fundamental differences among the subcultures in how they view information. Members of bureaucrat subcultures tend to see information as a *commodity* to be managed effectively as the foundation for administration; members of scientist subcultures tend to see information as a *community* found in bodies of research, collegial relationships; and within the field as the source of knowledge to solve problems, and members of politician subcultures tend to see information as a *currency* to be gathered and used to serve political and strategic objectives (see Figure 2).

We also propose four types of systems for analyzing the information needs and processes within subcultures The first two, *social* and *constituency*, are found within each subculture; the second two,

technical and *organizational*, are found within the overall agency. (1) Each subculture has its own **social systems** that reflect the values and practices of its members. These systems include networks, professional development associations, educational and socialization systems, etc. Social systems are important since non-technical resources such as networks of affiliation and trust are at the heart of successful information-sharing. (2) Each subculture also has its primary **constituency systems** to serve. There are glaring differences among the constituencies across and within subcultures, as can be seen in the Politician subculture where appointed leaders must serve the public, special interests and the three branches of government. Constituency systems operate inside and outside of the subcultures and the overall organization, and there is a two way flow of influence between agencies and constituents within each subculture. (3) Within an agency, *organizational systems* includes the processes, practices, and people that make up the infrastructure and shape the culture in support of information-sharing and decision-making activities. Each subculture has its own relationship to and relative influence on the overall organizational system (4) Every agency has developed *technical systems* to enable and support knowledge-sharing and decision-making. Each of the three subcultures tends to interact with technical systems in different ways and have a dominant approach to data and information within these systems.

Specifically, with regard to the *technical systems*, the politician subculture focuses on aggregating data to serve many of its purposes. The scientist subculture focuses on disaggregating data to meet its various research pursuits. The bureaucrat subculture focuses on operationalizing data in order to serve its administrative functions. Each of the three subcultures also has differing primary information activities. The politician subculture engages largely in reporting and justifying activities. The scientist subculture engages in researching and information/knowledge-creating activities. The bureaucrat subculture engages in documenting and implementing activities. These differing information activities make information-sharing and technological support for information-sharing a challenge across subcultures *within* agencies, not to mention the challenges for information sharing *across* agency cultures.
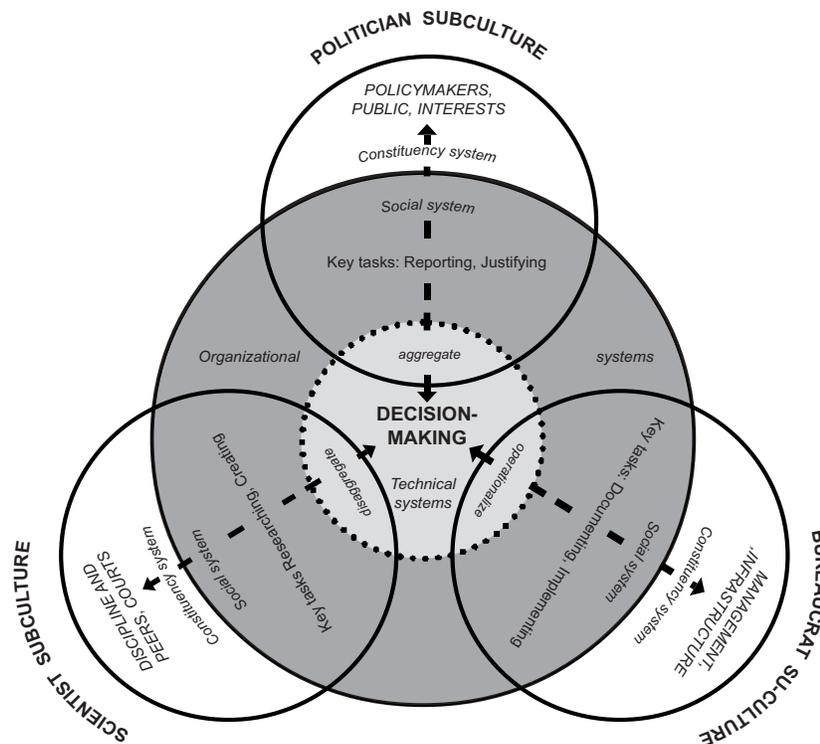

Figure 2: Four Types of Systems Within Public Sector Organizations and Subcultures

Case Illustrations

A closer examination of two recent natural resource management situations illustrates the potential usefulness of the conceptual framework for analyzing and improving cross-subculture and cross-agency information sharing efforts. Both involve interactions between representatives of natural resource management agencies who decide which actions should be taken on publicly-owned lands (for example, the U.S. Forest Service and the U.S. Bureau of Land Management) and regulatory agencies who must enforce regulations protecting specific public interests (for example, the U.S. Department of Fish and Wildlife and the U.S. Environmental Protection Agency).

The first example shows the challenges of creating appropriate systems for information sharing across and within agencies. The U.S. government was sued by environmental groups charging that specific federal timber sales were in violation of the Endangered Species Act. The government was ordered by the court to show how they had used the best available science in analyzing the impact of the timber sales on the habitat of certain endangered species. The task facing the government agencies involved was to show a consistent pattern across the hundreds of scientific analyses that formed the cumulative record of decision.

Individual scientists had used well-accepted methods of data collection and analysis, and individual bureaucrats had made resource management decisions based on the scientific analyses, but the individuals had scientific training in different relevant scientific disciplines, and used different processes for compiling and recording their data, analyses, and recommendations. Some agencies with a strong culture of decentralization discovered that even scientists with very similar roles but in different geographical locations accomplished their task very differently. The challenge of showing the consistency across all the habitat analyses was enormous.

From the point of view of managers within the bureaucrat subculture of each agency, the future use of a standardized information system would be an obvious solution. The new problems that would be created by the creation of such a standardized database include only partial data being available about any particular plot of public land, and that partial data came from different agencies, from scientists with different discipline trainings, with different preferred criteria for evaluating the quality of a plot of land as habitat for a particular species. All agencies were operating in a resource-constrained environment, so funds to design and implement a new information system would mean tradeoffs with other activities. More specifically, the individuals who collected and analyzed biological data were themselves operating under resource constraints, so just because a certain standardized set of data had been identified as desirable to collect did not guarantee that individual employees would have the time, skills, and other resources to collect and record the data.

The focus on the scientist and bureaucrat subcultures' responses to this organizational challenge ignores the larger political context of this example. The Endangered Species Act was enacted into law in a certain political context to achieve certain ends. More than a quarter century later it has become one tool used by various political interest groups to achieve disparate objectives. Different methods of gathering, recording and analyzing data about public lands may provide stronger or weaker support for various management decisions and outcomes. This is not readily acknowledged because of norms of impartiality within both scientist and bureaucrat subcultures. Habitat and the current scientific understanding of what leads species to become extinct are complex subjects, and it is difficult for politics not to emerge as a subtext.

Challenges for Information-Sharing and Decision-Making in the Public Sector

We identify four main areas of challenge and opportunity in looking at issues facing the public sector around information-sharing and decision-making within and across agencies. These preliminary thoughts are based on our initial research as well as years of experience working with various public sector organizations on information-sharing issues. The four areas are meant to serve as a starting point for a rubric that could be used within public sector organizations and by outside constituencies to assess an agency's past projects, current capabilities, and future plans in the area of information-sharing.

Data is political. All choices about data and data systems are predicated on a political stance and create political consequences. The health of a democracy and the robustness of the public sector require a system of checks and balances within the system so the necessary information is shared and the best decisions are made. It is important to address the issues that arise within an agency or across a system when one of the sub-cultures becomes dominant.

Information is structural.
The design of any information technology system or social system affecting knowledge-sharing needs to account for any likely, significant downstream implications of the choices made. As part of these considerations, choices must be made that weigh the needs for freedom of information flow and the needs for effective, collective action. Agencies need to identify the transaction costs for information-sharing across boundaries and the resources necessary to accomplish these exchanges.

Knowledge is cultural.
Each of the sub-cultures has different pressures, mandates, and goals for its work, and as a result it has different informational requirements. The Politician sub-culture is charged with managing the diverse demands of interest groups within a pluralistic society. The Scientist sub-culture is organized around the development and application of knowledge to complex problems. The Bureaucrat sub-culture is entrusted with responsibility for public resources. Each of the three sub-cultures has different kinds of data and information it tends to collect, different rubrics it uses for interpretation, different knowledge bases and languages it draws from, and different needs it has for information to be shared with its constituencies.

Wisdom is relational.
Each sub-culture tends to operate from different worldviews, values, mental models, and identity, and as a result relationships and communication across these social boundaries can be challenging. These challenges often take the form of disconnects resulting from the fact that one person's wisdom is another person's data. It is important to develop the human relationships and communities of practitioners to mediate among sub-cultures and information technology systems.

The next step in our research will be to identify more fully the means by which these challenges have been and could be addressed in order to facilitate more effective information-sharing. We are at a critical juncture in terms of addressing these issues as the nation continues to wrestle with rapid advances in technology, the desire for more effective information-sharing within a democratic commitment, the need for enhanced collaboration among agencies and other partners in order to work on complex issues, and the growing politicization of information. There is a pressing need to understand the balances necessary between technical and non-technical approaches, the prerequisites for freedom and the needs of the collective, and the mandates and values of each sub-culture with the others. Research on information-sharing is one key element in seeking these balances for the public good.

References

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