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The Conversation Mop: Scenes in the Stream of Discourse

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The interface of thought and talk was examined in a two-stage research project that focused on the nature of cognitive structures guiding discourse and the nature of discourse structures produced by the cognitive structures. Schank's (1982) theory of dynamic memory employs scenes as the building blocks for cognitive structures that represent action sequences. These scenes are structured by memory organization packets (MOPs). Scenes in a conversational MOP were hypothesized to be topic centered and weakly ordered by the MOP, with stronger ordering occurring between subsets of scenes. This hypothesis was verified for both the cognitive structure underlying discourse production and the actual discourse structure. Furthermore, a universal conversational scene was identified that suggests how individuals can talk on topics they know little about. Finally, the linguistic invariance in identifying the scene and the actions in a scene suggest that a limited set of scripts exists to accomplish each scene.

INTRODUCTION

Conversational exchanges involve more than just the overt behaviors enacted by interlocutors. Talk does not occur in a vacuum; talk occurs in the context of thought and knowledge. Although scholars have long believed that individuals' prior knowledge affects interactions with others, little effort has been directed at understanding how cognitive systems not only encode, interpret, store, and retrieve social information, but also guide, direct, and alter conversational behavior. To examine everyday discourse as strictly an exchange of overt behaviors without consideration of the scripts, plans, goals, and understandings of the interlocutors is to prevent the development of a well-defined relationship between thought and talk. This article explores the cognitive foundation of conver-

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sational behavior by focusing on the *interface* between cognitive structures and discourse structures.

Conversational behavior is highly structured. It involves enacting behavior sequences with linguistic units that are prefabricated and repetitive across encounters (Coulmas, 1981). Verbal regularities include topic sequencing (Berger, Gardner, Clatterbuck, & Schulman, 1976), reciprocity of intimacy (e.g., Chelune & Associates, 1979), cyclicity of question content (Berger & Kellermann, 1983), lexical and topical coherence (e.g., Brown & Yule, 1983; Craig & Tracy, 1983; McLaughlin, 1984; Reichman, 1978), sequentially dependent events such as adjacency pairs (e.g., Levinson, 1983; McLaughlin, 1984) and speech acts (Jose, 1983), lexical convergence (Allen & Guy, 1974), utterance-form patterning (Kent, Davis, & Shapiro, 1978, 1981; Mishler, 1975a, 1975b, 1978), and so on. In daily conversational exchanges, a fixed linguistic expression tends to occur once every five words (Sorhus, 1977).

The list of possible conversational units and their associated patterning is, at least as one reads the literature, seemingly infinite. Discourse analysts unitize the conversational stream into vocabulary words, clauses, sentences, thought units, questions, speech acts, turns, and macrostructures, among others. Despite the profusion of structures resulting from the almost endless means of unitizing the conversational stream, hierarchical relationships clearly exist among the structures. For example, macrostructures organize topics that relate to both turns and adjacency pairs, which, in turn, are composed of thought units, speech acts, and questions constructed by clauses consisting of vocabulary words. Thus, the seeming profusion of discourse units and their resultant implications for discourse structures is more a function of a *linear* model of discourse, without as consistent a concern for its corresponding hierarchical nature. In essence, conversations are linearly and hierarchically structured; that is, sequential dependencies, as well as embeddedness of acts, occur in conversational discourse.

Discourse analysis has traditionally focused on the sequential dependencies within a linguistically fixed event. For example, greeting formulas (Krivonos & Knapp, 1975; Laver, 1981; Schegloff, 1968; Schiffrin, 1977), compliments (Manes & Wolfson, 1981; Pomerantz, 1978), apologies (Edmondson, 1981; Fraser, 1981), and leave-taking routines (Albert & Kessler, 1976, 1978; Knapp, Hart, Friedrich, & Shulman, 1973; Laver, 1981) have been studied extensively. Although consistent patterning in such linguistically fixed events has been detected, the *ordering* of such events has generally been ignored; how these events are embedded into a conversation is unknown. At issue is the context for the occurrence of linguistic routines. Contingencies between routines require investigation of the linguistic structure of movement "out of" greeting behaviors and "into" leave-taking behaviors. Recently Douglas (1984) reports the linear sequencing among the events at the top of the hierarchical and linear structure of discourse: initiation, maintenance, and termination of conversation. Thus, at the highest hierarchical level, the maintenance stage *links* greeting to leave-taking

behaviors while *containing* events such as compliments and apologies. Sequencing of routines *within* each of these three conversational phases is unknown, though ripe for examination. Preliminary work on the *reactive* nature of apologies (Fraser, 1981) and the *directive* nature of gambits (Keller, 1981; Rehbein, 1981) indicates that the sequential linkages between linguistic routines embedded within higher levels of the hierarchy can and need to be explicated. This article explores the linkages of linguistic routines in conversational discourse; in specific, the nature of these linkages is explored in terms of the cognitive structures guiding their production.

Given the hierarchical and linear nature of *conversational* structures, the *cognitive* structures supporting production and comprehension of discourse would need to be endowed with similar qualities. In other words, if conversational behavior is directed by cognitive structures, those cognitive structures must permit embedded, as well as sequentially dependent, sequences of discourse. Similarly, the comprehension of conversations would seem to dictate cognitive structures that permit processing of discourse in both hierarchical and linear directions. To the extent that individuals are cognitive misers seeking to minimize the cognitive energy they devote to behavior production and comprehension (Fiske & Taylor, 1984; Taylor, 1980), the cognitive structures directing discourse are likely to be the same as the cognitive structures used for comprehending discourse. Basically, the principle of cognitive efficiency suggests that individuals seek to develop a limited set of knowledge structures that can be flexible in their deployment in a wide range of situations. In the context of conversational analysis, this principle implies that those knowledge structures used for discourse production are the same as those employed for discourse comprehension. Furthermore, this principle suggests that these structures need to be flexible, to permit adaptation to a variety of discourse contexts where conversational goals and partners might vary dramatically. Thus, the cognitive structures used for production and comprehension of discourse should be contained in a limited set, permit flexibility of use, and be organized hierarchically and linearly.

A wide range of knowledge structures has been posited by cognitive theorists for storing information about the social world. Cognitive plans, episodes, frames, scripts, and schemata have been proposed as means of interpreting and storing social or textual events (Abelson, 1976, 1981; Forgas, 1982; Harre & Secord, 1973; Miller, Galanter, & Pribram, 1960; Minsky, 1975; Neisser, 1967; Rumelhart, 1976; Schank & Abelson, 1977). Although the cognitive representation of social interaction is the unifying theme of these various knowledge structures, the nature of such structures has most often been described within the context of cognitive scripts (Langer, Blank, & Chanowitz, 1978). Scripts were initially defined as "*a coherent sequence of events expected by the individual, involving him either as a participant or as an observer*" (Abelson, 1976, p. 33). This concept of a script was based on the presumption that whole sequences of

events were stored together for each type of social sequence having a given situational context. This presumption, however, has come into question. Bower, Black, and Turner (1979) found that memory confusions occurred between stories that called on different, though similar, scripts (e.g., visits to the doctor and the dentist). If different scripts were stored as separate memory structures, those confusions should not have occurred. Moreover, Schank (1982) has noted that the seemingly endless number of scripts such a presumption requires would make storing, retrieving, and updating these knowledge structures virtually impossible.

As a result of these limitations, Schank (1982) developed a theory of dynamic memory that permits a limited set of cognitive structures that are flexibly deployed to meet the action-sequence requirements of a given situation. In developing this theory, Schank (1982) revised the definition of a script and introduced structures of scenes, Memory Organization Packets (MOPs) and meta-MOPs. MOPs are cognitive structures that organize behavioral sequences appropriate to a given situation, in order to achieve one's goals. In contrast with scripts, MOPs are not situation-specific, prepackaged, action sequences. Rather, MOPs are knowledge structures that command how to organize *scenes* so that some higher level goal(s) can be accomplished.

A scene, the key term in this new representation of action sequences, is a grouping of generalized actions with a shared instrumental goal. The scene describes how and where a particular set of actions takes place. A scene is a relatively "small" chunk of social behavior, compared to the ways in which the construct script has been interpreted in the past. For example, if a researcher were interested in the cognitive structures underlying the action sequences in going to a restaurant, one scene might be "being seated at your table." Each scene contains generalized actions and has only one instrumental goal.

In this new formulation of action-sequence representation, scripts are embodied in scenes, in contrast to older formulations, where scenes were embodied in scripts. Thus, many scripts might exist for each scene, and each script contains the specific actions that provide added detail to the general actions contained in the scene. Each script can be viewed as one specific method or set of tactics for accomplishing the goal of the scene. For example, an "introduction" scene for an initial interaction might have one script involving specific actions related to shaking hands, while another script might involve specific actions related to revealing the relationship between a partner and oneself (e.g., saying that you are the partner's student or that you have met before). What is crucial here is that the script only contains those specific actions that detail the general actions involved in the scene. Cross-situational or general actions, such as stating your name, are contained in the overall scene. In short, the independent memory unit of a MOP is a scene, a grouping of cross-situational and situation-specific actions.

The function of a MOP is to describe how scenes are linked to accomplish a higher order goal. In other words, a MOP is a knowledge structure prescribing what combination of a series of instrumental goals can facilitate achievement of

some more complex goal. MOPs are created when scenes function independently but often co-occur; they are stereotypical sequences of socially defined patterns. Unlike the old formulation of scripts, one scene can be employed by many different MOPs. In the older formulation of a script, an "introduction" scene in an initial interaction script and that in a script about a visit to a professor would be contained in different memory units and stored in different memory locations. In this new formulation of MOPs, *one* "introduction" scene would be stored in memory, so that an initial interaction MOP and a MOP about a visit to the professor could both command the use of this same introduction scene. The ability to use a given scene in multiple MOPs provides a dynamic means of generating contingent sequences of routines. The MOP can flexibly choose and sequence scenes when some higher level goal requires accomplishment. Furthermore, the number of knowledge structures required in such a dynamic view of memory is limited, in that the basic building block of a scene can be tapped over and over again as needed.

Meta-MOPs organize MOPs so that ordered sequences of plans can occur. For example, a meta-MOP of a "trip" might organize the MOPs of "flying," "going to a restaurant," "staying in a hotel," and so forth. A given MOP can be used by multiple meta-MOPs, just as a given scene can be used by multiple MOPs. As is noticeable, scripts, scenes, MOPs, and meta-MOPs are contextually based knowledge structures, in that each has a goal that is achieved by the ordering of its constituent parts.

Schank's revised formulation for representing action sequences not only explains how routinized behavior is comprehended and produced but also provides powerful explanations for differences in which routines are employed and for occurrence of seemingly novel behavior. As multiple scripts are attached to a given scene, routinized behavior sequences might vary somewhat in employment of the scene, dependent on the specific script instantiated for the scene. Thus, variation in script instantiation might obscure the generalized action sequences related to the scene for the achievement of the instrumental goal. Similarly, the variation of behavior in a seemingly novel situation might be more a function of a different MOP being employed to order scenes for the situation than of random behavior. Clearly, Schank's revised formulation represents memory dynamically, eliminating the need to alter numerous cognitive structures as a given particular action sequence is altered. In the revised formulation, only the given structure (be it script or scene) requires alteration, as the structure is flexibly linked or associated with its higher order structure.

Clearly, Schank's perspective on behavior is goal oriented. Each cognitive structure has its corresponding goal. Such goal orientation in representing behavior, in particular conversation, is not without controversy. However, conversation is generally organized around goals that one or more of the persons involved in the interaction are attempting to achieve (Berger & Kellermann, 1986). Furthermore, discourse has been, and continues to be, modeled usefully as a set of

interacting plans (Bruce, 1980; Cohen & Perrault, 1979; Hobbs & Evans, 1980; Keller, 1981; Levy, 1979; Rehbein, 1981; Wilensky, 1983). Potential conversational goals include persuasion, enjoyment (passing time), information seeking, and so forth (e.g., Berger & Kellermann, 1983, 1986; Kellermann & Berger, 1984). Furthermore, such a goal orientation does not imply conscious processing or awareness of each instrumental or higher order goal. Indeed, the very presupposition of a cognitive approach as defined by Schank is the ability to reduce cognitive energy deployed toward behaving in social situations.

Although many alternative theories of cognitive structures exist, Schank's is particularly useful for understanding the production of conversational behavior in that (a) it suggests how "segments" of conversations occurring in widely varying contexts and for widely varying goals could appear similar in structure (i.e., by the organizing MOPs commanding some of the same scenes); (b) it suggests how conversational behavior can simultaneously appear routine but flexibly adaptive to a partner (i.e., by altering scripts used to color a scene); (c) it suggests how conversational structures can be embedded hierarchically and sequenced linearly (i.e., scripts embedded in scenes sequentially ordered by a MOP, where MOPs can be embedded in meta-MOPs); (d) it is consistent with research on cognitive processing (i.e., reducing cognitive energy and easing the updating of knowledge structures); and (e) it is consistent with research on conversational behavior (i.e., goal orientation, flexible routines, etc). Few other theories of cognitive structures or of conversational structures can provide these same advantages. Consequently, Schank's dynamic memory theory is employed as a guide not only to the expected structure of the cognitive system but also to the expected structure of conversations.

This paper explores a conversation MOP that is probably used in a number of meta-MOPs: the informal initial conversation MOP. Informal initial encounters were chosen as the context of this research for multiple reasons. *First,* informal initial encounters are typically the basis of the development of our permanent social relationships. In the vocabulary of dynamic memory theory, meta-MOPs related to "developing an intimate relationship," "developing a social life," and the like would employ an initial interaction conversation MOP aimed at informal encounters. In fact, the successful achievement of the goals related to these meta-MOPs would seem to hinge greatly on the execution of the informal initial conversation MOP. *Second,* an interaction context that permits the identification of scenes is needed. MOPs that relate to conversational behavior of marital couples, although theoretically and pragmatically interesting, have no necessary requirement of ritualized behavior *across couples.* Consequently, MOPs could be guiding conversational behavior but, due to the idiosyncratic nature of each couple's MOPs, identification of the scenes would be inhibited by variance in the conversational structure. In other words, the informal initial interaction MOP is likely to be shared by members of a culture, thus permitting identification of the scenes if the MOP indeed exists. *Finally,* many of the scenes

in an informal initial conversation MOP are likely to be commanded by other MOPs, for other types of initial encounters and for conversations in more developed relationships. For example, greetings are used in task and social encounters, as well as in initial and more developed relationships. Certainly, some scenes might be expected to vary as the relational stage (initial, developed, decaying), purpose (social, task, etc.), and setting (formal, informal, etc.) vary. However, if the scenes used in initial informal (social) conversations are identified, such variation can then be usefully explored. The means are at hand to make comparisons, understand the development of idiosyncratic scenes and MOPs, and explore the role of physical settings in the development and deployment of scenes and MOPs. The goal of the initial informal conversation MOP is to become acquainted, fulfilling what Schank would term either an enjoyment or an achievement goal (e.g., Berger & Calabrese, 1975; Berger & Kellermann, 1983, 1986; Douglas, 1983, 1984; Kellermann, 1984; Kellermann & Berger, 1984). The scenes organized by this MOP are the focus of this research.

As noted earlier, past research suggests a number of scenes that might be included in the informal initial conversation MOP. Greetings, good-byes, compliments, and so forth are all possible candidates for scenes in the informal initial conversation MOP. However, whatever becomes a scene needs to have an associated instrumental goal. Conversational topics are believed to define the scenes of the informal initial conversation MOP, as well as being available for other MOPs. Topics of discourse have received a great deal of attention as organizing devices, being one of the major means of achieving coherence in discourse (e.g., Brown & Yule, 1983; Planalp & Tracy, 1980; Reichman, 1978; Schank, 1977; Sigman, 1983; Tracy & Moran, 1983). Smith, Meux, Coombs, Nuthall, and Precians (1967) have identified what they term a "venture" as a segment of discourse consisting of a set of utterances dealing with a single topic and having a single overarching content objective. The venture is believed to be the equivalent of the scene in the informal initial conversation MOP. Greetings serve the goal of recognizing the other, introductions serve the content objective of exchanging identifying information, and each topic serves an instrumental goal of locating commonalities, extracting information, and the like. Nonetheless, it is argued that, in informal initial interactions, persons tend to have compatible goals, in terms of both the MOP and each scene. As noted earlier, the typical initial interaction goal in informal contexts is to become acquainted. Scenes in the MOP, therefore, should promote that goal. Given that initial interactions are governed to a large degree by cultural norms, interlocutors would be expected to have acquired the "scenes that function independently but co-occur." Thus, convergence across individuals as to the informal initial conversation MOP would be expected. Although different scripts may be employed for the enactment of each scene, our interest at this point is in identifying the scenes.

Although the scenes in the informal initial conversation MOP are expected to be shared by individuals within the same culture, the ordering of the scenes is not

expected to be strongly causal. Abelson (1981) differentiated between strong and weak scripts, the difference referring to the strength of causal connections between constituent parts of the script. Although the notion of script has been revised, the idea that causal ordering of constituent parts is variable can still be applied to the ordering of the scenes by a MOP. The informal initial conversation MOP is believed to be weakly ordered, due to the rough equivalence of a subset of topics at any one time. Thus, scenes organized weakly into subsets of scenes are hypothesized. These subsets are then more strongly ordered. However, as particular scenes (topics) can bridge subsets (i.e., occur in more than one subset), these scenes would then serve a linking function that permits the conversation to be maintained at its current state (within its subset) or altered to another state (the next subset). Thus, depending on the extent to which the goal of the MOP is achieved (or achievement is desired), interlocutors can direct the course of the conversation and respond to the directioning of conversation partners. This research, therefore, seeks to verify the existence, and determine the nature, of the informal initial conversation MOP, recognizing that the scenes are likely to be weakly ordered and centered around topics.

Our goal is not only to show the existence of such a cognitive structure in memory, but also to demonstrate that conversational behavior exhibits these same regularities. In other words, the cognitive structure *and* the structure of the discourse per se are believed to function as a weakly ordered set of topics, each with instrumental goals. Our purpose is to demonstrate that there is correspondence between thought and talk in terms of structure, indicating that the cognitive system guides discourse production as well as discourse comprehension.

To achieve this dual goal of examining the conversation MOP at both cognitive and behavioral levels, a two-part research project was undertaken. Part I was concerned with verifying the existence of the informal initial conversation MOP and isolating its scenes. Part II sought to determine if the scenes appearing in the cognitive structure also appear in actual discourse, that is, if discourse structures correspond to cognitive structures. Such a two-pronged approach has been deemed necessary for verifying the cognitive production of discourse (Kellermann, 1984).

PART I. THE COGNITIVE STRUCTURE FOR INFORMAL INITIAL CONVERSATIONS

To verify and explore the nature of the informal initial conversation MOP, it is necessary to develop procedures that tap individuals' knowledge structures for this context. Bower et al. (1979) have developed a procedure for eliciting the major scenes (termed "actions" in their research paradigm) in a MOP. This procedure has been utilized by a number of other researchers (e.g., Pryor & Merluzzi, 1985) and has become the standard procedure for investigating this type of knowledge structure. Consequently, with only minor modifications for

the MOP being considered, the procedure of Bower et al. (1979) was used. It involves developing a survey to elicit the actions in the MOP under consideration.

Methodology

Survey Construction. A survey was constructed to elicit actions that would typically occur in informal conversations between two persons meeting for the first time. Informal conversations were defined by example in the instructions to participants as party situations or as meeting someone at a bar, a grocery store, or the neighbors. The instructions stressed that this informal conversation was occurring between strangers, persons who had never talked before. Furthermore, we asked the participants to provide actions that would *typically* occur across such informal initial interactions (so specific scripts of a scene were not tapped, but the generalized scene itself was). Because the scenes are abstractions of conversational units, participants were instructed not to write out a conversation verbatim, but instead to abstract the actions and list them in sequential order. No instructions concerning the *nature* of the abstractions were provided, so that participants could not be biased into providing topics as scenes. Furthermore, the instructions asked participants to report only verbal actions typical in informal initial conversations. Each participant was asked to generate at least 20 actions that typically occur when persons meet for the first time informally and converse. Participants were told to list the actions they generated in order on the survey, starting with the verbal action that typically opens such conversational encounters and ending with the verbal action that typically stops or closes such conversations. To ensure that each action could be clearly identified by researchers, the survey had two sheets with 30 horizontal lines drawn on each, every line of which was numbered (e.g., "act 1," "act 2"). Participants were instructed to separate each action, listing one action per line.

Participants. The surveys were distributed to 232 undergraduates drawn from a wide variety of majors at the University of Wisconsin. Of these 232 surveys, 74 had to be discarded for failure of the participants to follow instructions. The surveys were discarded for one of three reasons: (a) the conversations had been written out verbatim rather than abstracted into actions, (b) over 50% of the actions were nonverbal (when only verbal actions had been requested), or (c) the actions were situation specific (script-based) rather than typical of most informal initial encounters (scene-based). Consequently, 158 surveys were usable.

Coding Procedures. The goal of these coding procedures was to develop a set of categories for the actions listed on the surveys. Prior to classification of actions, each survey was coded for the total number of actions it contained. During this coding, each survey was checked to make sure each line contained

only one act and that the act on each line was a verbal action rather than a nonverbal action. Two coders were trained in this procedure until they achieved high reliability in identifying verbal actions ($r = .95$). In the event one line of the survey contained two verbal actions (signified by use of such words as "and," "then," and "also"), two actions were marked for that line. In the event the action recorded on a line was nonverbal, it was deleted. On the average, participants generated 20.84 verbal actions ($n = 3292$, range = 8–57). Each act was then assigned a rank that was determined by the order in which it was listed on the survey.

Each verbal action was assigned to a category using a strict categorization rule: Unless the act was written *exactly* the same as other acts, a new category was started. At the end of this classification procedure, 33 acts were assigned to categories that were very infrequent. Of these 33, only 13 were totally unique; that is, 13 acts were suggested by participants that were not duplicated by any other participant. The remaining 20 acts, although not unique, simply occurred too few times for a "true" category to be retained. This low ratio of unique to total acts (13/3292) is considered evidence of consistency across individuals by Bower et al. (1979) in the isolation of a MOP, given a large number of categories, as occurred here, and approximately 20 acts generated per subject, as occurred here.

Categories were then collapsed if there was an overlap of key words used to describe an action. For example, "see you" and "see you later" were collapsed into an "until later" category, because the key words of "see you" did not vary. Forty-nine categories remained after this collapsing procedure.

The actions in each of the 49 categories were analyzed to determine the placement of each category in the conversation MOP. Placement was determined by generating a mean rank for the category and then ordering categories by this mean rank. Because participants had provided varying numbers of total acts in their individual surveys, an adjusted rank for each act in a category was computed prior to determining the mean rank for the category. The adjusted rank converted the rank a participant had assigned to an act to a 100-point scale, based on the ratio of the participant's rank of the act to the total number of acts that participant had identified. Thus, if a given act had been the 5th act of 20 identified by a participant, the adjusted rank would be 25. The mean rank for each category was then computed, using these adjusted ranks. However, the mean rank could only be based on those acts that belonged to the category. As a result, the *stability* of a given mean rank varies as a function of the number of participants who generated the acts in the category.

To account for such variations in stability, criterion levels for inclusion of a category in the conversation MOP were set (as they were by Bower et al. in their 1979 analyses). Multiple inclusion levels were established: A minimum of 20% of the participants surveyed had to generate the verbal action for the category to be included in the conversation MOP; further criteria of 35%, 50%, and 65%

were employed to differentiate between levels of agreement for inclusion and to note the strength of given scenes in the MOP. In this sample, these inclusion criteria imply that 31 of the 158 participants surveyed had to have generated a verbal action for that category to be included in the conversation MOP (the 20% inclusion criterion); 55 participants corresponded to the 35% criterion, 79 participants to the 50% criterion, and 102 participants to the 65% criterion.

Results

Scenes in the MOP. As hypothesized, scenes in the conversation MOP are centered around topics. Furthermore, these scenes clearly follow the order of initiation, maintenance, and termination isolated by Douglas (1983, 1984). Scenes in the initiation phase are diagrammed in Figure 1, along with the variants in language use that comprise the category. As can be seen in Figure 1, "greetings" open conversational encounters, followed by introductions and references to health, the present situation, the reason for one's presence, and the weather. Attention devices, status reports, and familiarity references do happen, but they fail to meet the minimum level for inclusion in the MOP. These scenes cluster into subsets (based on a series of *t* tests) such that greetings comprise subset 1, introductions and health queries and statements comprise subset 2, and present situation, reason for presence, and weather comprise subset 3. Thus, the scenes in the initiation phase seem to be weakly ordered, though the subsets are more strongly ordered. An interesting sidelight to these results concerns the linguistic invariance that seems to characterize the reporting of the scenes. For example, the category of greetings was reported in only one of six forms by participants: "Say hi/hello," "greet other," "answer hi/hello," "return greeting," "exchange hi's" and "exchange greetings." Every scene in the initiation phase exhibited such linguistic invariance in how it was reported by participants. Thus, we can be confident that a cultural MOP that does have scenes containing *generalized* actions is being tapped. Not only do the scenes exhibit agreement across participants, but the actual linguistic reporting of those scenes exhibits marked invariance.

The maintenance phase of the conversation is outlined in Figure 2. The scenes in the maintenance phase commence with a focus on the two individuals in the conversation. As can be seen in Figure 2, the scenes comprising the maintenance phase of the informal initial conversation MOP are "where do you live?" "hometown," "persons known in common," "what do you do?" "education," "occupation," "social relations," "compliments," "personal interests," "family," and "sports." These scenes also form into subsets, though the first subset overlaps with scenes in the last subset of the initiation phase. Subset 1 of the maintenance phase includes the present situation, reason for presence, and weather scenes from the initiation phase and adds where live, hometown, and persons know in common from the maintenance phase. Subset 2

FIG. 1. Initiation phase

Mean	Verbal Action	Unique : Total People : Actions	Variant	Unique People
6.74	*GREETINGS	114 : 137	Say "hi/hello"	50
			Greet	45
			Answer "hi/hello"	12
			Return greeting	9
			Exchange "hi's"	7
			Exchange greetings	12
12.06	(Attention device)	13 : 16	Excuses	12
			Shocking statements	1
14.90	*INTRODUCTION	123 : 179	Ask name	26
			Tell name	68
			Answer	25
			Exchange names	49
			Comment on name	1
16.12	(Positive evaluation)	19 : 21	Say "Nice to meet you"	14
			Respond	2
			Exchange "Nice to meet you's"	5
19.14	Health	31 : 50	"How are you?"	31
			Answers	10
			Reciprocations	4
23.17	Present situation	40 : 61	Discuss surroundigns	23
			Evaluate surroundings	11
			Talk @ people by you	5
			Common aspect of situation	9
24.59	Reason for presence	36 : 56	"Why are you here?"	22
			Respond	9
			Exchange	12
			Tell	10
31.74	(Status report)	9 : 11	"How are things going?"	5
			"What's up?"	4
35.02	Weather	53 : 64	Comment @ weather	53
			Respond	10
35.43	(Familiarity reference)	14 : 19	Never seen you before	2
			"Haven't I seen you before?"	8
			"Haven't I met you before?"	4
			"I've heard about you."	3

Note. *CAPITAL LETTERS mean over 65% of respondents stated the actions. CAPITAL LETTERS mean 50%–65% of respondents stated the action. Underlining means 35%–50% of respondents stated the action. Typed means 20%–35% of respondents stated the action. (Parentheses) mean less than 20% of respondents stated the action.

FIG. 2. Maintenance phase

Mean	Verbal Action	Unique People : Total Actions	Variant	Unique People
38.82	(Age)	11 : 12	Ask age	6
			Tell age	5
39.84	(Personal background)	20 : 27	Discover background	13
			Discuss background	6
			Tell background	6
41.01	Where live	58 : 86	Ask "Where do you live"	51
			Tell where you live	7
			Discuss where you live	13
42.82	HOMETOWN	80 : 149	Name hometown	69
			Other's knowledge of hometown	12
			Facts about hometown	22
45.83	PERSONS KNOWN IN COMMON	80 : 167	In immediate situation	11
			In past/hometown	10
			In present city	6
			In general	67
48.10	What do you do?	46 : 86	Ask	34
			Provide	13
			Discuss	17
48.67	Education	66 : 204	Ask about	59
			Discuss	57
			Provide	3
49.41	Occupation	53 : 138	Ask about	41
			Provide	17
			Discuss	35
51.19	(Recent life events)	10 : 15	Discuss recent past events	4
			"What have you done lately?"	7
51.71	(Hospitality)	21 : 32	Offer drink/drugs	15
			Ask if want to sit down	3
			Offer food/drink	3
			Offer "X"	5
			Reply	4
51.96	(Humor)	19 : 26	Tell joke	17
			Exchange humor/joke	5
			Respond with joke	2
52.61	(Complain)	7 : 9		
52.90	Social relations	37 : 59	Clubs/organizations	8
			Relationships	26
			"Who do you live with?"	7
53.36	(Current phenomena)	23 : 31	Issues	4
			Events	14
			News	4
			Topic of the day	3
53.42	(Television)	13 : 13		

(continued)

FIG. 2. (Continued)

Mean	Verbal Action	Unique People : Total Actions	Variant	Unique People
54.70	Compliments	37 : 54	Compliment person	15
			Compliment looks	6
			Compliment clothes	15
			Compliment generally	7
			Respond	6
56.87	Interests	48 : 69	Discuss interests	17
			Discuss hobbies	15
			Discuss interests/hobbies	10
			Discuss interests/activities	10
57.50	(Fashion)	5 : 5		
59.29	(Music)	19 : 30	Discuss	6
			Preferences	12
			"Have you heard . . . ?"	2
59.42	(Vices)	7 : 10		
60.04	(Movies)	18 : 22	"Have you seen 'X'?"	6
			Discuss	14
60.79	(Goals/intentions)	29 : 44	Ask @ future plans/goals	17
			Discuss future plans/goals	19
			Tell of future plans/goals	3
62.61	Family	31 : 46	Discuss family	22
			Discuss brothers/sisters	8
			Discuss parents	5
63.72	Sports	40 : 62	Discuss	20
			Participate in?	11
			Viewed or attended?	6
			Ones you like?	9
64.72	(Books)	7 : 8		
65.06	(Local entertainment)	20 : 27	Places to go	17
			Things to do	9
66.96	(Politics)	21 : 31	Discuss political views	14
			Discuss candidates	3
			Discuss global issues	4
			Discuss domestic policies	3
68.98	(Travel)	20 : 33	Places you've been	10
			Places you're going	8
			"Do you travel?"	3
			Discuss	7
71.48	(Religion)	4 : 4		

Note. *CAPITAL LETTERS mean over 65% of respondents stated the action. CAPITAL LETTERS mean 50%–65% of respondents stated the action. Underlining means 35%–50% of respondents stated the action. Typed means 20%–35% of respondents stated the action. (Parentheses) mean less than 20% of respondents stated the action.

of the maintenance phase also overlaps with subset 1, in that it contains the scenes of where live, hometown, persons known in common, what do you do, education, occupation, social relations, compliments, and interests. Subset 3 also exhibits this overlap, in that it contains the scenes of social relations, compliments, interests, family, and sports. A clear change in focus is noticeable *through* the maintenance phase and *in comparison* to the initiation phase. In contrast with the initiation phase, scenes in the maintenance phase focus on the individual as a psychological and unique entity. These scenes, at least by subset, progress from factual information (where do you live, hometown, persons known in common, etc.) to opinion/attitude/value information (social relations, compliments, personal interests, family). However, the maintenance phase seems to terminate when a *decrease* in personal information occurs by a shift in focus to a topic such as sports. Similar to the findings for the initiation phase, there is linguistic invariance in the reporting of scenes in the maintenance phase. This linguistic invariance buttresses the viability of these topics as scenes in the informal initial conversation MOP, because they indicate there is convergence in the general actions and goal of the scene. It should be mentioned that a number of categories failed to meet the minimum level for inclusion as a scene in the MOP for the maintenance phase. Again, these scenes do happen, though just *infrequently*. Thus, such scenes could be representative of idiosyncratic elements of a MOP or of scripts embodied in other scenes in the MOP.

The scenes in the termination phase are outlined in Figure 3. The termination phase includes the possibility of a future meeting, the evaluation of the present encounter, a plan for a future meeting, a positive evaluation of the partner, and exchanges of until laters, reasons for terminating the conversation, and good-byes. These scenes are organized into two subsets: Subset 1 includes the scenes from discussing future meeting to the reason for terminating the encounter. Subset 2 includes the scenes of the reason for terminating the encounter and good-byes. It is possible that, if individuals were not attracted to their conversational partners, the organization of scenes in the termination phase of the MOP would permit exiting the encounter by providing a reason for termination and/or simply saying good-bye. However, the reason for a termination scene is a bridge scene from the first set, so, if one were attempting to exit the encounter quickly, it might be likely that this scene, as well as the good-bye scene, would appear. In contrast, the first subset in the termination phase seems to involve scenes that would occur if an interlocutor were attracted to the conversational partner. Indeed, a majority of participants completing the surveys indicated precisely this decision rule as a *condition* for choosing a scene from the first subset or going immediately to a reason for terminating and saying good-bye in the second subset. As with the earlier phases, the scenes were again reported with marked linguistic invariance.

A summary listing of the informal initial conversation MOP is provided in

FIG. 3. Termination phase

Mean	Verbal Action	Unique People : Total Actions	Variant	Unique People
74.43	(Talk @ near future activity)	28 : 35	General upcoming plans	17
			Where going after this?	6
			Come here often?	6
85.29	Discuss future meeting		Offer	
			Discuss meeting again	15
			Suggest meeting again	30
			Request meeting again	7
			Invite to do "X"	6
			Request going/doing "X"	13
			Respond	
			Accept or reject	11
			Evaluate offer	4
85.63	Evaluation of encounter	47 : 63	Comment on prior topic	5
			Comment on time spent	7
			Express enjoyment of talk	22
			Express enjoying talk to you	14
88.62	(Exchange contact information)	23 : 26	Ask	5
			Provide	3
			Exchange	15
88.73	Plan future meeting	38 : 45	Arrange future meeting	23
			Set a time/place	6
			Set a time	7
			Set a place	3
			Set an activity	2
90.13	Positive evaluation of person	63 : 81	Say "Nice to meet you"	58
			Respond	15
			Exchange "Nice to meet you"	5
90.41	Until later	49 : 72	"Hope to see you again."	19
			"Maybe see you again."	5
			"See you."	5
			"See you later."	12
			"See you around."	8
			"See you at 'X' time."	2
			"Catch you later."	4
			"Talk to you later."	4
			"Give me a call."	7
91.65	(Wish well)	30 : 37	"Have a nice 'X.'"	9
			"Take care."	6
			"Take it easy."	4
			"Be careful."	2
			"Good luck."	6
			"Good luck with 'X.'"	6
93.17	Reason for terminating	65 : 89	Description ("gotta run")	23
			Excuse yourself	5
			Ask/give permission to leave	2
			Apologize	1
			Temporal prompt ("time to go")	9

FIG. 3. (Continued)

Mean	Verbal Action	Unique : Total People : Actions	Variant	Unique People
			Give reason	21
			Must go do "X"	11
			Have an appointment	10
98.26	GOODBYES	91 : 105	Goodbye/farewell/goodnight	74
			Answer goodbye	13
			Exchange goodbyes	17

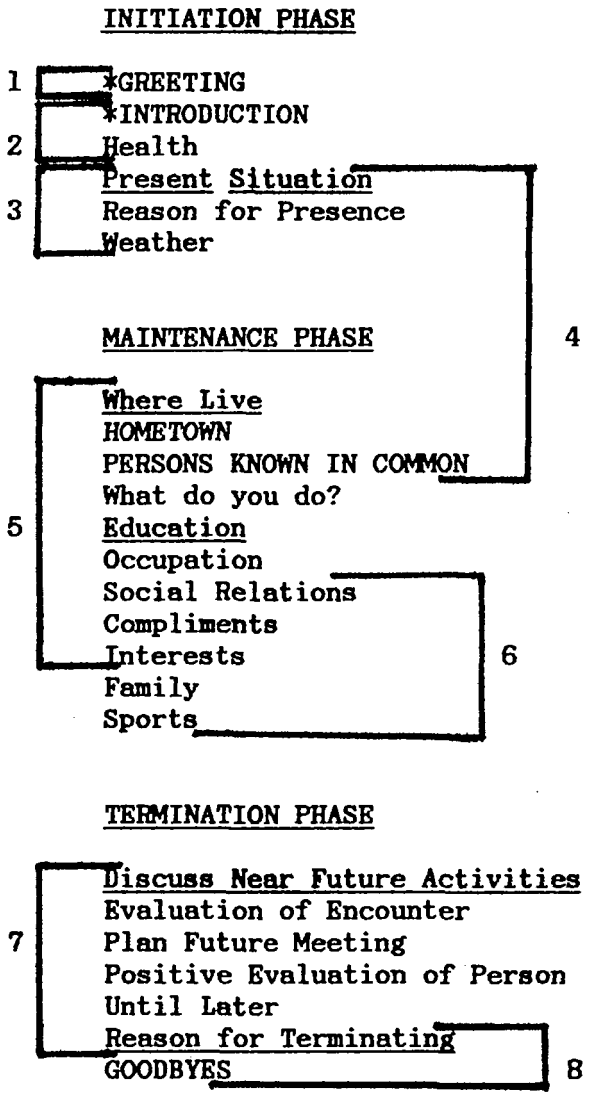
Note. *CAPITAL LETTERS mean over 65% of respondents stated the action. CAPITAL LETTERS mean 50%–65% of respondents stated the action. Underlining means 35%–50% of respondents stated the action. Typed means 20%–35% of respondents stated the action. (Parentheses) mean less than 20% of respondents stated the action.

Figure 4. The scenes in Figure 4, along with their marked subsets, are weakly ordered, with the subsets being more strongly ordered. The scenes are centered around topics as hypothesized. Furthermore, clear bridge scenes exist between subsets, except in the movement from the maintenance phase to the termination phase.

The Nature of the Scenes. Although it was not a focus of this research, preliminary (though not conclusive) analysis of the generalized actions comprising some of the scenes in the MOP was made. Certain categories of scenes had almost two times as many actions as participants generating those actions, indicating that participants were generating multiple actions per category. To explore the nature of the generalized actions in these scenes, the categories that had less than a .54 ratio of people to number of actions generated were reanalyzed. Six scenes met this criterion: where live, hometown, persons known in common, what do you do, occupation, and education. Each of these categories occurred in the maintenance phase of the MOP.

Each of these six scenes produced a sequence of generalized actions that was virtually identical; we called these generalized action routines "subroutines." In Figure 5, the subroutine structure for the scenes of where live, where from, persons known in common, and what do you do, are provided. The subroutine structure is provided on the left side of Figure 5, and exemplar verbal actions provided by participants are listed as part of the subroutine for each respective scene. The subroutine is similar across these four scenes and has six generalized acts: get facts, discuss facts, evaluate facts, discuss explanations, discuss goals/intentions, and discuss enabling conditions of the goals/intentions. Thus, the hometown subroutine involves getting facts about where someone is from, discussing the hometown, evaluating the hometown, explaining the evaluation of the hometown, discussing plans to return, and potentially discussing how those plans can come to be realized.

FIG. 4. The informal initial conversation mop



Note. *CAPITAL LETTERS mean over 65% of the respondents stated the action; CAPITAL LETTERS mean 50–65% of respondents stated the action; Underlined means 35–50% of the respondents stated the action; Typed means 20–35% of the respondents stated the action; (In Parentheses) means less than 20% of the respondents stated the action.

FIG. 5. Subroutines for residence, hometown, mutual friend, and what do you do

	Residence Subroutine	Hometown Subroutine	Mutual Friend Subroutine	What Do You Do Subroutine
Get facts				
Do you?				
Ask "X"	Where do you live?	Where are you from?	Do you know "X?"	What do you do?
Answer	I live at "X" location.	I'm from "X" spot.	Yes/No	I'm an "X."
Other asks	Where do you live?	Where are you from?		Do you go to school or work?
Answer	I live at "X" location.	I'm from "X" spot.		I'm an "X."
Familiarity?	Do you know where that is?	Do you know where that is?		
	Have you heard of that?	Have you heard of it?		
	I (don't) know where that is.	I (don't) know where that is.		
		I've (not) been there.		
How long?	How long have you lived there?	How long have you lived there?	How long have you known "X?"	How long have you done that?
	I've lived there "X" time.	Did you grow up there?	I've known "X" a long time.	
Where do you?			Where did you meet "X?"	Where do you work/study?
Discuss facts	Discuss location	Discuss hometowns	Discuss "X"	Discuss work/school
			Discuss experiences with "X"	
Evaluate facts				
How is it?		What is it like?	How is "X?"	What is it like?
Do you like it?	Do you like "X" location?	Do you like your hometown?	Do you like "X?"	Do you like it?
Opinions/beliefs	What do you feel/think about it?	What do you feel/think of it?	Isn't "X" a nice person?	What do you feel/think of it?
Acknowledgements			I agree.	I agree.
Explanations		Explain why like/hate it	How did you meet "X?"	Explain why like/hate it
Goals/intentions		Do you want to go back?	Are you going to see "X" soon?	What do you want to do in future?
				Intending to stay?
Enabling conditions			Give my regards to "X."	Problems you have

The get-facts stage tends to be question driven, centering around the "where, are/do you, how" questions that Robinson and Rackstraw (1972) have found to be important in discourse. For example, getting facts about hometowns involves asking "Where are you from?," "Do you know it?," "How long have you lived there?," and so forth. Although the discuss-facts stage is not often *described* by participants for these four subroutines, it is possible that the "what, when, who" questions of Robinson and Rackstraw are the primary focus. For example, the discuss-facts stage of the hometown subroutine might involve questions of "What do you do there?," "When is a good time to go there?," "Who lives there?," and so on. Support for this reasoning can be found in the subroutines for occupation and education outlined in Figure 6. For these two scenes, the discuss-facts stage was explicitly described by participants as involving the elicitation of information about *focus* ("What is it you do exactly?"), about work *conditions* ("What is the 'system' like?" or "When do you have to do things?"), and about *authorities* ("Who do you deal with?"). Indeed, it appears that each of these subtopics in the education and occupation scenes can be developed according to the same subroutine used for the overall scene. For example, in the occupation subroutine, eliciting information about the focus of the job involves getting facts, describing those facts, evaluating those facts, explaining behavior, identifying goals/intentions, and discussing enabling conditions. For each subtopic in these two scenes' subroutines, the very same subroutine seems to be reestablished and then carried through each step of the subroutine. In other words, a subroutine can be nested *within* another subroutine. The reasoning behind this claim is that the subroutine for the scene listed in the left column was generated by *participants* and *not* imposed as a structure by ourselves. Participants generated *both* the generalized actions of the subroutine and the exemplars of the subroutine as applied to the scene and to the sub-subroutines. The subroutine structure generated by participants is exactly identical to the structure imposed by the researchers for the four scenes in Figure 5.

Although these results are clearly exploratory and insufficient to test any particular hypothesis about the generalized action sequence related to any specific scene, it nonetheless appears that *one* generalized action sequence is guiding the development of each of these scenes. Schank (1982) has argued for the existence of universal scenes, which are defined as generalized action sequences that are role related but context free. In other words, the universal scene must apply to some general role domain (such as "interlocutor") but can apply to any particular context related to that role. If this subroutine is a universal conversational scene, interlocutors would be capable of talking about any topic (scene) by simply applying the generalized actions in the universal scene (the subroutine). Again, these results are speculative, given the limited sample of actions available for analysis of the subroutines. Nonetheless, such similarity in structure across scenes is consistent with the assumption of cognitive economy and individuals' being cognitive misers.

FIG. 6. Occupation and education subroutines

Occupation Subroutine

Get facts	
Do you?	Do you work?
Answer	Yes/no
Do you?	Do you work?
Answer	Yes/no
Familiarity?	
How long?	How long have you worked there?
Where do you?	Where do you work?

Education Subroutine

Do you go to school?
Yes/No
Are you a student?
Yes/No
When did you graduate from high school?
What year are you?
Where do you go to school?
Where have you gone to school?

	Focus of Job Subroutine	Work Conditions Subroutine	Authority Subroutine	Focus of School Subroutines		Work Conditions Subroutine	Authority Subroutine
Discuss facts	What line of work?	What work required?	Who is your boss?	What is your major?	What classes?	What work's required?	What profs?
	Answer		Answer		Answer		
	And you?			And you?			
	Answer			Answer			
	Describe occupation	Describe work/pay	Describe boss	Describe major	Describe	Describe work/hours	Describe prof
Evaluate							
How is it going?					How going?	How did exams go?	
Do you like it?	Like occupation?	Do you like work?	Do you like boss?		Like them?		Like prof?
Opinions/beliefs	How feel about it?				What think @?		
Acknowledgements	I see.					That's too bad.	
Explanations	Why did you choose it?			Why choose it?			
Goals/intentions	Do you have future plans?			What do with it?			
Enabling conditions	Do you have the skills?						
	How is the job situation?						

Other Structures. Instead of providing verbal actions, some participants represented the discourse structure in terms of goal sequencing, topic sequencing, or form sequencing. These surveys were analyzed separately, though any results must be considered exploratory and tentative, given the small sample sizes they are based on. Nonetheless, these goal, topic, and form structures were explored because of the *consistency* we were finding in response patterns of participants adopting this approach. The sequencing found for each of these three structures is outlined in Figure 7. These structures are similar, regardless of whether they were being viewed as a search for commonalities, an exercise in topic exchanges, or a development of form. Question–answer periods seem to guide the search for commonalities that occurs through the suggestion of topics. The discussion of commonalities parallels the discussion of topics, which seems to occur through forms of discussion, agreement, and backchanneling. The exchange of opinions on commonalities mirrors the exchange of opinions on form, which includes debating and storytelling. Finally, it is interesting to note the iterative process assumed by the "find another commonality" and "change topics" categories. Winding down the conversation appears to occur by return to an earlier general *topic (much as with* the analysis of scenes earlier) and by shortened responses. Perhaps most interesting is the comparison of the these structures to the subroutine structure. Many similarities are immediately apparent. The subroutines, as well as these structures, seem to involve a fact-finding mission, a discussion mission, an evaluation mission, and a means of closing down the topic (i.e., finding a new topic). Clearly, such similarity in structure at all levels is provocative, though testing of such structure must remain for future research. Nonetheless, these structures provide evidence of the *goal* for each *scene* in the conversation MOP; that is, the goal is to become acquainted by searching for commonalities. Furthermore, the fact that *scenes* are *topical* in nature is supported in the topic-sequencing structure. The discussion of topics is the *means* by which the goal of the conversation MOP is accomplished. Finally, the form-sequence structure suggests the *linguistic components* that will attach to any particular set of actions designed to carry out a scene; that is, the form of verbal behaviors individuals employ as they "go through" the subroutine for each topic matches the *substance* of the talk about the topic.

Discussion

Not only does the informal initial conversation MOP receive verification with these results, but the scenes organized by that MOP are now known to be topic centered, to be weakly ordered, and to include bridge scenes between more strongly ordered sets of topics. Moreover, the goal of the scenes seems to be centered around locating commonalities. It was noted earlier that the informal initial conversation MOP is a likely candidate for inclusion in such meta-MOPs as developing an intimate relationship or developing a social life. Indeed, this

FIG. 7. Goal, topic, and form structures

Goal Sequence Structure			Topic Squence Structure			Form Sequence Structure		
Start conversation								
Commonalities	(66/155)	48.21	Topic exchange	(23/37)	56.42			
Search for/find commonalities	(48/62)	40.74	Suggest topic	(11/12)	37.69	Interrogation	(25/59)	40.77
						Question–answer sequence	(3/4)	47.81
						Questions	(9/10)	46.26
						Answers	(5/5)	65.28
						Question by A	(8/8)	18.80
						Answer by B	(8/8)	28.24
						Question by B	(7/7)	24.86
						Answer by A	(4/4)	29.03
						More questions	(6/9)	59.29
						More answers	(3/4)	61.46
Discuss commonalities	(40/58)	49.76	Discuss topic	(3/4)	53.76	Discuss	(16/27)	46.85
						Agree	(11/14)	44.58
						Backchannel	(6/7)	48.36
Exchange opinions	(13/18)	61.23				Get opinions	(14/19)	62.39
						Debate	(11/16)	62.42
						Stories	(7/8)	62.84
Find another	(12/17)	59.74	Change topics	(14/14)	60.53			
Wind down conversation	(6/8)	81.27	Return to earlier	(5/7)	81.82	Shorten responses	(3/4)	85.86
Parting remarks	(19/22)	94.63	general topic					

search for commonalities is an exercise in becoming acquainted that would *permit* the accomplishment of the goal(s) associated with such relational meta-MOPs. In addition, although our results are speculative, it is our contention that one relatively simple universal scene is systematically applied to each scene in the MOP. In other words, our results are thought to suggest the possibility of one relatively simple set of generalized actions being applicable to any topic of conversation. Such a claim would imply that individuals could conduct discourse on topics they know little to nothing about, a situation we have all encountered and seem to have handled. Thus, the *flexibility* of such a cognitive representation of discourse is great. If an interlocutor initiates a scene (topic) that conversational partners do not have in their own MOP, the universal scene could be applied, so that the discourse could continue unimpeded. Clearly, such reasoning needs to be verified by further research, though much of the tension between our intuitive belief in both conversational flexibility and conversational routine can be resolved if this universal scene does indeed exist.

This presumption of a universal scene is consistent with findings from other research programs, specifically, the research conducted by Kellermann and Berger (Berger & Kellermann, 1983, 1986; Kellermann, 1984; Kellermann & Berger, 1984). These investigators have consistently demonstrated cyclicity in the verbal behaviors of persons engaged in initial conversational interaction. In other words, various verbal behaviors cycle over the course of a conversation, waxing and waning as time progresses, specifically, question-asking cycles, as do explanations for behavior and information about goals/intentions. If there is a universal scene that involves getting facts, discussing facts, explaining facts, discussing goals/intentions, and discussing enabling conditions for those goals/intentions, such cyclicity would be *expected* as part of the structure of discourse. For example, as each scene in the conversation is initiated, question asking would be expected to be high, as per the form macrostructure and the question-driven nature of the get-facts and discuss-facts stage of the subroutine. However, as persons move toward discussion of evaluation, goals/intentions, and enabling conditions, the interrogation sequences diminish while statement-based linguistic forms increase. Thus, the generalized actions in the universal scene are consistent with the cyclicity detected in form and content in other research.

What is left unanswered by this reasoning is when and why individuals decide to progress *through* the subroutine. Certainly, much discourse on any given topic simply involves only one or two of the questions in the get-facts stage of the subroutine. A new topic is then introduced and handled in a similar fashion. Our data do not allow any conclusions concerning when or why persons choose to "go down" the subroutine versus "moving on" to a new scene. The *action rules* for determining the choice of linear versus hierarchical movement would be interesting to investigate. One possibility is that the information elicited in the get-facts stage does not promote the conversational goal of the commonality search, though it might be sufficient to satisfy the instrumental goal of the scene.

Regardless, the possibility of a universal conversational scene suggested by our data is believed to be provocative and powerful for understanding discourse structure and comprehension.

PART II. THE CORRESPONDENCE OF COGNITIVE AND DISCOURSE STRUCTURES

Our initial goal was to verify the correspondence of the cognitive structure and the structure of discourse, so that understanding of discourse production and comprehension could be expanded. Although our exploration of the informal initial conversation MOP was suggestive of future research directions, it was felt necessary to determine if this cognitive structure were capable of guiding discourse production. If the MOP is guiding behavior, then discourse structure should mirror the structure of the MOP. In other words, the scenes in the MOP should appear in actual discourse. Furthermore, these scenes would be expected to be weakly ordered, with bridge scenes connecting subsets of the scenes. Given that our research interests lie in understanding the nature of discourse, it is believed that whatever structure emerges behaviorally can be used to test the adequacy of any cognitive structure claimed to produce that discourse. In other words, the structure of the discourse is a given explained via recourse to cognitive theory. The cognitive explanation, however, would be falsified if the discourse structure were significantly different from the cognitive structure. Thus, this phase of the research project sought to examine the typical scenes produced in discourse and to explore the ordering among the scenes.

Methodology

Participants. Participants in this research were 86 undergraduates drawn from communication courses at Northwestern University and the University of Wisconsin. No overlap in the sample was permitted between the Part I phase of the research project and this phase. There was a wide diversity of majors in the sample, in that the courses from which participants were recruited satisfied general university requirements. These participants were organized into 43 dyads, approximately 1/3 of whom were mixed sex dyads, 1/3 were male–male dyads, and 1/3 were female–female dyads. The gender composition of the conversational dyads was allowed to vary randomly, so that results would not be limited by gender composition.

Procedures. When participants were recruited for the research, each was asked to place his or her name on the sign-up sheet next to the name of another person whom he or she did *not* know, (because the structure of *initial* conversations was of interest. All participants were given written instructions when they came to the laboratory at the assigned time. These instructions informed them

that they would be conversing each with another person who was a stranger; that they should hold an informal conversation much like they might if they were meeting another person at a party, the neighbors', a grocery store, or a bar; that they should *not* pretend they were in any one of these specific situations; and that they should act as they *typically* would when informally meeting someone for the first time. These instructions mirror those provided participants in Part I of this research project and describe the constraints of informal initial interaction.

After participants individually read their instructions, the experimenter asked if there were any questions and made sure that the dyad members had never met previously. Dyads were then taken to an experimental room where they conversed for a period of 5 min, during which their conversations were videotaped from behind a one-way mirror, with their knowledge. Participants were then debriefed and thanked for their participation.

Coding. Because the research centered on interest in the discourse structure for *typical* informal initial interactions, coders assessed each conversation for its typicality. The reliability of the coders was high ($r = .98$). To inhibit consistency in ratings, these conversations were interspersed with conversations collected for other research projects, in which typicality might be expected to vary. The conversations used in this research were found to be typical of informal initial interactions by the coders; on a 1–7 scale (7 = typical), the mean was 6.3 (range = 5–7).

Coders were then trained to isolate the *scenes* employed by the conversational participants. Scenes were defined as a set of utterances dealing with a single topic and having a single overarching content objective, as is consistent with our approach to the definition of conversational scenes in a MOP. Coders were provided a list of *all* scenes generated by participants from Part I of the research, *including* those scenes that did not occur with sufficient frequency to be part of the MOP. "Unique" scenes (the "unique" verbal actions) were also provided to coders.

Exemplars for each of these scenes were provided and discussed with coders. Coders were told that these scenes were *not* exhaustive; indeed, they were informed that they would probably encounter many scenes that would not be on the list we had supplied. Reliability in coding was achieved quite quickly. Three conversations were coded by each of the three coders. A total of 30 unique scenes was identified by the coders, 29 of which were identically defined and sequentially ordered by all three coders. One coder included a scene the other two did not. In other words, three coders simultaneously agreed on the scenes and their ordering 96.7% of the time. Thus, the researchers were confident the conversations were coded reliably as to their scenes.

The procedures from this point forward were virtually identical to those for the data from Part I. An index card was used to record information for each scene: the definition of the scene, the dyad producing the scene, the rank of the

scene in the conversation, and the total number of scenes produced by that dyad (N = 707 scenes; M = 16.4; range = 7–29). The index cards were then categorized, with categories collapsed on the basis of key words (N = 37 collapsed categories). An adjusted rank was calculated for each act in a category to compensate for the varying number of scenes produced by each dyad. As with the survey data, a scale of 0–100 was employed for this adjusted rank. The overall mean for the category was then computed on the basis of the scenes comprising the category. The inclusion criteria were the same as Part I: 20% of the participants minimally needed for scene inclusion (8 dyads); 35% (15 dyads); 50% (21 dyads); and 65% (28 dyads).

Results

Scenes in Discourse. Thirty-seven discrete scenes emerged from the conversations of the dyads. Of these, 3 did not surface as suggested scenes in Part I. These new scenes are locations, food, and transportation. None of these new scenes met the 20% criterion for inclusion in the structure of discourse. Figure 8 outlines the scenes, their respective means, and the number of dyads producing each scene. As can be seen, the initiation phase of a conversation commences with greetings, which are followed by health, introduction, positive evaluation, and present situation. As with the Part I findings, greetings form a unique subset, and health, introductions, and positive evaluations group together into a second subset (as determined by pair-wise t tests). Present situation is again a bridge scene between initiation and maintenance phases of conversation, being contained in the first maintenance subset along with education, recent life events, occupation, persons known in common, hometown, goals/intentions, humor, and personal background. The second maintenance phase subset includes the bridge scenes from recent life events to personal background and adds sports, travel, interests, and where live. The third maintenance phase subset includes two bridge scenes from the first maintenance phase subset (humor, personal background) and six bridge scenes from the second maintenance phase subset (humor, personal background, sports, travel, interests, where live?). The only unique scene in this subset is family. The fourth maintenance phase subset includes one bridge scene from the second maintenance phase subset (personal background) and all scenes but humor from the third maintenance phase subset. The only unique scene in this subset is social relations.

Figure 9 outlines the structure of discourse in terms of its scenes. Subsets for the scenes are also diagrammed. As can be noticed, the scenes in the initiation phase of conversation are weakly ordered, though the subsets of scenes are strongly ordered. In contrast, not only are the scenes in the maintenance phase weakly ordered but also subsets of scenes exhibit only moderately strong ordering.

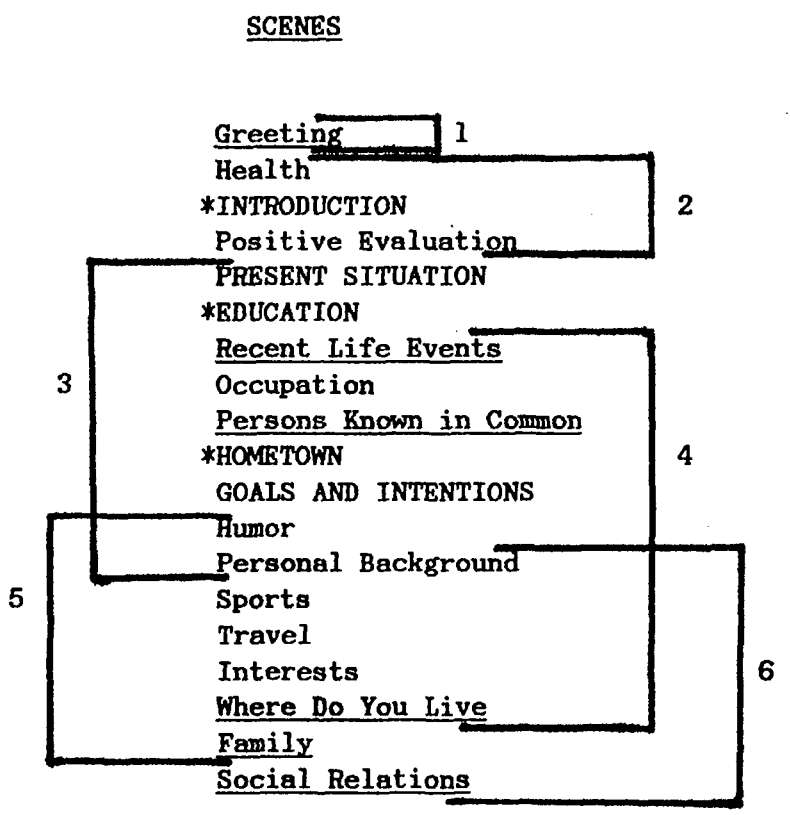
These scenes defining discourse structure summarize each dyad's conversa-

FIG. 8. Discourse scenes

Mean	Scene	Unique/Total Dyads/Scenes
9.11	Greeting	(19/22)
15.46	Health	(14/14)
16.44	*INTRODUCTION	(32/38)
18.13	(Reason for presence)	(4/ 4)
19.52	Positive evaluation	(13/13)
26.70	(Status report)	(2/ 2)
27.73	("What do you do?")	(2/ 2)
46.04	PRESENT SITUATION	(21/36)
48.64	(Compliment)	(3/ 5)
51.46	*EDUCATION	(42/136)
52.27	(Television)	(2/ 2)
53.30	Recent life events	(15/25)
53.81	Occupation	(14/23)
54.11	(Familiarity reference)	(4/ 6)
55.04	Persons known in common	(16/23)
56.52	*HOMETOWN	(28/52)
57.22	GOALS/INTENTIONS	(25/56)
57.51	Humor	(9/14)
58.66	Personal background	(10/15)
60.45	(Current phenomenon)	(5/ 7)
62.30	Sports	(13/30)
65.00	Travel	(13/24)
65.66	Interests	(11/18)
66.20	"Where do you live?"	(16/30)
66.55	(Locations)	(5/ 7)
67.98	(Movies)	(3/ 3)
68.39	Family	(17/32)
70.32	(Local entertainment)	(5/ 5)
70.37	(Food)	(1/ 1)
71.32	(Complaints)	(4/ 4)
72.49	Social relations	(20/41)
83.54	(Politics)	(3/ 3)
86.30	(Weather)	(6/ 8)
86.34	(Transportation)	(2/ 2)
88.89	(Vices)	(1/ 1)
90.00	(Music)	(1/ 2)
92.59	(Near future activities)	(1/ 1)

Note. *CAPITAL LETTERS mean over 65% of dyads engaged in the scene. CAPITAL LETTERS mean over 50% of dyads engaged in the scene. Underlining means over 35% of dyads engaged in the scene. Typed means over 20% of dyads engaged in the scene. (Parentheses) mean less than 20% of dyads engaged in the scene.

FIG. 9. Discourse structure



Note. *CAPITAL LETTERS mean over 65% of dyads engaged in the scene. CAPITAL LETTERS mean over 50% of dyads engaged in the scene. Underlining means over 35% of dyads engaged in the scene. Typed means over 20% of dyads engaged in the scene. (Parentheses) mean less than 20% of dyads engaged in the scene.

tion relatively well. Of the 16.4 scenes that occurred on average for each dyad, the discourse structure overlaps, on the average, in 14.9 of those scenes. In other words, only 1.5 scenes, on the average, are in the dyad's actual conversation that do not appear in the discourse structure. Dyads do engage in a minimal number of scenes that are not typical of the discourse structure itself. A number of scenes were produced by dyads that did not meet the minimum criteria for inclusion (see Figure 8). However, most of these scenes were *generated* in the Part I data, though generally these scenes failed the inclusion criteria for both the conversation MOP and the discourse structure. These scenes reflect *idiosyncratic* scenes in the *cultural* MOP that is being described in this research.

Comparing Discourse Structure to the Conversation Mop. There is a strong similarity between scenes that were generated in the survey data and scenes the dyads produced in the conversational data. Only six scenes in the survey data (whether meeting inclusion levels or not) did not emerge at all in the discourse data. These scenes (attention device, age, hospitality, fashion, books, religion) were all low-frequency scenes in the survey data. Similarly, only three scenes emerged in the discourse data that had not been encountered in the survey data (locations, food, transportation). These scenes were also low-frequency scenes in the discourse data.

The conversation MOP organizes 24 scenes, versus the 19 scenes present in discourse structure. To some degree, the difference in this count is due to the fact that the conversations did not progress to the termination phase; the discourse structure tends to be based on only the initiation and maintenance phases. Taking this difference into account, the conversation MOP has 17 scenes in the initiation and maintenance phases, versus the 19 scenes of discourse structure. However, this does not mean that all of the included scenes are identical. Scenes that minimally make the first inclusion level (i.e., the 20% inclusion criterion) seem to be the source of the difference. For example, four scenes (reason for presence, weather, what do you do, compliments) included in the conversation MOP at the 20% criterion did not reach that criterion for discourse structure. Five scenes (positive evaluation, personal background, recent life events, humor, travel) included in discourse structure did not meet the 20% inclusion criterion for the conversation MOP. However, these problems almost all occurred with the 20% inclusion criterion. Only one scene was differentially included beyond the 20% criterion, that being the goals/intentions scene included in discourse structure at the 50% criterion that (barely) failed to make the conversation MOP.

Certainly, some differences in scene inclusion are expected, particularly around the minimum inclusion level of 20%. Self-report data have some inherent limits, in that individuals do not have complete and accurate recall of all events, nor can they necessarily access all cognitive structures equally well. Even given equal access to the cognitive structure, the act of writing out the self-report places constraints on what individuals provide. Despite these problems, however, self-reports are perhaps the only means of actually tapping the exact scenes in a conversation MOP. Even without consideration of these problems of self-reports, marked similarity between cognitive and discourse structures does exist. The percentage of participants suggesting a scene in the survey data correlates highly with the percentage of dyads producing those scenes in actual discourse ($r = .70$, $p < .001$). Furthermore, the mean ranks generated for scenes suggested in the survey data correspond highly to the mean ranks suggested for those scenes in the discourse data ($r = .79$, $p < .001$). This last correlation between mean ranks is particularly enlightening because it includes scenes where the mean rank might not be stable (i.e., low-frequency scenes). The strength of these

two correlations indicates that there is good correspondence between the MOP and discourse structure.

If Figure 9 is compared with Figure 4, it might be concluded that the ordering of the MOP is quite different from the ordering of discourse structure. However, the ordering *between* subsets is more important than the ordering of each scene in the MOP. As hypothesized, scenes are weakly ordered, whereas subsets are more strongly ordered. If *subsets* are compared between Figures 4 and 9, the similarity between the conversation MOP and discourse structure is noticeable. The first two subsets of the MOP correspond almost exactly to the first two subsets of discourse structure (except for the inclusion of the positive evaluation scene in discourse structure). The third subset of the MOP does not appear in discourse structure, but the fourth subset of the MOP is very similar to the third subset of discourse structure. In like manner, the fifth subset of the MOP is quite similar to the fourth subset of discourse structure, and the sixth subset of the MOP is much like both the fifth and sixth subsets of discourse structure. (Note that the fifth and sixth subsets of discourse structure are almost identical.) Thus, *subsets* of scenes are more strongly ordered, whereas individual scenes exhibit weak ordering. Nonetheless, there is a definite *progression* to the scenes in both the MOP and discourse structure, in the form of *subsets* and bridge scenes.

CONCLUSIONS

Informal initial conversation exhibits a structure of scenes that are weakly ordered by subsets. This discourse structure is markedly similar to the cognitive structure individuals have for informal conversational exchanges. The correspondence between the cognitive structures for comprehending and producing discourse and actual discourse structures is consistent with the hypothesis that discourse is guided and comprehended by a MOP with the goal of becoming acquainted. This MOP organizes scenes that have similar instrumental goals of seeking commonalities and extracting identifying information. These scenes are centered around topics that have the specific content objective of a similarity search. As the MOP is weakly ordered, so, too, is the discourse structure. However, the subsets of scenes that occur in the MOP are more strongly ordered and are directly reflected in the subsets of discourse produced.

Although the structure of discourse is "weakly linear," its hierarchical structure seems to be quite patterned. Data from Part I of the research suggest that a universal conversational scene might exist that directs the enactment of each scene. This universal scene contains generalized actions that could be used to talk on almost any topic. The subroutine involves getting facts, discussing facts, evaluation, explanation, discussion of goals/intentions, and isolation of enabling conditions. Although the exploratory nature of such results *must* be emphasized, the *flexibility* for comprehending and producing discourse based on such a cog-

nitive structure is undebatable. This universal scene suggests that a limited set of knowledge structures exists that can be flexibly employed in hierarchical and linear directions. The only specific knowledge structures required are the scenes (topics), the universal scene to supply the generalized actions, and the MOP organizing the scenes. These scenes can then be employed in other MOPs as needed, as can the universal scene of the subroutine. In other words, individuals can adapt to novel situations in relatively routine ways by applying the universal scene to whatever topic appears in the conversational stream. Such flexibility is highly desirable in any explanation of conversational behavior, because rarely is one interlocutor completely able to control the direction of the conversation. Furthermore, when an individual is *comprehending* a conversation in which he or she might or might not be taking an active role, the necessity for such flexibility becomes apparent. Thus, Schank's (1982) view of dynamic memory provides a sound theoretic base for exploring discourse structure, gauging discourse comprehension, and understanding discourse production. The conversation MOP explains how thought is linked to talk.

The linguistic invariance associated with the scenes, as determined by the survey data, is supported by the existence of a universal scene. Sorhus (1977) notes that, in daily conversational exchanges, a fixed linguistic expression occurs, on the average, every five words. Such linguistic invariance is the likely result of the conversation MOP guiding actual discourse behavior. However, the linguistic invariance is indicative of the limited number of scripts attached to each scene in the MOP. Again, the fact that limits exist for the quantity of cognitive structures that individuals maintain must be emphasized. Even more encouraging is the fact that discourse is produced in a flexible manner but with a great deal of linguistic invariance. The implication of such linguistic invariance is that what we often relegate to random error in discourse behavior might well be a script embedded in a scene of a conversation MOP. Future research on fixed linguistic events should investigate the differing *sets* of tactics that might be employed to accomplish the instrumental goal of each of these scenes. Furthermore, such research would benefit by examining which tactics are general to the scene and which are script based. The linguistic invariance found in this research suggests that such a task is not an infinite search for tactics but, instead, a search for a limited set of scripts that provide added details to the generalized actions of a scene or of the universal scene.

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