

Discovering Information Behavior in Sense Making.

II. The Social

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This article, the second of three, used the methods of ethnography of communication to explore the social elements of information behavior in sense making of participants in the annual work planning of a unit of a public agency. In particular, this article focuses on the role of information in the sense making that took place from the point of view of the organization and other social communication aspects of work life. The organizational sense-making analysis considers the instantiation of various properties relating to the organization's strategies for survival (identity), history (retrospect), and relations with its environment (extraction of cues). Taken together, the instantiation of these properties structures and supports what, where, when, why, and how information behaviors are employed in sense making. Also considered is the social role of various communicative events (e.g., meetings, conversations, written messages) in the sense making of the parties to the work-planning task. Communicative events also provide situations for and constraints on the role of information behavior in sense making. A fundamental finding is that the participants in the work-planning process did not think of information or actions to collect, process, or use information as something separate from the task or problem at hand. Attention to this fact suggests that information systems that exist to support tasks in social settings need to be integrated into organizational or institutional designs. Otherwise, such systems are likely to exist, consume resources, and divert attention away from the basic issues, problems, and sense making of tasks and situations.

Introduction

This study is being reported in three parts for several reasons: to provide the rich description that is the hallmark of ethnographic research, to provide details of the data and analysis necessary to allow readers to make their own interpretations and judgments, and to highlight possi-

ble impacts of several different research views on information behavior in relation to other aspects of people's lives. Part I (Solomon, 1997a) provides an overview of the conceptual foundations, background, and methodology covering all three parts as well as the time and timing view. Part II, provided in this article, considers the social by focusing on organizational properties of sense making and the communicative events that support the creation of common ground and the development of meaning from often widely dispersed facts and points of view. Part III (Solomon, 1997b) considers patterns of individual sense making that influenced the work-planning process as well as a conceptual synthesis of all three parts. The whole of the study is brought together briefly in Solomon (in press).

The study as a whole sought to explore the role and place of information in the annual work planning of a unit of a public agency. This organization provided technical assistance related to conservation and appropriate use of natural resources such as rivers, trails, and open space. Provision of assistance was dependent upon the largess of the legislature. Thus, the work-planning process was uncertain in that there was no assurance of funding until funds were actually appropriated, let alone what the level of funding would be if funds were provided. The process, thus, was one of obtaining technical assistance project proposals from regional offices and, then, evaluating and ranking those proposals so that the "best" projects would be funded and work begun. The study continued over three annual iterations of this work-planning process to understand how the advance of time and resulting changes from year to year influenced information behavior.

The methods employed were those of ethnography of communication (Saville-Troike, 1989). I was involved as a participant observer during the process. My role was one of record keeping and facilitation. This role enabled me to collect information, record and observe meetings and other communicative events, ask questions, and otherwise collect the data underlying the analysis. It also

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limited my influence on the process, as I only collected information about the process and did not directly collect, process, or use the information for work-planning purposes.

The analysis was typical of a qualitative study in a naturalistic setting. Basic data were collected including field notes of observation sessions and interviews as well as logs maintained by participants and the products of the work planning process (WPP) (e.g., memoranda, database reports, handouts). This basic data was expanded with my annotations, reactions, and questions. These field notes and their expansions were also coded using categories that were evident in the data. Each effort to reflect on observations, interviews, or documentary evidence was, in turn, employed to guide future observations, interviews, and documentary analysis. Further details of the background of this study, its methods, and analytical approach may be found in Solomon (1997a).

Two primary themes that provide evidence regarding the social aspects of information behavior in sense making are considered in the remainder of this article. The first provides an organizational view; the second investigates the role of communicative events in sense making.

Organizational View

The question of how an organization influences the sense making of its members motivates this section. Weick's (1995) treatise *Sensemaking in Organizations* provides a conceptualization of sense making that includes seven properties: identity, retrospect, enactment, social, ongoing, extracted cues, and plausibility. The following introduces these properties and uses them to create a profile of the study unit's organizational sense making.

Identity

Identity is both a process that differentiates one organization from another and a statement of what those distinctions are. An organization's identity in both process and substance is likely to evolve over time. Thus, one focus for describing organizational sense making involves understanding the process and substance of an organization's identity: Why does the organization exist? How will it perpetuate its existence? To what extent do the members of the organization have a common sense of organizational identity? How has the organization's identity evolved?

Several years before the beginning of this WPP study, the study unit was created to perform the ill-defined mission of providing technical assistance in the natural resources area. This was initially translated into a four-pronged effort to provide information services, training, self-help publications, and demonstrations of model conservation strategies. Each of these technical assistance strategies received good reviews from those who benefited. Yet, when a new administration, bent on decreasing

spending, came into power, it became clear that demonstration projects offered an effective strategy for generating support for funding in the legislature, because the projects were tied to physical land and water resources, which were associated with the political constituencies of members of the legislature.

There was also a tradition within the study unit of employing information about the environment that allowed it to survive and flourish in the face of strongly negative forces by adapting the organization's identity in the face of environmental change. For example, many of the study unit's staff built bridges with other organizations that brought important contextual information to the attention of management.

Beyond this external orientation, there was also another thread of sense making and identity within the study unit. The organization emphasized production or what came to be known as "conservation successes," where the idea was that, beyond co-optation of members of the legislature by proposing projects in their districts and cooperation with public interest groups, ultimately a record of performance was necessary for survival. In sum, the study unit created its identity by focusing on these two themes of adaptation through cooperation and demonstration of success through production.

Retrospect

Organizations make sense of their current situation by looking backward and revisiting past actions and their success. This retrospective look limits what aspects of the past are recalled as it is anchored in the current situation. Thus, memory of the past is limited both by what has been recorded and by the current situation. Such tendencies or biases in decision making as adjustment and anchoring, availability, and representativeness (Tversky & Kahneman, 1981) seem to influence the retrospective property of sense making. Retrospect also seems to promote the development of common ground among organizational members in an attempt to reduce equivocality about preferences, priorities, and values. Those tried and true strategies that an organization and its members employ are instances of retrospect.

The study unit's emphases on cooperation and production both have their roots in the past. The major change in these strategies over time involved movement from employing them both internally and externally to discovering that their external application produced the greatest long-term benefit. This shift in strategy became necessary when the study unit was incorporated into a new, but reluctant parent organization.

Enactment

Enactment refers to the efforts of the organization to produce its own environment. When people follow through on their sense of the situation and act on their

interpretations, their actions influence what happens in the future. Thus, enactment is a dynamic property that tends to lead to evolution in sense making.

Enactment was evident in many aspects of the WPP. For instance, discussions with legislative staffs by study unit members or cooperators raised awareness of the positive impacts of the study unit's programs. These discussions also modified the legislature's expectations regarding the study unit's future activities. Enactment also was evident in the criteria employed during project selection and in the evolution of projects selected. Later projects tended to be much more complex than earlier projects, involving, for instance, multiple resources, technology, and more ambitious scope. The learning and interpretation that occurred during early projects influenced the acceptability of later projects.

Social

Socialization, reference groups, norms, roles, formats, standards, communicative events, patterns of communication, and the like influence perceptions and interpretations. Thus, an important property of sense making relates to the slant—positive or negative—that is imbued by the social system.

Evidence of the development of shared meaning within the study unit during the WPP was rare. Even when project selection criteria had been established, different WPP participants had very different understandings of what these criteria meant. Yet, the transactional and authority roles that the different participants in the WPP played forced shared action: one person needed to collect data before it could be processed and reported. Someone else might need to analyze the reported data before developing recommendations. Several parties might discuss the recommendations and propose modifications or fine tuning. One participant then might draft a memorandum, which would be reviewed by several others before it was signed and transmitted. In short, one participant's work outputs provided inputs and stimulus to someone else's.

Action without shared experience, however, frequently led to false starts or interruptions during the WPP that, in turn, contributed to frustration and anxiety across the participants. For instance, those involved in work-planning discussions often communicated at crosspurposes. In contrast, interorganizational relationships were very successful in producing shared commitment and, consequently, action. These sharing mechanisms bridged organizational boundaries to tie together the study unit's staff with staff members of cooperating organizations. This cooperation seemed to result from common aspects of education, professional experience, and even leisure time pursuits. These people spoke the same language and played the same language games (Mauws & Phillips, 1995; Wittgenstein, 1958). For instance, the hiker found it easy to communicate with the hiker; the kayaker with the kayaker; and the canoer with the canoer. Thus, the

process of agreeing to act seems to benefit from common experiences, shared understandings of terminology, and the mutuality of goals.

Ongoing

Beginnings and endings in organizational life are obscure in comparison to continuing projects and tasks. Interruptions and shifts from one project or task to another are common. These interruptions in turn contribute to emotions: sometimes positive ("I'm glad to get away from that report for awhile. I really like these crash projects where I get to call up folks in the regional offices.") and often negative ("Everytime I get close to finishing, there is another change in direction . . .").

The transactional interactions of participants in the WPP were a force for sense making's ongoing nature: these interactions provided an impetus for movement through the process and changes in direction that were proposed in response to signals from the organization's environment. Interruptions, however, often disturbed the flow of action. Thus, the study unit was concerned with both (1) task completion to demonstrate success and (2) environmental scanning and adaptation to respond to the interests of those who control or influence funding. Both of these ends were important for the study unit's survival. Yet, the interaction of the two strategies led to conflicts and interruptions in the ongoing nature of the process.

Extracted and Enacted Cues

Evidence that an organization's world is changing is extracted from the information gleaned through the contacts of its members with the members of other organizations or through scanning, browsing, or use of various information systems that gather, store, and provide access to information about environmental influences. These extractions, in turn, may lead to enactment of adaptations that spur further extractions and enactments.

The previously mentioned interorganizational relationships provide a well-developed mechanism for keeping a finger on happenings that were likely to influence the study unit's funding. Strategy discussions involving all WPP staff revealed that there were a variety of potential cooperators with whom mutual relationships did not yet exist. This movement to consider unconventional allies was useful in expanding support. Alternatively, attempts to develop connections with potential cooperators might divert resources from the ongoing. These factors led to attempts to expand cooperative relationships, but in a very selective and focused way.

Plausibility

Sense making relies on reasonableness rather than accuracy. Plausibility potentially provides more of a bridge between current understandings and past history to ex-

tracted cues than does accuracy, which may only deepen the gap between past, present, and future. In short, sense making seems to be built on a plausible story, not necessarily one that is entirely accurate or that comprehensively includes “everything under the sun.”

Such cues were usually processed with little effort towards confirmation. For instance, in reacting to the report of a rumor, the study unit’s Chief noted that:

The fact that [someone] passed that comment is reason enough for concern. Even if it is not true. A perception of truth can hurt us.

Thus, organizational action was frequently predicated on unverified reports in an attempt to counteract any possible negative reactions on the part of legislators or cooperators.

Organizational Sense-Making Properties and Information Behavior

Weick (1995) indicates how these seven sense-making properties might interact:

Once people begin to act (enactment), they generate tangible outcomes (cues) in some context (social), and this helps them discover (retrospect) what is occurring (ongoing), what needs to be explained (plausibility), and what would be done next (identity enhancement). [p. 55]

The following summarizes how the seven properties interacted in the WPP:

Based on comments from representatives of the legislature and public interest groups (extracted cues), the action to pursue a project approach to technical assistance was used to inform others (enactment) of a potential for interaction and impact (social) where previously successful and unsuccessful experience (retrospect) was employed to design procedures (ongoing), suggest program impacts (plausibility), and market the program (identity).

These seven properties fit together to form the organization’s collective sense of itself, which constrained the way that the study unit’s members operated.

These constraints and limits to action consist of both conscious and unconscious rules of behavior that are organizationally defined. In the case of the WPP such rules of behavior severely constrained how participants found meaning and, thus, what constituted appropriate sources of information. For example, while informal personal sources were used extensively, formal written sources were seldom consulted. The only exceptions were budget documents and legislative reports, which codified executive and legislative actions.

In responses to questions on this preference for personal sources, study participants indicated their assessment that personal sources were more current than written

texts, that people could be questioned about ambiguities or misunderstandings, and that cues provided by personal sources such as voice and body language provided clues regarding accuracy and truthfulness that were not available in a written text. While this tradition might be construed as cutting the organization’s sense making off from potentially important information regarding the sites of candidate conservation assistance projects, the history of previous conservation efforts, and other contextual information, participants indicated that they were aware of such additional sources and their possible value. They suggested, however, that time and their already extensive workload prohibited inclusion of further information sources.

Overall, preferences for sources of information are not so much selected as defined as appropriate organizationally for a constellation of reasons related to Weick’s properties of organizational sense making. For example, extracted cues from certain sources (e.g., the legislature) were valued, while others were ignored (e.g., the parent organization). This suggests an important insight: the character of information behavior is shaped by the organization’s sense-making tradition. An analysis of histories of many failed and successful organization might indicate patterns of success and failure related to how common ground is achieved, meaning is interpreted, and conflicting facts are evaluated (see, e.g., Weick, 1993). In the case here an uneasy alliance of production and survival pressures created a tension that influenced how decisions were made and enabled growth in a time of general retrenchment. Consequently, cues that were ignored by the “producers” were brought to the fore by the “adapters.”

Given this process view of organizational sense making, the analysis now moves to a consideration of the role that various structures, in the form of communicative events, played in the interstices between individual and organizational sense making.

Communicative Event View

In this section communicative events are considered as social structures that people use to make sense individually and collectively. They give life to organizational sense making by extracting and enacting cues, evaluating their plausibility and social impacts in terms of past actions, enacting the new or confirming the ongoing to create identity. As such, communicative events are vehicles for the sharing of experience as well as for expressing and defending positions. The sharing of experience, facts, assessments, positions on issues, and “war stories” applies the seven sense-making properties to create, modify, or solidify individual interpretations through social interaction. The products of such meaning generation processes as arguing, expecting, committing, and manipulating are the sense made by the participants and incorporated into personal beliefs or translated into structuring actions (Weick, 1995). In a positive sense, when partici-

pants come together to cooperate, communicative events are forces *for* organizational action. In a negative sense, when participants avoid or are blocked from arguing, expecting, committing, or manipulating, time is lost, information is ambiguous, action is blocked, and participants feel frustrated because they “don’t know what’s going on.”

Quotations from participants in the WPP hint at the choices that they made in selecting or avoiding participation in the various communicative events:

Why am I usually late for those meetings? Well, I guess I’m just not into meetings. So much time is spent on the same old stuff. Sometimes I could just scream: How many times do we have to rehash this! It’s like *deja vu*. I can predict what will come up next.

We’ve gone through four drafts of the memo to the regions. I don’t think that he looked at any of them. Then we go for final and he changes the whole approach.

I’d rather wait until they’re not around and leave them notes. Then they can take my comments or leave them and I don’t have to listen to them quibble.

I think it’s better to get everybody together to talk about our different ideas than pass a bunch of paper around.

Individuals create barriers and bridges as they select or avoid communicative events. Organizations are given life by such events (Schrage, 1990). An organization succeeds or fails through its selection and performance of communicative events. The recurring structures of communicative events encourage, restrict, shape, and inhibit organizational action as embodied in recurring processes such as work planning. Thus, these events serve as frames that structure the expectations of participants and guide their communicative contact and resulting actions. These recurring structures are implemented by language and patterns of speech acts, turn taking, openings, endings, interruptions, and the like (Boden, 1994). Ultimately, such events shape the organization’s workflow by conveying its perception of its environment, its operational objectives such as productivity and adaptability, its successes and failures, and its rules and resources that guide in sense making.

While the broad view of time and timing in the structures and actions of the WPP was useful in discerning change and the organizational view provided a characterization of how an organization focuses the sense making of its member, a focus on communicative events provides a way of understanding and describing the way that people develop common ground and shared meaning through their information behavior.

Classification of Communicative Events

Any approach to classification of communicative events emphasizes some matters over others. Two perspectives were employed in the analysis of communica-

tive events during this study. The first, following Eilon (1968), emphasizes kinds of messages, area of activity, message importance, and intent and impact of messages. The other, advocated by Hymes (1986) and known by the SPEAKING mnemonic, provides a framework for ethnographic analysis of communicative events.

Table 1, building upon Eilon’s taxonomy, provides a first cut at identifying the sorts of communicative events that were employed during the WPP. The table also summarizes their strengths and weaknesses as they promoted or degraded sense making and, ultimately, productivity. For the purposes here, Eilon’s distinction of written and oral messages is expanded to distinguish between oral events involving three or more participants as meetings and two participants as conversations. This distinction seems significant as the dynamic of multiple participants in a meeting creates opportunities for shared conversations that enable sense making that were different from the two party conversation.

While there is some overlap, especially in potential, the various forms of communicative events—meetings, conversations, messages and their kinds—tended to serve different functions. For instance, the staff meeting through its round-robin format permitted associations with otherwise independent activities and within the study organization permitted the passing of what often turned out to be important pieces of information or kernels of an idea. For the WPP, the staff meeting allowed participants to raise issues or concerns. These comments, in turn, were taken as queries that elicited both sources and information as possibly relevant: “Have you thought about contacting [deleted]?” or “I heard from [deleted] that . . .”

In contrast, Policy Group meetings focused on particular issues relating to work planning. For this event, information consisted of considered judgments, opinions, and rationales. These forms of information helped participants tie their information behaviors together into characteristic patterns. Understanding and definition as well as planning for information gathering, however, were consistent focuses until the very end of the annual process. While the expectation might be that the emphasis of the discussions within the Policy Group’s meetings would progress over time from definitional and tactical issues to strategic issues of policy and action, they became bogged down in foundational matters. Conditions of uncertainty and ambiguity within the environment of the WPP seemed to be the major culprits in slowing down the process with participants arguing over the necessity of reordering previous commitments. Emphasis on evaluation and use of information only came into play towards the end of the process. Even then, there was an emphasis on individual projects to check on the adequacy of the information that had been collected than on comprehensive evaluation and use.

In turn, memoranda, as products, present decisions or formally ask for something, often requiring the gathering of information. The information content of memoranda

TABLE 1. Communicative events in work planning.

Communicative event	Frequency and situation	Purpose	Strengths and weaknesses
<i>Meetings</i>			
Staff	Biweekly. Length \approx 1 h. Included all Study Unit staff.	Sharing of information; announcement of events. Helped establish expectations and commitment.	Discussion of what is happening and is what is going to happen.
Chiefs	Weekly. Length: \approx 1 h. Includes Chief, Deputy Chief, Branch Chiefs.	General sharing of information and discussion of issues. Work planning was but one topic among many. Argument was the major sense making process. A lack of shared experiences or frames for understanding blocked progress.	Provided a scheduled time for dealing with management issues. Lack of coherence from meeting to meeting. Much wasted time as one participant was frequently late.
Program	Annual. Length: 3 days. Includes all technical assistance program staff from Study Unit and the regions. Cooperators attend portions.	Staff training. Sharing of experiences. For work planning: discussion of policies, procedures, and funding. The shared experience helped to form expectations and commitment to project work standards.	Participants describe the experience as "very intense." Primarily involves exchange of information, but also serves important social purposes.
Conference calls	Ad hoc (4 times per year). 10 to 30 min. Usually included Chief, Technical Assistance (TA) Branch Chief, and regional office program chiefs.	Discuss proposed policy issues and procedures related to work planning. Share information among the regional offices and the Study Unit. Clarified expectations; restricted arguing.	These sessions were very focused on the agenda items and virtually free of "chit-chat." Regional office staff found them particularly valuable as they turned rumor and innuendo into fact.
Work planning—Policy group	Ad hoc (5–10 times per cycle of the WPP). Included three branch chiefs, two staff, and either the Chief or Deputy Chief.	Develop policy details and point-by-point wording of policy and procedure documents. While different points of view were presented during arguments, the ambiguity in terminology and interpretations underlying the arguments blocked action.	There was an inherent conflict between the TA Branch Chief's focus and that of the Chief and other branch chiefs: The TA Branch Chief emphasized details. The others, while interested in different aspects of the process were more concerned with basic policy issues and whether their interests were being addressed.
Work planning—Task group	About 200 h of work per cycle. Team consisted of the TA Branch Chief and two staff.	This team performed the information processing functions of the WPP (e.g., collection, indexing, retrieval, display).	The team's focus on the details of database management limited their ability to accept alternative ideas and interpretations of the information collected.
<i>Conversations</i>			
Face-to-face	Ad hoc (about 65 per cycle). At least one party was a Study Unit staff member; the other could be Study Unit, regional office, legislative, or public interest group staff.	Both face-to-face and phone conversations focused on the transmission or gathering of information. For instance, conversations initiated by study unit staff tended to be about project status. Those initiated by regional office staff tended to ask procedural questions.	An attempt to initiate a face-to-face conversation was often stopped by the absence of the addressee. This situation led to other communicative events: conversations with others, note leavings, retries.
Phone	Ad hoc (about 95 per work planning iteration).		"Telephone tag" was often a problem. When parties connected, it allowed quick handling of matters.

<i>Messages</i>				
Memoranda (on letterhead)	The most formal event (required surmaming by participants and signature by the parent organizations's Administrator). These were either attached to memoranda or passed out during meetings for review.	They communicated policies, procedures, or resource allocation decisions as appropriate for the particular subphase of the WPP.	It took a great deal of time to go through the surname process, which ate into the time that regional office staff had to gather requested information or begin work.	
Guidelines	Project and Project Status Forms.	Guidelines were developed to specify project selection criteria. After their initial development, they were not reconsidered.	The criteria contained in the guidelines were often ambiguous in application, which was subject to misunderstanding, and misinterpretation.	
Forms	Project information, Project allocation lists (25 drafts and final copy)	Information gathering	Extraneous information elements were included. Some key elements were excluded. Information aged quickly.	
Tables	These were informal requests for information, to review a draft, or to schedule a meeting.	Information sharing	Tended to include all information elements and all projects when a subset of information or projects was all that was needed.	
Notes	Three messages initiated by one of the regions. Phone response	They were employed frequently for routine matters or when the recipient was not physically available.	One staff member, in particular, would wait until a recipient had left the office before delivering a message, thus, avoiding personal contact.	
e-mail		Messages provided a response to requests for project information.	Mechanism was clumsy, requiring dial-up to an e-mail service, and transition through an awkward interface.	

included tables of funds allocations and lists of approved work projects, or instructions, definitions, specifications, and formats.

In summary, there was a specialization of functions across the various communicative events. Yet, this specialization was flexible. While any event could support any of the functions or purposes, a particular event (e.g., the conference call) was better suited to support one or two particular purposes or functions (e.g., understand and define, query information sources). As indicated in Table 1, these purposes also influenced what constituted information within the various events as well as what roles the events played in relation to the sequence of information behaviors employed by individuals. Although there was some evolution in the roles that the events played over the course of the WPP, this evolution was not pronounced.

What served as information showed some evolution over time. This evolution, however, resulted more from time running out than progress in committing to action. To complete the circle, information behavior was structured and constrained by the nature of the communicative events. The idealized elements that appear in, for instance, Kuhlthau's (1994) guide to the information search process were all touched at some point in the WPP. Yet, this did not happen in an ideal progressive sequential way. Rather, the sequence placed emphasis on matters that, according to logical process, would have been better treated after other matters. The following comment gives an indication of the impact of starting in the middle:

We decided what information to collect about projects, entered it into the database, printed reports, and tried to use it before we realized that we needed to decide what our criteria should be. Then, we found out that the criteria depended on a whole slew of policy decisions that were different for each of the three branch chiefs.

It is important though that we realize that starting at the end or in the middle is not unusual. A first approximation is taken at a solution. The experience, its results, and next steps suggest gaps that need to be filled or the need for a rationale to gain support. Thus, information behavior associated with this natural action has the character of a trial-and-error learning process.

Model of Interaction in Communicative Events

Hymes (1986) analytical framework highlights key elements in a communicative event. SPEAKING is employed here to help in understanding this trial-and-error learning process. It provides a faceted framework for identifying patterns of behavior within and among communicative events as well as to highlight those factors that need to be considered in analysis (Agar, 1994; Hymes, 1986; Schifffrin, 1994). The elements of SPEAKING are defined as follows:

S cene/setting (physical and subjective meaning of a situation),
P articipants,
E nds (purposes, goals, outcomes),
A cts (message form and content: speech acts),
K ey (tone and manner),
I nstrumentalities (i.e., channel and forms of speech),
N orms of interaction and interpretation, and
G enres (text types)

The SPEAKING framework is used to expose patterns of information behavior during sense making within several classes of communicative events: meetings, conversations, and messages.

Meetings

Meetings have been the “laboratory” of the small group and decision making researchers. They have also received attention in normative works on how to run a meeting. Yet, it is interesting that, while meetings have been employed extensively as tools for research and have been the focus of prescriptions for improvement, there is little research that focuses on meetings themselves as a topic of investigation.

Schwartzman (1989), who studied the meeting in the setting of a mental health organization, is a major exception. She notes that:

. . . a meeting provides individuals with a way to create and then discover the meaning of what it is they are doing and saying. (p. 39)

. . . it is possible to suggest that decisions, policies, problems, and so forth are *not* what meetings are *about*. Instead, we need to revise this view and examine the possibility that meetings are what decisions, policies, problems, and crises are about. From this vantage point, decisions, policies, problems and crises occur *because* they produce meetings and, . . . in certain social systems it is meetings that produce “organization,” . . . (pp. 40–41)

A meeting, thus, becomes both a frame for organizational behavior and a frame for making sense of the current situation.

The remainder of this section contrasts the Chief’s, Work Planning-Policy Group, and Work Planning-Task Group meetings as critical examples for understanding sense making processes. Table 2 summarizes and compares these three types of meetings using the SPEAKING framework.

Setting, Scene. What might differences in space and scene contribute to our understanding of information behavior in sense making? The sites for the Chiefs and WP-Policy Group meetings are bright and comfortable, but are only available for temporary use. Any props must be

removed at the completion of the meeting. The WP-Task Group site has no windows and is cramped. However, the space allowed working materials to remain in place: flip-chart sheets were taped to the wall, files piled on the floor, and papers spread on the table. This allowed continuity over time that was lost in other settings, where a record might have aided in making sense of signals, arguments, and commitments.

Participants. The Technical Assistance Branch Chief was the only participant who was a regular attendee at each of these meeting types. Otherwise, only managers attended the Chiefs Meetings and only workers were present at the WP-Task Group Meetings. The WP-Policy Group Meetings served as a bridge by bringing managers and workers together. This juxtaposition of workers and managers had the benefit of bringing divergent views to the floor and the disadvantage of raising more views than there were participants. Also, while managers tended to be interested in high level issues of program continuity (e.g., funding, completion of conservation projects, relations with cooperators), the staff level participants emphasized details of wording and display. Thus, the WP-Policy Group Meetings tended to bog down in “minutiae.” As one manager noted: “In matters of import, it is form and not content that will getcha every time.” No consensus building or conflict resolution mechanism emerged from these discussions other than that which was forced by the deadline “when there was not enough energy left to quibble.”

Ends. The various purposes of the meetings fit with important aspects of the WPP. Transmission of information from the top down seemed to proceed reasonably well—the products of the Chiefs meetings contributed information to the WP-Policy Group meetings, which, in turn, furnished information to the WP-Task Group meetings. The Chiefs Meetings emphasized the external view—involving relations with and information about external conditions, and set the tone and framework for the WPP in light of what was cues regarding the interests and concerns of the public interest groups and the legislature. The WP-Policy Group meetings elaborated on work planning policy and associated procedures. The WP-Task Group meetings filled in the framework with details and performed information planning, gathering, and processing work.

This progression could not be entirely satisfactory because of the uncertainty and ambiguity inherent in the organizational environment. Over time, as the funding situation and the characteristics of potential projects became increasingly more certain and less ambiguous, resulting revisions to policy, procedure, and external requirements necessitated modifications in information gathering and processing work.

In contrast, staff became discouraged and channeled their frustrations and concerns in a bottom to top way.

TABLE 2. SPEAKING for three meeting types.

Meeting types	Chief's meeting	Work planning—Policy group meetings	Work planning—Task group meetings
Setting, scene	Chief's Office. Informal around table with plants and natural light from large windows.	Hearing room with impressive judicial bench, comfortable chairs, and table large enough to accommodate all. Formality of the space seems to carry over to the meeting.	Storage area converted to meeting space with large table; cramped; bare walls covered with large sheets of flip-chart paper.
Participants	Chief, Deputy Chief, Branch Chiefs, or their stand-ins	Branch Chiefs or their stand-ins (TA Branch Chief served as chair); Chief or Deputy Chief; and staff (2).	TA Branch Chief and staff (2)
Ends	Overt. Share information; consider alternative scenarios and outcomes; modify strategies to meet external exigencies. Covert. Manipulation of outcomes.	Overt. Establish work planning policy and procedures. Covert. Conflict in focus between task group members (meet deadlines, follow agreed upon procedures) & other participants (reconsider approach based on changing conditions and evaluation of conflicting information).	Overt. Gather, edit, organize, enter, retrieve project related information. Check work progress, approach, and adherence to schedule.
Act sequence	Holding pattern to await latecomers; opening by Chief to set initial agenda; round robin discussion of items; control of agenda proceeds around table until all have been heard; summary of follow-up items; closing.	Opened by TA Branch Chief, usually by commenting on delays, frustrations, etc., which sets a negative tone; sets agenda and asks for additional items; works through agenda; interruptions to make points are usually greeted by a stern reminder to get back to the agenda; round the table discussion of policy and procedural issues; closing.	Initiator opens with statement; others request clarification or make comments; work samples are introduced; consensus is reached as to approach; frustration and annoyance are expressed due to changes in policy direction or delays; summary of resolution or follow-up; closing.
Key	Relaxed, open, frank.	Serious; brusque, tense punctuated with humor, whining, righteous indignation, and other rhetorical devices.	Low key and open with some whining.
Instrumentalities	Verbal, nonverbal, memos.	Verbal, nonverbal, lists.	Verbal, nonverbal, lists.
Norms	Minimal attention to authority structure; multiple viewpoints; devil's advocate evaluation of scenarios; emphasis on future.	Rational, considered, in-depth review of policy and procedures, which creates a tension with those who offer approaches to meet the changing situation.	Methodical, systematic, and thorough coupled with resistance to change.
Genre	Quotations, strategies, invective, jokes, stories.	Lists, drafts of memos and policy guidelines, quotations, concerns, and strategies.	Lists, reports, forms.

The following comment is expressed during a WP-Policy Group Meeting in Year 3:

TA Branch Chief: In a very disquieting way yesterday I had this memo ready to go out to the regions. I don't know what the story is, but at the end of the 15 minute, discussion, I wasn't sure what he [the Chief] wanted. Oh, I don't know . . . So, I'm just gonna go back on first and then we can discuss whatever comments, questions, and concerns people have. Definitions are the first thing that we wanted to go through just so we can be uniform for the managers.

This display of frustration and retreat to minutiae seemed to be motivated by the interruption of the flow of work and ambiguity regarding the Chief's objectives. This branch chief's solution was to ignore the confusion generated by the conversation with the Chief and proceed through the unacceptable memo line by line.

Frustration breeds frustration. Participants at the managerial level became impatient and concerned with the amount of time that the WPP process consumed. The following quote from the Deputy Chief in follow-up to the previous quote expresses bewilderment and concern with the focus on definitions and line by line analysis of the draft memorandum:

Deputy Chief: Before we get into this line by line thing, do you want me to express the concerns that [the Chief] has at this point?

TA Branch Chief: Absolutely. Oh, you want to . . .

TA Branch Staff

Member: During this meeting?

Deputy Chief: Yep. If we buy [the Chief]'s message then this memo will be one-quarter of what it is now and there will be that many fewer lines to go . . . through. He is concerned with the amount of time this is taking and with what we are asking the regions to give us. His basic question is why are we asking for all this stuff especially about new projects when there quote: 'ain't a snowball's chance' that we're gonna be able to fund them?

Thus, the ends or purposes of the WPP were operationalized in different ways through these communicative events, with the WP-Policy Group meetings serving as a sort of battle ground for the external view of the Chief's meetings and the internal view of the WP-Task Group meetings.

Act Sequence. Analysis of the patterning of conversational units and topics within these three meeting types offers the possibility of insights into how information is introduced, challenged, verified, and used as a sense-making resource. Comparisons among, for example,

openings, closings, overlaps, interruptions, misunderstandings, turn taking, topic shifts, and coherence mechanisms provide clues as to how the meeting creates or stops cooperative action. The discussion here focuses on information management strategies.

The role of topics and the ease of changing topic varied considerably across the three meeting types. The Chiefs' meeting was by design a multitopic event. Typically, each participant had a turn to bring up matters of interest usually in order around the table starting with the Chief. Thus, each participant would introduce their matters at hand in sequence and lead the discussion or answer questions as appropriate. Shifts from this pattern occurred frequently as someone would say: "related to that is . . ." and introduce a related topic out of turn. The sum total of this process allowed individuals to argue their positions, raise questions where expectations were challenged, manipulate the situation to promote desired actions, and commit to a position.

There were two patterns in the WP-Policy Group meetings that depended on the impetus for the event: top down or bottom up. The top down events were generally motivated by and led by the Chief and allowed freewheeling discussion of likelihoods and strategies. Alternatively, bottom up events were motivated by the products of the WP-Task Group and were led by the Technical Assistance Branch Chief. In this case, attempts to change the topic and deviate from the systematic movement through task lists or lines in a memorandum were usually ignored because of the focus on fulfilling the plan. Thus, the introduction of new information—that which was not related to the current agenda item—was often tabled and forgotten. Thus, WP-Task Group meetings were very focused on accomplishing specific work involving the processing of technical assistance project information and topic shifts was not an issue.

Key. Variation in key reflects differences, among others, in personal style, the status of participants, definitions of information, and the work to be performed, especially in terms of convergence or divergence of viewpoint as a guiding emphasis of the meeting type. For the Chiefs' meetings, the Chief encouraged divergence by "tossing out grenades" that caught the others by surprise as a strategy for testing possible actions. The Chief's emphasis on monitoring the environment and devising a range of strategies for anticipating and adapting set the tone for topic setting, comments, and discussions. The Branch Chiefs often saw these comments, which were intended to promote discussion, as diversions from previous commitments. While the ensuing discussions accomplished the Chief's goal of getting feedback on his ideas, such events also help to further confuse, puzzle, and frustrate the others. Information related to the WPP in this setting consisted of, for instance, intelligence about the opinions of external cooperators, the interests and concerns of key

legislators, and the likelihoods and status of appropriations.

For the WP-Policy Group meetings the coming together of the managers and the workers led to a conflict between interests in meeting the latest in exigencies through change and getting the job done through stability. Status and power differences between the managers and the workers were mediated by the confusion and frustration felt by the workers, who were often challenged to redirect their efforts without the benefit of knowing about the messages from the environment that precipitated adjustments in plans. Information related to the WPP here included, for example, opinions about definitions, the expression of policies and procedures, and scheduling from the workers point of view, and changes in strategy and policy from the managers point of view.

For the WP-Task Group meetings, all participants, including the Technical Assistance Branch Chief, assumed worker roles. Leadership passed among the participants depending on the subtask at hand and who had responsibility for that subtask. The participants gave no thought to the impacts of change in, for instance, funding likelihoods or the conditions surrounding the implementation possibilities of individual projects over time. Their focus was directed by an established process, which they were committed to see through to the end. Information consisted of the completed data elements on the project request forms as well as follow up facts obtained through telephone conversations.

The comparative factors highlighted here created a communicative milieu that sometimes aided and sometimes hampered achievement of the purposes of the communicative event. Recognizing what these factors are and how they influence communication and action provides us with meta-knowledge about why stoppages occur. With this meta-knowledge, bridging strategies may be proposed. For instance, no one participating in the WP-Policy Group meetings had a clear sense of why they would rather avoid these meetings or why they felt frustrated during and after these events. The meta-knowledge that comes from this sort of analysis provides ammunition for self-assessment and redesign.

Instrumentalities. The instruments of action during these meetings were similar. They included flip-charts, draft memo's, tables, and reports—paper and via computer screen.

Norms. While the instruments for conveying information and communicating were generically alike, there were some interesting differences in kind and use. For the Chief's meetings, while the Chief was the *de facto* chair, the floor was open to all, interruptions were permitted, and questions and comment were encouraged, even if they were off the track. For the WP-Policy Group meetings, staff representatives, especially the Technical Assistance Branch Chief, usually controlled the floor. For in-

stance, the comments by the Deputy Chief quoted above regarding the focus on definitions was greeted by the Branch Chief's comment: "OK, let's go back through . . . keep on going through the draft." Thus, comment and debate were cut off when they were not relevant in the minds of the WPP staff. Within the WP-Task Group meetings the floor and flow was controlled by the information gathering and processing tasks at hand. The staff member who was responsible for the specific subtask led the meeting and controlled the sequence of action.

Genre. The Chiefs and WP-Task Force meetings were more informal and relaxed than the WP-Policy Group meetings. Both allowed humor to punctuate the discussions, relieve tense moments, and maintain polite relations. Anecdotes, "war stories," and other devices were also used to enrich the discussions within these meetings. All of this worked to promote shared understanding of the situations under discussion, not merely transmitting information for individual use.

In contrast, humor was notable by its absence in WP-Policy Group meetings. These Policy Group meetings were motivated by the creation and checking of lists, and movement through documents in step-by-step methodical fashion. While these devices also appeared in the other kinds of meetings, there was little to break the drudgery of such place marking devices as "on the next line," "at the bottom of page three," and "let's check off item number 3 and move on to the next." While definitions, for instance, were often discussed, the discussion emphasized consensus on wording rather than a shared understanding of why the definition was necessary and what the implications of different nuances were for the purposes of work planning, let alone commitment to some operating principle.

Discussion. Overall there was a healthy but exhausting airing of ideas, gripes, complaints, and opinions. As a result, the WPP was kept open and divergent too long. This created frustration and angst ("Will this ever end!") as well as a feeling of being manipulated ("This seems like one never ending game. When the bell finally rings and the game is over, it is time to start again."). The hardest hit were the people in the Work Planning-Task Group who spent their work lives trying to converge towards products only to have some new or rehashed idea or concern lead to divergence.

Meetings, thus, brought a mix of divergence and convergence that frequently led to confusion and episodes of paralysis. Yet, advantages also were apparent in this behavior. One advantage of the diversity of viewpoints was that the accommodations, when arrived at, were crafted to address the range of concerns of the public interest groups as well as resource significance and public policy issues. This counterbalanced a tendency toward inflexibility, perhaps akin to group think (Janis, 1972) that seemed to characterized the approach of the Work Planning-Task Group. The diversity of positions, updates

on project proposals, and expressions of support or concern of public interest groups and legislative staffs that were expressed during these meetings, ultimately, forced all participants to rethink their positions.

From a normative point of view, the experience of the WPP suggests two broad strategies: either (1) delay meetings until a point in the task or process when environmental conditions had solidified, or (2) meet more frequently to clarify position and purpose (ambiguity reduction), while recognizing that change in plans might be necessitated as the uncertain becomes certain. In the second case bridges between communicative events seem to be necessary with the opening devoted to refreshing memories and setting an agenda, and the closing summarizing what was achieved, along with follow-up items. The first strategy appears suited to situations where uncertainty impedes progress; the second where ambiguity is rampant.

Affective signals are key indicators of blocks to sense making. They need to be confronted by sharing the experiences and expectations of the diverse participants in the communicative event. From the standpoint of productivity, getting a head start may be disadvantageous. Explicit recognition of needs for (1) uncertainty reduction and (2) lessening of ambiguity in connection with human information processing may help focus the arguments that meetings as sense making devices support.

There is another side to this. While with hindsight improvements may be obvious, the various behavior, information, and otherwise, identified in this analysis are the stuff of sense making. While learning from trial and error is a possibility, an important value of meetings remains the airing of differences in understanding and viewpoint. Ultimately, information systems and information management strategies will only work if they fit into the culture that pervades the organization.

Conversations

The conversation as a communicative event focuses on the interaction between two parties at the same point in time. Conversations allowed participants to express and satisfy their needs to share opinions, interpretations, and knowledge to establish common understanding or to reach a decision. Following Grice (1975), principles of cooperation (positive), disinterest (neutral), and absence of cooperation (negative) all seemed to come into play in the WPP. That is, someone initiated a conversation when they wanted to get someone else to help them make sense of a situation by sharing their knowledge and insight. The other party, in turn, may be cooperative, indifferent, ambivalent, or uncooperative or even deceptive in response. While we may learn to discern conversational devices such as those indicated by Grice's conceptions of *quantity*, *quality*, *relation*, and *manner* to provide interpretative clues, we also rely on the cumulative evidence of interaction and feedback. In the comments that surfaced periodically

on the "games" that were being played, various participants pointed to various situations: (1) too much information (quantity—providing a printout including all projects when regional summaries were desired); (2) withholding of information (quality—omitting details from a report when the details indicated discrepancies and inconsistencies); (3) providing information that proved to be inaccurate (quality—indicating that a project had especially strong local support when it did not); (4) offering information that did not pertain to the problem at hand (relevance—asking for particular information and getting a story with no bearing on the initiating situation); and (5) avoiding the issue of concern (manner—employing indirect references, e.g., metaphors, analogies, and anecdotes) that did not directly address the issue on the table.

It is important to realize that the process of negotiation in a conversation was seen by some of the participants as being limited by the absence of an ethic of cooperation. This climate of game playing simply encouraged more of the same. The game playing of this sort differed from the linguistic games where participants were performing with conflicting sets of rules. Here, there was more the sense of adversarial power games. This recurring pattern widened the gaps between participants and reduced productivity.

The two parties to the WPP conversations occupied a variety of roles: superior and subordinate, peer, and employee (staff) and regional office personnel (line). The relationship of these patterns of role relationships to the themes of discovering sense making in information behavior and productivity are explored here. Table 3 provides a comparative overview of these role relationships.

Superior/Subordinate. A primary insight resulting from the analysis here was the vast gulf in perception of purposes and ends between superior and subordinate at the top of the hierarchy, particularly involving the Chief and the branch chiefs. Discussions initiated by the Chief emphasized external relations over the internal accomplishment of work and divergent thinking about alternative strategies for survival.

For instance, the Chief enjoyed playing the devil's advocate by throwing out ideas that often were very different from those raised in previous conversations. His intent was:

. . . to test the water. I want to get their [the branch chiefs] reactions. If it won't work, then all we have invested is a little bit of time. If the idea has some merit, then we can start tuning it. I don't think that we will survive if we sit down once a year and make a plan or set deadlines based on what the status of things is at that moment.

On the one hand, the Chief aims to open up thinking to consider unexplored options (divergence). On the other,

TABLE 3. SPEAKING for typical conversations: Illustrating role relationships.

	Superior/subordinate	Peer	Staff/line
Setting, Scene	Face-to-face	Face-to-face	Telephone
Participants	Initiated by Chief with TA Branch Chief.	Initiated by one branch chief with another.	Initiated by staff member with regional office staff.
Ends	To get the reactions of others to survival strategies. To diversify the organization's external support.	Ostensibly, to obtain the other's support. Actually, to understand the other's views to strengthen the rationale for preferred position.	To update and correct project proposal information in preparation for allocation decisions.
Act Sequence	The Chief's idea is taken as "bouncing off the walls" by the TA Branch Chief, who reacts negatively.	The initiator raises the question. Reaction is provided. Discussion ensues regarding points of argument. Some point are conceded; others are unresolved.	The staff member points out concern and makes demands. The regional staff member makes some defensive statements. The conversation involves information for the annual report.
Key	The Chief knows that the TA Branch Chief is irritated, but cannot figure out why. The TA Branch Chief cannot understand why the Chief seems intent on diversion.	The tone is one of formality and civility. There is something of the feeling of a debate here: point and counterpoint, where the conversation is not designed to result in agreement or solution, but to refine arguments.	The manner and tone of the staff member suggests that she is trying to convey her importance as a member of the headquarters organization. The regional staff member, however, treats the staff member with cordiality and civility, but without deference.
Instrumentalities	The TA Branch Chief raises his voice and speaks in a staccato fashion to emphasize his displeasure. The Chief speaks softly and calmly to try to ease the situation.	There is no evidence of animosity. Rather, these conversations are part of the "game." The parties try to agree. There is no measure of winning or losing.	The need for information is punctuated with sarcastic comments that denigrate the work of the regional staff.
Norms	There is a divergence of norms. The Chief tries to get the TA Branch Chief to consider alternatives and he cannot.	The parties expect to refine their understanding of the others' position.	There is the difference between the people who set the schedule, and measure conformance and those who face day-to-day problems.
Genre	The Chief illustrates points with anecdotes. The TABC refers to schedules and deadlines.	Comments from cooperators that support the argument being made or contradict the argument of the other party are introduced.	The parties refer to completed project forms submitted by the regional office.

his subordinates are looking for stability and consistency to reach a conclusion or produce a product (convergence). The branch chiefs in this situation see their relationships with the Chief as power, authority, and control contests. The Chief, in turn, sees his actions as a mechanism for encouraging creativity and involvement. An organization probably needs both divergence and convergence to survive in a complex dynamic environment. What seems to be missing in the research situation is a link between the process and search for structure and the process and search for shared experience.

In contrast, conversational interactions at the other end of the hierarchy, involving the Technical Assistance Branch staff and their branch chief, emphasized work status, operational problems, and next steps. While frustrations were expressed by both superior and subordinate, the conversations were conciliatory and emphasized convergence of work towards interim or end products. Discussion frequently focused on shared definitions or understandings of information requirements, sources, classification schemes, quality checks, display, and ranking criteria. Analytical and evaluative discussions were absent at this level reflecting a stress on accuracy, conformance to plans, and deadlines. There was a drive to routinize the information definition, collection, and processing aspects of the WPP and make them static. Yet, the turbulence of the political situation required at least some monitoring and scanning of the environment in recognition of the passage of time.

Peers. Conversations between peers differed by level within the organization. At the worker level, staff functioned as colleagues. Their conversations focused on various matters: (1) work status (“Have we got the stuff from [deleted] yet?”); (2) helping one another (“Do you want me to enter the rest of those project sheets while you’re at the meeting?”); (3) facts (“Who is the staff contact for the [deleted] project?”); (4) procedures (“Do you have time to show me how to create a report from the project database?”); and (5) emotional support (“I know these proposals cause you agita. Don’t let them get you down. He [the Chief] just wants to make sure we cover all of our bases.”).

At the Branch Chief level the conversations were more adversarial. There was some “turf” protection—“I really think that the [deleted] project fits more into what we are supposed to be doing in the Water Branch. [Deleted] is a big supporter of that project and has already expressed a concern that the river conservation part of the project won’t get its due if trails are emphasized.” While at the end of a conversation each party is clear on the other’s position, resolution was rare. These situations either fester or are resolved through the devices of the Chief or Deputy Chief.

Staff/Line. With reference to technical assistance, the study unit is clearly a staff organization. It developed policy and procedures, performed planning and coordina-

tion functions, maintained databases and program records, fulfilled marketing and other broad program management duties, and offered general assistance and training. The study unit’s only real formal control mechanism was the allocation of resources through the WPP. Even so, once resources were allocated to a regional office, there was little that could be done to ensure that funds were used entirely as per the plan. Whatever the influence of the allocation mechanism, it lessened over the 3-year course of this study as, first, regional directors, and, then, “block grants” effectively eliminated this stick. The threat, however, remained that those regional programs that performed poorly would not receive additional funds should they become available, and would be the first to be cut in the face of funding reductions.

Regional office staffs, in contrast, performed actual project work, “on the ground,” working with actual physical resources and the full range of people who were interested or touched by a project. Sometimes projects fell through, were delayed, or took longer to complete than anticipated. These sorts of happenings were viewed with distrust by the study unit’s staff. Thus, the conversations initiated by these people often served to strain relations between study unit and the regional office staff. The following excerpt of a conversation between a member of the study unit’s staff and a counterpart in the regional office is indicative:

- Study Unit: I need to check some of the information that you gave on the project submission forms. It seems to be incomplete and in some cases wrong.
- Region: We did those a couple of months ago based on what we knew at the time. Some things have probably changed. Hey, we do the best we can in the time allowed. Anyway, what do you want to know?

As the study unit’s control of the resource allocation process lessened, its staff realized that the adversarial tone of conversations and other communicative interaction with the personnel in the regional offices was counterproductive. As staff time was made available through simplification of the WPP, efforts were made to develop a supportive, advocacy relationship with the regional office personnel.

Summary

Overall, conversations involving two participants succeeded much more frequently than multiparty meetings in reaching an end that was satisfactory to those involved and that kept the WPP process moving. This was, in part, the result of their greater clarity in purpose and meaning than for planning meetings. The expectations of participants regarding purposes and outcomes, which were major sources of ambiguity in meetings, were more closely

met. Conversations also succeeded because their reciprocal, two-party nature reduced the variety, complexity, and uncertainty of arguments by more seamlessly allowing participants to raise their confusion and puzzlement. Conversations also allowed participants to more flexibly and freely gain the floor to raise their concerns and points of view. During the WPP conversations and meetings served different purposes. The meeting was a general device for broad assessment of options and opportunities that allowed different interpretations of facts and figures to be heard and discussed. Conversations focused on specific issues or concerns.

This inquiry now moves from simultaneous communicative events to those where the communicators were separated in time and space.

Messages

Messages comprise the set of written communications that were created through the WPP. As indicated in Table 1, a variety of message types were employed in the WPP, each reflecting a different situation, purpose, and degree of formality or permanence: memoranda, guidelines, forms, tables, notes, and e-mail. All of these message types carry information that bridges other communicative events. Thus, messages were either products of the WPP or links that kept information and the process flowing. As the messages were asynchronous, they served the general functions of informing and requesting.

The remainder of this section contrasts the message types as designs for maintaining momentum when synchronicity is not possible. Table 4 summarizes and compares message types using the SPEAKING framework. The table groups message types into three categories—memos and guidelines, forms and tables, and notes and e-mail.

Memos and Guidelines. These documents codify the WPP and its products (i.e., funded projects or funds allocations to the regional offices). As such, these products make a commitment to action, which structures further action. They are the culmination of the arguing, expecting, committing, and manipulating inherent in sense making. Wallas (as cited in Weick, 1995, p. 12) relates the comments of a young child “. . . who being told to be sure of her meaning before she spoke said ‘How can I know what I think till I see what I say?’ (Wallas, 1926, p. 106).” In short, we may not really know what we think until we are able to speak or write down our sense of the situation. *This is a fundamental insight into sense making.*

As Feldman (1989) notes in her study of policy making in the U.S. Department of Energy:

Written documents play an important role in this interpretative process [of characterizing a policy issue]. In the process of writing, an author must take a complex

reality and structure it into a linear, more simple presentation Because of the need to make sense within a reasonable time and space limitation, only details relevant to the proposed interpretation can be presented. Details that may support other interpretations are omitted. The written document establishes a frame that becomes part of the organizational memory. (pp. 91–92)

Thus, the written record, particularly in the form of memoranda and guidelines, is the memory of the WPP. All of the actions, arguments, frustration, and elation that went into the construction of the document are at best only vaguely remembered. The document is the primary vehicle for conveying sense made to those who were not present during the sense making process.

Forms and Tables. At their best, these document types are devices for noticing inconsistencies and discrepancies, or reducing a mass of information into a comprehensible and manageable format. At their worst they can confuse and obfuscate.

There were occasions of both during the WPP. While these devices were sometimes ignored when they were particularly incomprehensible, their value as supports to sense making came from their being as physical points of reference during meetings and conversations. Thus, the physical thing helped participants to target their thinking in a way that did not often occur when words were flying around.

In discussing a form or table, categories were frequently explained, challenged, and respecified. In addition, inconsistencies were pointed out; interpretations were challenged and as a result clarified:

Wouldn't it help encourage the regions to submit projects in that area if we had an open space label?

Those numbers don't add up to the total there. There seems to be about \$200,000 missing. Was a project left off the list somewhere or was there an addition mistake?

So this is what you meant when you said that the region was trying to put one over on us? It may be that they interpreted the instructions in a different way. Have you talked to them at all?"

In sum, the devices of forms and tables provided a concrete reference point for reduction in ambiguity.

Notes and e-mail. These messages primarily conveyed in-process requests for information or comment. They had a similar effect as the forms and tables in providing islands in the swamp of confusion and ambiguity: something to focus on or signal misunderstanding, disagreement, uncertainty, equivocality, or, in general, something of which collective sense must be made.

The major difference between forms and tables and notes and e-mail relates to their degree of anonymity. Notes and e-mail were from one person to another. For

TABLE 4. SPEAKING for messages.

	Memos/guidelines	Forms/tables	Notes/e-mail
Setting, scene	Formal issuance; signed, dated	Provide structure, definition, organization to the WPP.	Informal; often undated with typed name.
Participants	Originator (staff), reviewers (Branch Chiefs, Chief and Deputy), signer (Chief, Administrator or Assistant Administrator). To: Regional Office Directors. Cc: Regional Office Program Chiefs.	Originator (TA Branch Staff). Users/reviewers (potentially all WPP participants including regional office and public interest group staffs).	Originator (any WPP participant); user/recipient (any other WPP participant).
Ends	Inform interested parties of policy, procedure, or resource allocation decisions	Information gathering and summary devices	Transmit requests (e.g., review of drafts, interpretations of meaning, reactions to strategies, scheduling of meetings)
Act sequence	Establish authority; express rationale; specify requirements; establish deadlines; list contacts; ending.	Specify required information elements for gathering or display.	Request or query; specify parameters of the request; deadlines.
Key	Formal language; passive voice; lengthy exposition; attachments; dense.	Information gathering: frameworks, definitions. Information summary: lists.	Informal (often handwritten); brief.
Instrumentalities	Written giving interim and final products of the WPP.	Written, telegraphic, records status at selected point in the WPP.	Written tool for managing the WPP and coordinating the activities of participants.
Norms	Interaction is based on need for standardization or structure in the performance of work.	Interaction is based on need for information.	Interaction is based on need for action.
Genre	Memo is a genre in the WP situation.	Forms and tables convey expectations regarding information needed.	Informal language.

these, there is a definiteness of who is communicating with whom. Forms were never signed and often not dated. A typical gambit in meetings and conversations was:

How is this one [held in the left hand] different from this one [held in the right hand]? Are they the same or is one newer?

These sorts of confusions required unproductive time for clarification, which reoccurred frequently over the course of the WPP.

Summary. All of these message forms had clarifying impacts on the WPP. They did not exist by themselves, but were both contributors to and products of the process of sense making. Identity and order problems, particularly with forms and tables, contributed to the sluggishness of the WPP, where time was required to identify a piece of paper's place in the process—past history, interim product, or the last word. The solution of simply dating the pieces of paper and labeling with the name of the originator, while occasionally mentioned, was seldom done.

All of the communicative events that were employed in the WPP were vehicles of sense making. Each variation contributes in different ways by helping people, for instance, to define, organize, process, or present information to support sense making. Too, these events often contributed to confusion and ambiguity in understanding the intentions or expectations of participants. These are common strengths and weaknesses as people interact to move from their own understandings to incorporate the understanding of others to specify organizational action.

Conclusions

The idea of this study was to map information behavior in an attempt to understand the role of information in people's lives. In attempting to do this it became evident that information behavior is part and parcel of something that the study participants often labeled as "sense making," "making sense," or even "playing games." That is, *participants do not think of information or actions to collect, process, or use information as something separate from the task or problem at hand.* Information behavior is part and parcel of everything that goes on in their information worlds. This is an absolutely fundamental insight. Many of the problems of information system design, information management, and training arise because we do not incorporate this empirical fact into theory, research, and practice.

The study also found that this business of making sense is not a one time static thing, but unfolds and undulates over time. Sense making is about capturing meaning, which is something that changes as the world changes. Sense making has a significant social aspect. Information behavior is formed and constrained by the social requirements of tasks and the ways that social structures such

as organizations, meetings, conversations, and message types define acceptable behavior. When people are involved in some organizational task, one person's input is often another's output. All of these pieces need to fit together for sense making to occur. The idea of information behavior in sense making is to capture this dependency, interaction, and commitment to action. Information systems that exist to support tasks in social settings need to be integrated into the organizational or institutional design. Otherwise, such systems are likely to exist, consume resources, and divert attention away from the basic issues, problems, and sense making of the task.

For example, "tidbits" and "morsels" about the external (the views of legislators and cooperators) and the internal (project proposals and status) were critical in the funding success of the study organization. The interesting thing about these things that some participants labeled "tidbits" is that for the most part they were extracted from the study unit's environment as the formal information systems of the organization did not get at matters of reduction of complexity and attenuation of ambiguity. These matters required interaction between the study unit's members and their counterparts in other organizations to capture cues, and the individual and social sense making that allows people who are aware of these cues to develop understanding and meaning through arguing, expecting, committing, and manipulating. The stuff that we call information is not separable from these processes.

The process of meaning development is both fundamental to complex, multiparty, information intensive tasks and takes time. It is the use of time for extracting cues, sharing ideas, arguing, thinking, and creating messages that enables sense making. As chaotic, frustrating, and inefficient as some social elements of the WPP were, this is how participants made social sense. Yet, researchers and professionals in the information field can make a difference in improving productivity and helping participants find less frustration and more flow to their efforts. By understanding the nature of information behavior in sense making, we can participate in the creation of learning organizations. In such organizations information and communication systems are integrated into task processes, evaluation of the role of systems in task processes is part of their being, these systems are integrated into the organization in a manner so subtle that their presence is scarcely evident, and the systems, themselves incorporate people.

References

- Agar, M. (1994). *Language shock: Understanding the culture of conversation*. New York: William Morrow.
- Boden, D. (1994). *The business of talk: Organization in action*. Cambridge, MA: Polity Press.
- Eilon (1968). Taxonomy of communications. *Administrative Science Quarterly*, 13, 266–288.
- Feldman, M. S. (1989). *Order without design: Information production and policy making*. Stanford, CA: Stanford University Press.

- Grice, H. P. (1975). Logic and conversation. In: P. Cole & J. L. Morgan (Eds.), *Syntax and semantics (Vol. 3): Speech acts* (pp. 41–58). New York: Academic Press.
- Hymes, D. (1986). Models of the interaction of language and social life. In J. J. Gumperz & D. Hymes (Eds.), *Directions in sociolinguistics: The ethnography of communication* (pp. 35–71). New York: Basil Blackwell.
- Janis, I. (1972). *Victims of group think*. Boston, MA: Houghton-Mifflin.
- Kuhlthau, C. C. (1994). *Teaching the library research process*. Metuchen, NJ: Scarecrow Press.
- Mauws, M. K., & Phillips, N. (1995). Understanding language games. *Organization Science*, 6, 322–334.
- Saville-Troike, M. (1989). *The ethnography of communication*. New York: Basil Blackwell.
- Schiffrin, D. (1994). *Approaches to discourse*. Cambridge, MA: Blackwell.
- Schrage, M. (1990). *Shared minds: The new technologies of collaboration*. New York: Random House.
- Schwartzman, H. B. (1989). *The meeting: Gatherings in organizations and communities*. New York: Plenum Press.
- Solomon, P. (1997a). Discovering information behavior in sense making: I. Time and timing. *Journal of the American Society for Information Science*, 48, 1097–1108.
- Solomon, P. (1997b). Discovering information behavior in sense making: III. The person. *Journal of the American Society for Information Science*, 48, 1127–1138.
- Solomon, P. (in press). Information behavior in sense making: A three-year case study of work planning. In: P. Vakkari, R. Savolainen, & B. Dervin (Eds.), *Information Seeking in Context*, London: Taylor Graham.
- Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, 211, 453–458.
- Wallas, G. (1926). *The art of thought*. New York: Harcourt Brace.
- Weick, K. E. (1993). The collapse of sense making in organizations: The Mann Gulch disaster. *Administrative Science Quarterly*, 38, 628–652.
- Weick, K. E. (1995). *Sensemaking in organizations*. Thousand Oaks, CA: Sage.
- Wittgenstein, L. (1958). *Philosophical investigations*. Oxford: Blackwell.