Organizational Structuration: Interaction and Interrelation

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Abstract

This paper attempts to bring structuration/negotiated-order/role theory together with the language action perspective in order to show how these consistent and complementary views provide a useful means of articulating the process of organizing. Structuration theory dissolves the structure/action duality. Structure and action are mutually constituting and constitutive; structure is both the medium and the outcome of interaction. Structure is a pattern that emerges from interactions, a network of role interrelations produced and reproduced (accomplished) through semiotic interaction. Roles are bound to a matrix of social relations and any modification of social structure is grounded in changes that occur at the level of dyadic interaction. These agreements (commitments/expectations) at the dyadic level serve as the bridge between individual action and organizational structure. An organization consists of "structures of mutual expectation, attached to roles which define what each of its members shall expect from others and from [themselves] (Vickers 1967)." A role is a constellation of (often reciprocal) commitments/expectations that are held by and about an agent that are created, maintained, modified, and dissolved through conversational interactions. An agent acting in a role is enabled and constrained by authority, dependencies on allocations of resources and rewards, as well as by a complex experiential background of social, legal, institutional, professional commitments/expectations.

The language action perspective (LAP) views language as action, rather than representation. LAP focuses on the pragmatic aspects of linguistic/semiotic moves (illocutionary speech acts), conversations, and discourses; interactions between dyadic speaker/listener pairs with shared backgrounds/contexts. Specifically, it focuses on the conversations that form commitments/expectations for action (or inaction) by which people coordinate as they work together. Such conversations consist of coupled sequences of moves (request, offer, counter-offer, decline, agree, etc.) between two agents ('customer' and 'performer'.) A discourse (process), whether predefined or improvisational, is played out through a set of interdependent conversations between agents acting in formal or informal organizational roles. The interdependencies between conversations and discourses inhere from existing commitments or physical/temporal constraints. An organizational 'process' is enacted by a chain of customer/performer pairs who coordinate their actions through conversational interactions/transactions to achieve a result. Using this perspective, we explicate organizational process/structure as a dynamic network/web of conversations and commitments/expectations interrelated through roles.

LAP compliments the theoretical perspective provided by structuration/negotiated-order/role theory by providing a concrete way of explicating the specific interactions and interrelations (roles, 'structure') that are mutually constituting and constitutive. While social network analysis reveals interaction patterns it doesn't reveal how these patterns induce specific actions or define roles. LAP provides a model and mapping convention that does so by providing a clear description/representation of commitments/expectations, how work/actions are coordinated, and the interrelationship of roles. It is through people that the commerce of interactions is linked together into a meaningful web of interrelationships at work.

Introduction

Organizational structure is represented in organizational behavior and organizational theory classes by the classic organization chart, which shows lines of authority and division of labor. We suggest that the classic organization chart represents patterns of expected dyadic role relationships that constrain and enable peoples' actions within the organization and that this is the essence of organizational structure. However, the classic organization chart is not the only pattern of expected dyadic role relationships that constrain and enable peoples' actions within an organization. Using this definition, social networks, traditional process diagrams, and language/action process maps are also representations of organizational structure, and by looking at the nature of the pattern of relationships represented in each case, we can assess the relative merits of each.

Any representation of organizational structure tends to reify the static image, a snapshot of a moment. Although this may be unavoidable, we will attempt to firmly ground our ideas of structure as something that is fluid and constantly changing. Our concept of organizational structuration is based on structuration (Giddens 1984), negotiated-order (Maines & Charlton 1990), and role theory (Sarbin 1953). But before we develop this definition at length, let us briefly look at what light it sheds on some representations of organizational structure.

Classic organization charts. As a first example let us look at the classic organizational chart. The classic organization chart is a pattern of reporting relationships between individuals within the organization. It specifies roles in terms of job titles and only represents the interactions between the roles of supervisor and subordinate. Even when non-traditional geometries are used (e.g. circular, clover-leave, inverted-pyramid) there is a supervisor-subordinate relationship evident. The organization chart primarily represents an authority structure, defining the relationships of roles with respect to resource allocation and utilization; it represents an 'accountability hierarchy' (Jaques 1990). It dates back to the early days of large bureaucratic organizations at which time those may well have been the most important roles and interactions in regards to the allocation of organizational resources and the accomplishment of the instrumental purposes of the organization. The classic organization chart's strength is its simplicity and the relative clarity of looking at only the supervisor - subordinate interactions. As long as the accountability for, coordination and control of resources are primarily based on supervisor - subordinate interactions, the classic organization chart is a good representation of organizational structure. However, it is a weak representation of organizational structure if the supervisor - subordinate interaction does not drive the organization. As organizations become flatter, and filled with autonomous knowledge workers networking here and there, it would seem that the supervisor - subordinate relationship has less and less to do with achieving the instrumental purposes of the organization.

Social networks. In his seminal work that linked changes in technology and roles to changes in organizational structure, Barley used social networks to represent organizational structure (Barley 1990). Social networks have the advantage of clearly representing interactions and using the dyad as the unit of analysis. Social networks have the additional advantage of being able to be represented as a matrix and manipulated mathematically to calculate measures such as centrality and density. The weakness of a social network as a representation of organizational structure is that the 'roles' of the interactants are all the same. That is to say, for a friendship network the role is friend, for a respect network, the role is respected other, and so on. The roles tend to be general and not connected to the instrumental purpose of the organization, but are instead more general social roles. Thus the social network may be a good representation of the informal social structure within the organization, it does not connect the interactions to the processes in which they are occurring, leaving them without context or connection to the instrumental action of the organization.

Traditional process maps. If we focus on the instrumental purpose of the organization, process maps come to mind as a way to represent the structure. Typical process maps cut across organizational functions and show a process broken down into inputs, specific actions, and outputs of those actions. There is a clear sense of how organizational resources are used to accomplish the instrumental tasks of the organization and to the extent that people and the roles

they play are represented there is a sense of what roles accomplish what actions. There is also often a sense of rules that define decision points in the process. What is missing are the interactions between the people in the roles, the interactions through which they coordinate and define their roles. Interaction is limited to one person in a role receiving inputs to their own action that are the outputs of another person's actions. There is no sense of the dyadic interaction, no interrelation between people interacting in roles, negotiating the structures that enable and constrain their interactions in the process. The process map is in essence a technical/rational view of an organization that implies a model of the organizational structure as being designed and implemented rather than negotiated and enacted.

Language/action process maps. A recent alternative to the traditional process map is the language/action process map (e.g. Kensing & Winograd 1991; Newman & Winograd 1992; Scherr 1993; Harris & Taylor 1997). Coordination maps, based on the language/action approach, map the pragmatic speech acts or moves made between pairs of people as they coordinate their actions to accomplish the instrumental purposes of the organization. We shall discuss the language/action process map and its philosophic basis later in more depth because we believe it is a superior representation of the dyadic role relationships that relate directly to the instrumental purposes of the organization.

Organizational Structuration

Following Barley (1990), our point of departure is the common theme running through the theoretical perspectives known as structuration (Giddens 1984), negotiated-order (Maines & Charlton 1990), and role theory (Sarbin 1953). We use the term 'structuration' to encompass the general idea that structures are constituted by interactions while at the same time 'structuring' interactions -- structures, organizations, institutions are socially and historically constructed through the acts of and interactions between individuals. This process is primarily about negotiating the roles that people play relative to one another.

The idea of organizational structuration has been applied in organizational studies for some time (See Whittington (1992) for a review). The structurational perspective gives us a framework within which to analyze and describe the process of organizing. It provides a bridge between the 'structural' and 'interactionist' perspectives. It has been fruitfully applied in the study of technology and organization (Barley 1990; Orlikowsky 1990; Orlikowsky & Robey 1991; DeSanctis & Poole 1994; Brooks 1997), to describe the complex interplay of social and technological factors in enabling and constraining organizational structures and processes.

Structure. To explore the meaning of 'organizational structure', we begin with the idea of a 'structure' in general. If we try to answer the question: "What is a social structure?" we inevitably find ourselves describing actions and interactions, experienced or anticipated that we associate with a 'structure'. What we call 'structure' consists of memories and expectations; a structure 'emerges' in a person's mind. Its 'existence' is revealed by and inferred from a history of actual interactions and a future of anticipated possible interactions. Each interaction contributes to the creation and re-creation of a structure to the extent that it instills or reinforces expectations of and commitments to behaviors that individuals associate with that structure. Structures are 'semiotically real' (Merrell 1997) in that the conception of them enables and constrains the actual behavior of individuals. As Orlikowski & Robey (1991) suggest, "people readily allow their actions to be constrained by these shared abstractions of social structure." When we assert that a structure 'exists' or is 'real', we are saying that we are unwilling or unable to challenge or change the patterning of interactions that the belief in the structure engenders.

Structures are manifest in action/interaction. Structures do not interact – we can never actually observe an organization or a group performing an action. Organizational or group action is a concept we "construct out of a plurum of experiences of elements (individuals) each of whom, separately, can be actually encountered (Allport 1962, p4)." As Park says, "there are no social forces which are not at the same time forces lodged in individuals, deriving their energy from individuals, and operating in and through individuals (Park, in Maines 1977, p274)."

Organizational structures (hierarchical, bureaucratic, matrix, organic, virtual, clusters, network, functionalized, process-oriented, etc.) are distinguished by the differences and commonalties of their interaction and interrelation patterns. When we describe an 'organizational structure' we ultimately describe the types of relations and groupings, the interconnections through activities and recruitment, the believed in values and norms of the members, and the obtaining sanctioning mechanisms (Nadel 1951). The classic organizational chart, for example, represents a pattern of particular interactions, specifically, supervisor - subordinate relationships, usually grouped in 'functional' branches. Distinctions such as 'flat' or 'hierarchical' describe aspects of the patterns of those interactions.

Structure and action

Structuration. Giddens' theory of structuration moves beyond the dichotomy of action and structure: structure and action are mutually constituting and constitutive (Ranson, et al 1980); structural properties "are both the medium and the outcome of the practices they recursively organize (Giddens 1984, p69)." Social structures are social practices ordered across space and time, patterns of interaction situated in time; only when examined over time does any structure emerge. Rather than being brought into being by actors, structures are continually enacted and re-enacted in and through interactions. Organizational structure is a pattern that emerges from interactions, a network of role interrelations produced and reproduced through interaction.

Negotiated Order. Consistent with the structurational view, negotiated-order holds that social orders are more or less stable patterns of action, interaction, and interpretation (Barley 1990). Organizational structures 'emerge' from patterns of interaction, or processes.

> "Actor's conceptions of the nature of large scale structures inform the way in which they conduct themselves, and those structures themselves are meaningless constructs without human actors to enact them or represent what they are in some concrete situation. Negotiated orders refer to those arenas through which structural constraint, in the form of roles, policies, laws, normative proscriptions, and ideology are defined, interpreted, and incorporated into the daily activities of organizational members. This process of incorporation pertains neither exclusively to the structural arrangements nor to the individuals, but to the multiple webs of groups affiliation which bind collectivities together." (Maines 1977, p303)

Institutional structures vary in their stability, and the time periods over which changes can occur. Structures gain an appearance of stability over time, they are the byproducts of a history of interaction and become 'institutionalized'. Over time, recurrent behaviors lead to the formation of an interaction order and a set of shared typifications that gradually acquire the moral status of taken for granted facts. As structures become 'established' they appear permanent and 'non-negotiable', but they have in fact been produced through a process of negotiation (Maines 1985). The patterns of dyadic role relationships or interrelations that we call 'structure' is always negotiated between multiple agents; fundamentally, structure results from dyadic interactions, not individual actions.

Roles. Much of what is perceived as organizational (social) structure consists of the commitments and expectations associated with historically constructed roles. Jaques suggests that "the first level of social structure is that of the system or network of connected roles which can be deduced or abstracted by direct observation ... roles and role relationships are the building blocks of which the institutions are to be constructed (Jaques 1976, p23)." Role theory provides an analytical tool for explicating organizational structure from observations so that we can ground roles "in the interactions that occur in the course of daily life." (Barley 1990, p68) If roles "are intimately bound to a matrix of social relations," then "any modification of social structure is, by definition, grounded in changes that occur at the level of dyadic interaction (Barley 1990, p69)." Following Vickers (1967, p109) view of an organization as consisting of "structures of mutual expectation, attached to roles which define what each of its members shall expect from others and from [themselves]", we can define a role as a constellation of (often reciprocal) commitments/expectations that are held by and about the role-incumbent that are created, maintained, modified, and dissolved through conversational (semiotic) interactions. An individual making/taking a role (Turner 1962) (the role-incumbent)

creates/assumes the duties or expectations of that role. An agent acting in a role is both enabled and constrained by rules, authority, allocations of resources and rewards, as well as by a complex experiential background of social, legal, institutional, professional commitments and expectations regarding behavior.

Interaction and Interrelation

Organizational structure emerges from patterns of interactions. Following Weick (1969), Allport (1962), Jaques (1976), Barley (1990), and others we take the dyad as the basic unit of social behavior. The dyadic interaction is a useful unit of analysis because it is observable (or at least discoverable); it enables us to "study the content of an interaction order through observation (Barley 1990, p68)." More importantly, "events at the dyadic level are pivotal because they serve as an explicit bridge between individuals and organizational structure (Barley 1990, p70)." Dyadic interactions consist of 'moves' which "provide an empirical tool for examining structuration in organizations (Pentland 1992, p545)." While we use the term 'move' somewhat differently from Pentland, we agree that moves provide a way to "analyze the connection between actions and structures", or between interactions and interrelations (p545)."

Interaction. The point of defining 'interaction' as a dyadic interaction is to counteract the tendency to 'objectify' action within organizational discourse. "By focusing on actions rather than objects, we can develop a lexicon with which to express routines and organizational structures as ongoing accomplishments (Pentland 1992, p546)." An individual's act or action becomes an interaction when it is interpreted by another individual: individuals act, dyads interact. By identifying not only the actor, but also the interpreter, action is put into context within a network of people acting in roles. In a dyadic interaction the actor (un)intentionally emits signs and the interpreter interprets these signs in the context of past interactions with this and other actors. Interpretation is commemorative in exploring how this act coheres (makes sense) with prior acts and interpretations. Interpretation is expectant in exploring what acts might follow and how future acts may be contingent on possible acts the interpreter might or might not take. In this sense, meaning is retrospectively explicative and prospectively implicative. Each act (un)intentionally creates commitments on the part of the actor and expectations on the part of the interpreter. The committer makes a commitment and the expectant assumes (or infers) a corresponding expectation. We use the terms commitment and expectation in a general sense, as reflected in Goffman's (1967) statement: "participating in any contact with others is a commitment (p6)."

Interrelation. These commitments and corresponding expectations are the elements that constitute the dyadic interrelations between people. Always situationally contingent, a commitment is a commitment to, and an expectation is an expectation of, a particular actor. By 'particular actor' we mean not only a specific person, but also any individual who appears in a particular role, who enacts that role in a given interactional situation. In other words, when one comes into interaction with another, roles are assumed vis-à-vis one another. One assumes behavioral expectations of the other and assumes behavioral commitments to the other appropriate to the situation. It is these expectations and commitments that constitute the interrelation. And organizational structure is a pattern of interrelations.

Roles and Processes

Roles are defined in a differential or relative way from other roles[2]. "Roles are not separate social entities but always part of role relationships, the relationship between roles being an integral part of the definition of the role itself." These relationships provide "the setting of the social context including both boundaries and direction within which those taking part in the relationship will constrain or limit their idiosyncratic behaviors so that a mutually adaptive interaction may occur... In its most general sense a role may be defined as a knot in a social net of role relationships (Jaques 1976, p25)."

While Jaques suggests that no role can exist by itself, we suggest that a role also never exists outside of the context of an organizational process. That someone is acting in a particular role is only evidenced by the acts and interactions that the individual engages in. These interacts occur in a stream of interactions, as part of a process, formal or informal. A role is not only

defined with respect to other roles but also in the context of ongoing organizational processes. What makes roles different are the rule-resource sets associated with them; rules are applied differentially and access to and control of resources, including the power to modify the rules, varies between roles. We can describe these rule-resource sets as interrelations established and maintained through dyadic interactions. To the extent that structures exist, they exist in people's heads and those structures primarily consist of expectations and commitments regarding the behavior of different role-holders.

Processes and Roles. "In a dyad there is interdependence, reciprocal behavior, and the necessity for accommodation to another person (Weick 1969, p237)." "The behaviors of one person are contingent on the behaviors of another person(s), and these contingencies are called interacts (Weick 1969, p89)." We view these 'contingencies' as a sequence of interlocked interactions that form a kind of conversation, the purpose of which is to coordinate the action or inaction of the interactants. The achievement of instrumental results is accomplished through the dyadic interactions that coordinate action. "Sets of interacts are assembled into processes" and "processes contain individual behaviors that are interlocked among two or more people (Allport 1962)." If, with Barley (1990), we assume that roles are grounded in the interactions that occur in the course of everyday life, roles can be more specifically explicated by describing the interactions of role-holders in the context of processes.

It is essential to recognize that the base unit of analysis is the dyadic interaction between agents. The rules of the structure constrain and enable the dyadic interactions, but it is the dyadic interactions that are of primary interest -- the rules are only of interest in that they constrain and enable the dyadic interaction. For example, a classic organizational chart that only has one box or one that has several boxes that are not connected tells us very little about organizational structure. It is only when the boxes are connected and the dyads described that the representation becomes generally useful.

We view organizational structuration as the establishment of interrelations by and through interactions and the enablement and constraint of interactions by and through interrelations. Interaction and interrelation, process and structure are reciprocally constituted. G. H. Mead suggests that "you cannot have a process without some sort of structure, and yet the structure is simply something that expresses this process as it takes place (from Shalin 1986, p15)." Structures are defined in terms of processes, and processes are defined in terms of structures (Maines 1977).

The language/action perspective, introduced in the next section, provides an analytic framework for identifying and describing interactions, how they create and maintain interrelations, and how interrelations enable and constrain interaction. By articulating organizational processes from this perspective, the interactions that make up a 'role' can be explicated in detail. Processes are seen as dynamic, adaptable sets of interdependent interactions between people, often involving the ongoing negotiation of their roles therein.

A Language/Action Perspective

The language/action perspective provides a conceptual framework for describing and representing the processes of organizational structuration. A process mapped using the language/action approach does not represent tasks or activities like the traditional input-process-output process maps discussed above. Instead these maps represents organizational processes as a series of linked conversations or interactions that coordinate action. This approach maps the chains of dyadic interactions which coordinate the instrumental actions of agents in their various roles as members of the organization. We shall summarize the language/action perspective and then describe the mapping convention used to represent of organizational process and structure.

Language as Action. The idea of organization as a linguistic/semiotic construction is not new. Numerous authors have long argued from a symbolic interactionist or semiotic perspective (Holmqvist, et al 1996) that, in effect, "organizations are speech communities" (Barley 1983, p393), "communication is the organizing principle of the organization" (Jorgensen 1996, p273), "conversations are the essence of the organization" (Klein&Truex 1996, p227), and "organization is a product of communication" (Taylor 1993, p. ix). Most information

processing perspectives of organization (Huber & McDaniel 1986, Tushman & Nadler 1978) see people as processing information and making decisions; a view based on a 'conduit' metaphor of communication. In contrast, language/action and other semiotic-oriented views assume that "people act through language" (Winograd 1988, p5). It sees communication as always serving a pragmatic purpose - interaction is always an interpretation that is socially situated and contextualized.

"Words are deeds (Wittgenstein 1953, p546)." The language/action perspective views language as action, rather than representation, that is to say it focuses on the pragmatic aspects of linguistic or semiotic action[3]. Language, "the tool of tools", is "always a form of action and in its instrumental use is always a means of concerted action for an end... a mode of social action with which to realize the ends of association (Dewey 1925, p152)." Specifically, language/action focuses on the conversations, interactions that form commitments and expectations among people –- these are the interactions that are the basis for concerted, organized action. The basic unit of analysis is the interaction between dyadic speaker/listener (customer/performer) pairs. An interaction consists of a coherent sequence of moves (illocutionary acts) which forms a conversation.

Illocutionary Acts & Linguistic Moves. Speech act theory (Austin 1962, Searle 1975) distinguishes between the illocutionary force and the propositional content of an utterance. The illocutionary force is the expressed commitment of the speaker[4]; it inheres "not in the performance of the speaker, but as something to be attained by both partners, in collaboration (Taylor 1993, p190)." There is no illocutionary act if is there is no interpreter and interpretation is never independent of context (Flores, et al 1988). An illocutionary act expresses commitment to a future action (implicitly or explicitly), it "brings forth, as an intentional act of the speaker, a reorganization of the social relations that make up the world of the participants in the conversation (Flores & Ludlow 1981, p97)." We argue that illocutionary acts are the basic 'moves' in interactions between two people who are coordinating their actions.

Although there is no formal correspondence between specific words and the structure of commitments (Flores & Ludlow 1981), people routinely make sense of the moves conveyed by the utterances of others because they share context, a background within which an utterance is interpreted. It is important to note that implicit moves are common. A silence may be interpreted as a move; what is not said is 'listened to' as much as what is said (Flores, et al 1988)." Moves are conveyed in and through many media, often mediated[5] by some 'artifact', such as a paper form, or by technical systems, such as a computers. This mediation can make it difficult to identify the moves within an organization process.

Interaction and Commitment. Winograd and Flores (1987) assert that the "essential importance of an illocutionary point is the specification of meaning in terms of patterns of commitment entered into by speaker and hearer by virtue of taking part in the conversation (p59)." A fundamental condition of successful communication is "mutual recognition of commitment" so that there is "a sufficient coupling so that breakdowns are infrequent, and a standing commitment by both speaker and listener to enter into dialogue in the face of a breakdown (p63)." The use of the term commitment in this context is unlike the ordinary usage where it refers to strong obligations or responsibilities. We use the word commitment in a more general way. By committing to something, the speaker creates in the listener an expectation that the speaker intends to fulfill or abide by the commitment. In situations of relatively honest discourse, by speaking, people commit themselves to the intelligibility, truth, sincerity and appropriateness of what they say (Flores 1982).

Habermas suggests that every language act has consequences for the participants and leads to other immediate actions and to commitments for future action, or inaction (Winograd and Flores, 1986, p59). Many words can imply a commitment: promise; agreement; obligation; accountability; responsibility; assurance; binding; constraint; boundary; limit; norm; contract; guarantee; warranty; pledge; swear; vow. It is important to note that even to revoke an existing commitment is to make a different commitment. When I say "I changed my mind, I won't do it," I have committed myself to not fulfill the commitment and created a corresponding expectation in the listener. We can demit as easily as we can commit. All commitments are to

some extent contingent (tentative, conditional, dependent on the actions of others), and therefore open to revision or revocation.

Conversations. A conversation is an interaction between two or more people, involving a (usually) coherent set of linguistic moves. In order for the image of organization as consisting of people engaged in conversation to be a useful analytic tool, we need to be able to distinguish between conversations types and the pragmatic purposes that they serve; we need a way to distinguish what specific conversations are 'about'. From the language/action perspective, we are interested in exploring "the role that all conversations play with respect to action or potential for action (Winograd 1988, p15)." The conversation types are accompanied by different moods and the boundaries between types are not sharply defined (Winograd 1988). Each conversation type provides background for the others. In practice, we seamlessly move between and weave together these conversation types as appropriate. We suggest a simplistic taxonomy of five conversation types: relational, contextual, explorative, coordinative, and discursive.

Relational Conversations. Relational conversations are about establishing and maintaining relationships among people. People manage these conversations so as to build or maintain their own identities and membership in the organization, as well as contributing to the identity of others. Many of these conversations constitute what Goffman (1967) calls 'interaction rituals' including greetings and partings, deference and status recognition, face-saving, repairs, and explanations. Jokes and humor are used for stress-relief to manage conflict. Relational conversation is used for setting bounds and establishing certain aspects of role relationships, some formal such as enacting the status hierarchy but much of it informal and 'social'.

Contextual Conversations. Conversations of the contextual type provide orientation, background and context for action and interaction. Through these conversations a shared background of data, facts, assumptions, and 'knowledge' are constructed. Training and instruction are explicit activities for orienting individuals within the organizational context. While much of this interaction is verbal, many contextual conversations are embodied in and enacted through artifacts, records, symbols, and texts. A good deal of these conversations involves 'sense-making' or "reconstructing plausible histories after the fact (Daft & Weick 1984)." Narrative story-telling, rituals and ceremonies convey history as well as practical guidance. Over time, contextual conversations contribute to the interpretive schema and mental models shared by the members of the symbolic community, as well as to establishing the normative expectations of appropriate behaviors, duties, and obligations.

Explorative Conversations. A speculative mood characterizes conversations for exploring possibilities. These sometimes open-ended conversations "open up new backgrounds (Winograd & Flores 1987, p151)" for future action. Often focused on exploring ways to identify and solve problems or invent and pursue opportunities. Through this type of conversations we 'brainstorm', explore possible plans, offer goals and objective, build consensus, and select among possibilities. As explorative conversations move toward coordinative conversations, conversations focus on negotiating priorities, task definition, decomposition and assignment, and the differentiation of roles and responsibilities.

Coordinative Conversations. The central fabric of organizational activity is a web of commitments and expectations resulting from coordinative conversations[6]. "We work together by making commitments so that we can successfully anticipate the actions of others and coordinate them with our own (Winograd 1988, p10)." A coordinative conversation, which we call an interact, is a pattern of linguistic moves through which the interactants coordinate their action or inaction. The 'dance' of the coordinative conversation can be analyzed into moves and phases that describe the dyadic interactions through which people procure the cooperative assistance of others. Winograd and Flores (1987) have created a model of the possible acts that can be carried out as two agents interact to accomplish something through a coordinative conversation. Language/action process mapping focuses on this type of conversation because, even though such conversations by no means represent a majority of the conversations that take place in organizations, they do tie directly to the instrumental actions of the agents within an organization, to the rules and resources that enable and constrain the process of organizing.

Discursive Conversations. Interspersed in and around most conversations are conversations aimed at clarification. Such discursive interaction questions or challenges the 'validity claims' lying within or behind an utterance. These claims include intelligibility or coherency, appropriateness or relevance, adequacy or completeness, truthfulness or sincerity, legitimacy or justice. (For more on this, see Klein & Duane (1996)).

A thread of conversations often weaves through the modes in iterative or recursive fashion. Within each type of conversation there are implicitly allowable or appropriate moves. In particular, coordinative conversations have a recurrent pattern that we can use analytically to explicate organizational processes.

Organizational Processes

Process is generally viewed as dichotomous with structure; process is viewed as routine activities operating within static structures. By broadening the meaning of the term 'process' to encompass all organizational activity, a more comprehensive and consistent view of organizing can be had. Following Weick (1969), we suggest that processes are assembled from sets of interacts. By defining an organizational process as a series of interdependent interacts we can view all organizational activity (and interaction) as consisting of structurational processes, releasing us from the process/structure dichotomy. What we see as organizational structure "determines how an organization acts and how it appears is the same structure that is established by regular patterns of interlocked behavior (Weick 1969, p90)." Behaviors are interlocked through interaction and by interrelations. A process consists of a set of interdependent interacts that coordinate the actions among the participants in order to satisfy a specific request or fulfilling an offer accepted by the 'customer' that the process serves.

Processes come in many 'shapes and sizes'. A process may be routine and repetitive, more or less planned and occasional, or completely ad-hoc and unique. A 'project' can be viewed as a process consisting of interacts which are iteratively planned, executed, and re-planned, while what is generally called a 'business process' is usually a recurrent pattern of routine interactions, a "frozen patterns of conversations (Winograd 1988, p20)." Duration and frequency also characterize processes; long duration processes often involve infrequent interactions and relatively loose ties among the interacts, while short duration processes involve more frequent interactions and usually require tighter coupling between interacts. Additionally, the equivocality of the conditions of satisfaction of the customer that the process serves changes the nature of a process; the more equivocal, the fewer rules applied and the more need/room for interpretation and improvisation.

A process always operates in the context of, are embedded in other layers of processes. For instance, a production process operates in the context of and is enabled and constrained by planning, budgeting, administrative, and other prior or ongoing processes. Vertical, 'functionally-oriented' processes (often seen as structural) usually express chains of interacts for allocating and accounting for resources, both allocative and authoritative. The 'customers' for these processes are typically members of the management or owners of the organization.

A process, whether predefined or improvisational, is enacted through a set of interdependent interacts among agents acting in formal or informal organizational roles. The role of a process participant is made up of contingent commitments to and expectations of (in)action at one or more different points (interacts) in a process. Thus, roles are described "in terms of potential for entering into particular recurrent conversations. (Winograd 1988, p25)," or at least particular kinds of conversations, whether recurrent or not.

Viewing an organization as a web of interrelations constituted by and constitutive of interactions allows us to describe organizational activities and structures as processes or sets of interacts. Structures can be viewed as processes in two ways: 1) Some processes result in the establishment of structures of 'standing' commitments/expectations which may remain unchanged for long periods of time. These standing interacts create the impression of static or stable structures when viewed over short time periods, but in fact they do change when viewed over a long enough period of time. 2) Structures become manifest through action and interaction. Any structure is undergirded by actual or possible processes which 'express' the structure's properties. Such a process can be 'called up' for the purpose of making the

structure ‘visible’ under certain circumstances. For instance, when a rule is violated, a process may be initiated to apply sanctions, thus enacting the consequences implied by the structure. Such a process may be inhibitory by acting to stop another on-going process. It is only through this possibility of consequential action or stopping of action that a structure acts to enable and constrain other processes.

Process Mapping Using the Language/Action Model

In order to map a process we need to identify each of the interacts and, within each interact, identify the two interactants (the customer and the performer)[7] and what we call the ‘conditions of satisfaction’ of the interact. To explain why an interact occurs it is necessary to situate it in the context of the other interacts that make up the process. The meaning of a specific interact must in large part be inferred from its context. Process mapping from this perspective often requires an interative, hermeneutical analysis.

Interactants. There are two interactants between whom the interact occurs: the customer and the provider. By ‘customer’, we simply mean the person who makes a request or receives an offer, nothing more. The performer (or supplier, or provider) is the person who makes an offer or is made a request of. The customer interacts at both the beginning of a process (by making a request or accepting an offer) and the end (by declaring themselves satisfied or not.) Customers or performers may be 'inside' or 'outside' of some organizational boundary. The customer and performer labels do not necessarily connote hierarchical position or social status; nor does the fact that person-A is person-B's customer in one interact preclude person-B from being person-A's customer in another; in fact, there is almost always some sort of complimentary or reciprocal set of commitments behind any interact. For instance, the client is the 'customer' and a software developer is the 'performer' with respect to the interact about providing a software solution. But the software developer is the 'customer' and the client is the 'provider' in the interact about getting paid for the work.

Note that interacts are between specific individuals acting in specific roles, not between groups, such as teams or departments. It is important to identify who will act, otherwise no one in particular is accountable for a link in the coordination process. There are customer/performer relationships even within teams. A process participant may not know who their customer is. Sometimes there is no customer at all, but a process continues to function in spite of the fact that the need has long since disappeared.

Conditions of Satisfaction. Once the customer is identified, their conditions of satisfaction (COS) need to be articulated. While the customer's conditions of satisfaction often include 'requirements', 'deliverables' or 'outputs', these things alone don't always get to the essence of what the customer wants. The COS may prove elusive, requiring analysis of the context (other interacts) in order to articulate them in a meaningful way. Sometimes no one person understands the COS and they only come into focus as the whole work process is analyzed. In some processes, the COS cannot be defined a priori. In such cases the COS of one interact may get negotiated as part of the completion of another interact. For example, a potential client might approach a software developer with a 'request' that may be as general as "Can you provide me a solution that satisfies my needs?" This interact will be surrounded by a series of conversations where the client's people and the developer's people work together to negotiate and define this customer's specific COS for the project. The software development organization in this case may have an internal process for estimating the costs of a variety of potential solutions that can be proposed to the client.

Moves & Phases. Each interact between a customer and a performer moves through four phases: 1) preparing and making a request or an offer, 2) negotiating and reaching agreement, or not, 3) performing and reporting the work complete, and 4) assessing the work and declaring satisfaction, or dissatisfaction. Within the conversation a limited number of pragmatic moves are allowable, such as request, offer, counter-offer, agree, report-complete, and accept[8]. These moves can be explicit or implicit, and not all of the possible moves will be taken in each interact. Learning to ‘see’ and distinguish the moves or language acts takes some practice. In

many processes, these moves may be implicit or be mediated[9] by some 'artifact' such as a form or by a technical system such as a computer.

Representing Interacts. An interact is represented as a four-part loop (see Figure 1) beginning at the 9 o'clock position and proceeding clockwise. The arrows represent each of the four phases. The loop symbol appropriately connotes closure, as each interact must be explicitly or implicitly completed[10.] The customer of the interact appears on the left and the performer on the right. The conditions of satisfaction appear in the middle of the loop (usually in abbreviated form).

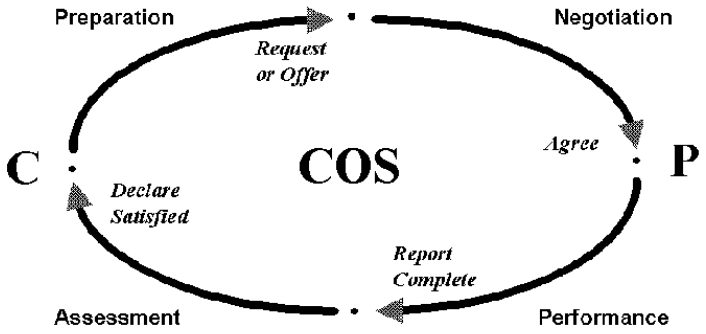

Figure 1

Interdependencies. The often contingent interdependencies between interacts are represented by links drawn between them. The move that triggers or is triggered by a dependency is denoted by where the link is connected to the loop. While some interdependencies inhere from logical, physical or temporal constraints, other interdependencies are socially designed, negotiated or established as needed. These social interdependencies inhere from choices concerned with the division of labor, skill sets and role definition. The form of the process reflects the roles that the participants play. In a coordination map, some interdependencies are implicit in the form of the process, though they are not represented explicitly.

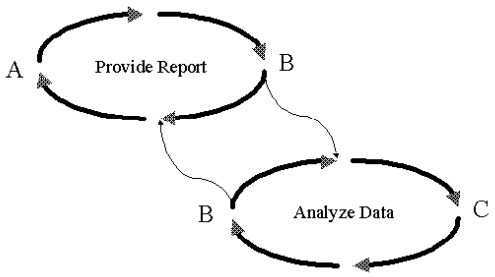

Figure 2

Figure 2 depicts two interdependent interacts where one party cannot agree to a request made by a second party without first obtaining a commitment from a third party to perform.

Process Mapping. The language/action perspective allows us to link a series of coordinative conversations (interacts) together to represent a recurring process (or a project that occurs once.) The analysis and modeling process involves identifying each interact, the customer and performer, the customer's conditions of satisfaction, and how each of the moves is taken, and the interdependencies between moves in different interacts. By encouraging the identification

all the moves in each of the interacts that make up a process, the language/action model provides a powerful framework for unambiguously analyzing a work process. Working through and analyzing the moves and phases one-by-one often reveals hidden or implicit interactions that even the participants may not even be aware of. During this process, many tacit, taken-for-granted assumptions underlying a process can get unearthed by the participants, leading to insights, clarifications, and the source of breakdowns that might not otherwise be discovered. In figure 3 is shown the complete process for a project-based process within computer systems integration firm.

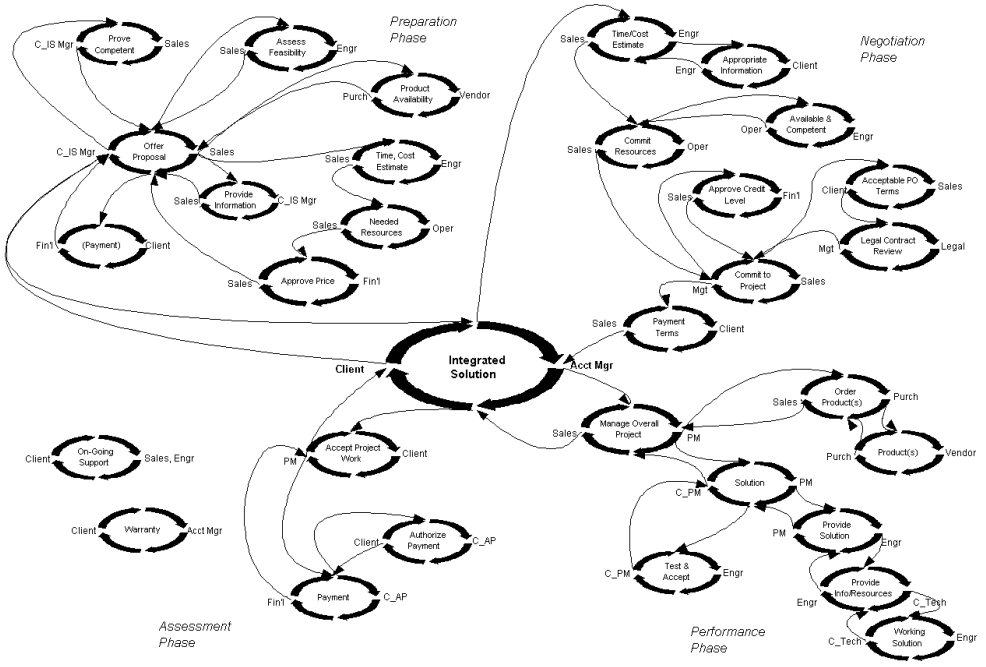

Figure 3

Foreground and Background. When doing analysis and mapping, we usually focus on a specific process. The purpose of a process is to satisfy the primary customer, often external to the organization. This foreground process is enacted in the context of other processes in the background, being enabled and constrained by them. People often act as the link (Jaques' knots in the social net) between different processes by appearing as an interactant or participant in each, enacting cross-process interdependencies. Such participants act to enable and/or constrain the foreground process based on commitments deriving from their role in one or more background processes, and/or vice versa.

Customers of the Organization. Organizational action and interaction is primarily directed towards satisfy the external customers of the organization. The 'designers' of the organization (founders/owners) in part choose the customers that the organization will serve, the kinds offers it will make and kinds of requests it will respond to, thereby defining the organization's purpose. At the same time, an organization necessarily operates within a web of existing and evolving external institutions with which organizational members must interact, including financial, industrial, professional, political, legal, sales and marketing institutions, as well as employees, vendors, suppliers, service providers, and government agencies. Agents of these institutions can appear as customers to the organization, or as external performers whose goods and services are needed to satisfy the organization's customers.

More on Roles. Using the language/action view of process, we are in a position to explicate roles in a specific way. A *role-element* is the participation (as a customer or performer) in a specific interact in a specific process. A *process role* is a set of role-elements in the same process that an individual participates in. A *functional role*, a 'role' in the traditional sense, is

a set of process roles. Individuals acting in functional roles participate in numerous processes and interrelate those processes in various ways. Typically, a functional role consists of process roles that 'leverage' an individual's experience, competencies, skill set, and relationships, and often reflects traditional positions or titles, such as marketing manager or salesperson.

The Coordination Map as Organizational Structure

Previously we had suggested looking at organizational structure as a pattern of dyadic interactions of agents in roles that is evidenced in the allocation and control of resources for executing the instrumental purposes of the organization. Clearly the coordination map is a pattern of dyadic interactions of agents in roles. The conversations for action coordinate the instrumental purposes of the organization and by extension then the control of resources for executing those purposes. Of course, like all representations the coordination map emphasizes some aspects of the organization and de-emphasizes other aspects and has limitations and strengths.

Limits of Coordination Mapping. There are many different layers of processes within an organization and it is impractical to map all of the layers and all of the interacts. For every interact in which an agent commits (or consumes) resources, there has been a background interact that formed the commitments that empower the agent to commit the resources in the foreground interact. Thus to represent organization structure with a coordination map requires explicitly making a choice about what layers of processes and interactions to map. Processes could be mapped showing the network of interact that satisfy the external customer on a day-to-day basis. At another level, we can map the network of standing commitments, resulting from a process in the background, that enable and constrain this process. For example, there are standing reciprocal commitments of the psychological employment contract (Rousseau 1995) that could be represented with a coordination map.

Because coordination mapping is a relatively new approach there are very few tools available for analyzing the coordination maps. Social network analysis has the advantage that a plethora of mathematical techniques and software tools have been developed to analyze social networks. The conversation for action represents a rigorous state model; thus there is clearly the possibility for mathematical analysis techniques to be developed. However, at this time these techniques do not exist and thus there is very little quantitative analysis of the coordination map possible. (For a discussion of other limitations, see Winograd (1988), p24 - 28.)

Strengths of Coordination Maps. The real strengths of the coordination map as a representation of organizational structure are in its rigor and its philosophical grounding. By rigor, we mean that the roles and relationships being represented are more precisely described than other representations. For example, the classic organization structure defines roles in terms of titles, but there is lot of difference between the role of one vice president and another vice president. The roles in the coordination map are specific to a particular conversation for action and at least in terms of the illocutionary speech acts there is a reasonably precise definition of what the person in a particular role does. The relations in the coordination map are defined in terms of the illocutionary acts and the commitments that are made. This is more precise than the often ambiguous superior - subordinate relationships or "dotted line" relationships of the classic organization chart or even the ties of a social network.

Philosophically, the coordination map represents a view of organizations as being socially constructed through language. The language/action approach and coordination maps provide a rigorous way of representing a subjective, interpretive understanding of organizational reality. In contrast, the underlying view of organizations for the classic organization chart is that of an objective technical/rational bureaucracy where hierarchical control is the most important aspect of the organization. The coordination map provides many scholars the opportunity to represent organizations in a way that is aligned with their own ontological understandings of organizations.

Suggestions for the Future. Using coordination mapping to represent the processes of organizational structuration would be a new approach and should provide new insights into organizational studies. We would suggest that when Barley used social networks to represent organizational structure in his study of how changes in technology change the organization, he

really showed how the changes in technology changed the social structure of the organization. The same sort of study could be conducted using coordination maps and we might see how the network of commitments (the process) changes with the introduction of new technology. Because of its philosophical grounding in language as action and the rigor of the conversation for action model there may be many new insights to be gleaned from representing organizational structure with coordination maps.

The first step is simply to make organizational scholars aware of this approach. Then as scholars start to represent organizational structure with coordination maps in their research, others might develop tools for analysis. The underlying state model of the conversation for action could certainly be fruitful ground for the mathematically inclined. And if nothing else, using a new and different representation of organizational structure will once again bring to the foreground the fundamental issues of what is organizational structure and how do structure and action relate.

Notes

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[2] Barley points out that there are relational and a nonrelational elements to a roles. Nonrelational role elements are bundles of behaviors, tasks, or activities characteristic of that role, which do not require specific partners (Barley 1990, p68). Relational role elements are defined in terms of interrelations with specific others.

[3] The term '*language'* in the 'language/action' refers to any form of communicative interaction which conveys meaning. The term 'semiosis' captures this more general sense of interaction, including non-verbal or non-linguistic modes of interaction such as gestures, facial and bodily expressions, even a silence. 'Instrumental' actions, as well, often convey 'linguistic' meaning. To interpret 'language' in a narrower sense of only speech and writings is to constrain the application of language/action to such an extent that it is useless. 'Semiotics' may be a better term for the field of study encompassed by language/action, as semiotics (the study of signs and signification) {per Peirce, Mead, James & Dewey} is inherently dynamic,... a sign gains meaning by being interpretted by an interpretter through the process of putting it in relation to other signs [Peirce].

[4] Likewise, 'expression' (production of a sign) and 'speaker' (sign emitter).

[5] Interactions may be 'mediated' by a variety of objects, artifacts, systems or media, including paper, telephone, fax, and computer programs and networks. Mediated interactions tend to 'distance' the 'interactants', sometimes to the point that neither party is aware of the identity of the other. This is especially and increasingly the case with computer systems. While we say "the program has a bug", the fact is that *the person* who wrote the program or the operating system or the micro-code or whatever, made a mistake or did not anticipate the situation that causes the 'bug'. Computers, for all practical purposes, never do anything wrong! This mediation of interactions by technology can lead to increasing ambiguity and confusion with respect to whom is accountable for what and make it difficult to effectively resolve a process thread. Mediation in articfacts also provides the 'presencing' of absent speakers, across both time and space.

[6] What we call 'coordinative conversations', Winograd & Flores (1987) call 'conversations for action'. We prefer the former term, as this type of conversation can be about action or inaction, and its underlying purpose is to coordinate action and interaction.

[7] Due to the novel ontology of the coordination model, there exist no words for some of the 'things' that it reveals. The inventors chose to adopt and essentially redefine existing English words. While the words chosen may be the best choices given the available English words, the meanings that these words assume within the context of the coordination model are crucially different from the common use meanings. This has caused considerable confusion for those attempting to learn the model. Worse, out-of-context interpretations have led to surprisingly vociferous and, in this writer's opinion, mostly ill-founded criticisms of this model. When learning the model, it is best to start out by jettisoning the common usage connotations associated the terms (esp. customer, performer, conversation, commitment, promise, conditions of satisfaction) and to treat them as new words with different meanings.

[8] The full set of moves consists of *request, counteroffer, offer, decline, agree, revoke, report completion, declare satisfaction, decline to accept,* and *cancel.*

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[10] Conversations can be 'completed' without the customer's conditions of satisfaction being met. Conversations can be terminated by the performer declining a request or revoking an agreement, or by the customer rejecting an offer, canceling a request, or declaring they are dissatisfied.

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