analytical constructs chosen. This step replicates an elementary notion of meaning and can be accomplished either by explicit instructions to trained human coders or by computer coding. The two evaluative criteria, reliability as measured by intercoder agreement and relevance or meaningfulness, are often at odds. Human coders tend to be unreliable but good at interpreting semantically complex texts (see INTERPRETATION). Computers have no problems with reliability but must be programmed to simulate much of a native speaker's linguistic competence. Notwithstanding major advances in the use of computers, their application usually sacrifices the criterion of meaningfulness in favor of reliability and speed.

Drawing inferences. The most important phase in a content analysis. It applies the stable knowledge about how the variable accounts of coded data are related to the phenomena the researcher wants to know about. The inferential step involved is rarely obvious. How the frequency of references indicates the attention a source pays to what it refers to, which distinct literary style uniquely identifies a particular author, and the way preferences for certain verbal attributions manifest speaker or listener attitudes need to be established by independent means. Analytical constructs of this kind need not be so simple either. In extracting military intelligence from enemy broadcasts, analysts employ elaborate "maps" of known relationships involving the role of and conflicts within the national leadership and among the population addressed. Similarly, inferences about individuals' worldviews from their idiosyncratic styles of reasoning involve several levels, each employing elaborate psychological constructs of their cognition.

Validation. The desideratum of any research effort. However, validation of content analysis results is limited by the intention of the technique to infer what cannot be observed directly and for which validating evidence is not readily available. For example, why would one want to extract military intelligence from enemy propaganda if the adversary's planned activities were already known, why would one want to infer media attention if attention were measurable directly, or why would one want to infer Kennedy's changing attitudes during the Cuban Missile Crisis from his communications if it were possible to interview him? Nevertheless, content analysis should not be undertaken without at least the possibility of bringing validating evidence to bear on its findings.

Limitations

Despite its claim to generality, content analysis has some inherent limitations. The first stems from its commitment to scientific decision making. Statistically significant findings require many units of analysis, and seeking such findings amounts to a commitment to be quantitative. This discourages the

analysis of unique communications or connected (nondecomposable) discourses characteristic of literary, historical, or psychoanalytic inquiries.

The second limitation stems from the replicability requirement. This implies fixed and observer-independent categories and procedures that must be codified without reference to the analyst and the material being analyzed. Computer content analysis is one of its results. It favors the use of data in contexts that entail stable and unambiguous interpretations and leaves little room for those whose meanings evolve in the process of communication and in ways characteristic of the different communicators or social groups involved. Such ambiguities are frequent in political and private discourses.

The expectation to contribute to social theory leads to the third limitation. If categories are obtained from the very material being analyzed, findings are not generalizable much beyond the given data. If they are derived from a general theory, findings tend to ignore much of the symbolic richness and uniqueness of the data in hand. The compromises content analysis must seek are rarely easy ones.

See also AGENDA-SETTING; COMMUNICATIONS RESEARCH: ORIGINS AND DEVELOPMENT; MASS COMMUNICATIONS RESEARCH.

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CONVERSATION

Most human communication takes place in face-to-face informal settings in what may be described loosely as conversational exchanges. In these exchanges the linguistic, paralinguistic, and kinesic (see KINESICS) channels are all involved and interlinked simultaneously. This form of human communication is quite obviously basic. It is the context in which children acquire their first languages (see LANGUAGE; LANGUAGE ACQUISITION), and until the comparatively recent developments of widespread LITERACY and electronic communications it was almost the

only fundamental kind of human verbal communication found in all societies.

Despite this self-evident primacy, conversation has been studied intensively only in very recent years, this study having been facilitated by advances in recording equipment. This research has revealed that, in contrast to earlier views, conversation is not a relatively unstructured form of human interaction. Conversational exchanges are subject to extremely complex procedures that regulate when and how speaking is done and how particular contributions—verbal or nonverbal—will be understood (which depends on their placement with respect to earlier contributions).

Organization of conversation. We owe our knowledge of the structural properties of conversation largely to a group of sociologists—Harvey Sacks, Emanuel Schegloff, Gail Jefferson, and others—who have undertaken intensive qualitative study of taped natural talk. Some of their basic findings can be briefly summarized.

A crucial property of conversation is that it is fundamentally interactional: how a conversation develops is determined jointly rather than by any one party to it, and this holds at almost every level. For example, a pause is something that can only be produced if all parties to a conversation desist from speaking; it is not the product of a single speaker. By the same token, an utterance that is produced without overlap (i.e., simultaneous SPEECH from another) is to that extent jointly arranged.

This coordination is achieved through the use of procedures that regulate verbal interaction as it unfolds. An obvious but fundamental characteristic of conversation is rapid turn taking, that is, speech by one party accompanied by silence from others, with frequent transition of parties between speaking and nonspeaking roles. This repetitive transition is often achieved with split-second timing and little overlap; typically no greater pauses occur between speakers than are found within a single speaker's utterance. Such transitions might be effected in a number of ways, for example, by a speaker producing as long an utterance as desired followed by an "over and out" signal, as on a field radio. Although some investigators have claimed to discover subtle verbal or nonverbal signals with this function, such signals do not seem to be essential to coordinated turn transitions. Rather, turn taking seems to be organized on the following rule-governed basis: the current speaker has the right to finish a minimal linguistic unit (clause or other prosodically defined unit), at the end of which any party may choose to speak, first speaker winning rights to that next unit, which in turn is subject at its completion to competitive turns by others. This predicts, correctly, that overlap will occur typically at transition points and will be caused by competitive first starts. Or overlap can occur just before the intended transition point at which a speaker has appended a tag question, name, or other unpredictable addition. When, because of competitive simultaneous starts, two speakers find themselves speaking simultaneously, there seem to be methods for resolving who should continue to speak. These methods largely involve indicating a degree of determination to continue, signaled, for example, by amplitude increase and syllable lengthening.

Despite ethnographic reports to the contrary, such a system of turn taking in informal talk appears to be universal. Claims that in other cultures people generally speak simultaneously, and thus do not abide by any turn-taking arrangements, seem to be based on impression rather than on careful analysis. For example, quarrels typically involve simultaneous speech, but this is produced more by competitive starts at turn-transition points (as allowed by the hypothesized rules) than by sheer disrespect for the current speaker's right to a turn.

A speaker may use his or her turn to constrain the possibilities of the next speaker's turn by, for example, selecting the next speaker by name or using one of a set of paired turn types, like greetings or question-answer pairs. Known as "adjacency pairs" because each part is normally (but not invariably) produced one after the other, these turn types produce a minimal conversational "sequence" of (at least) two turns, in which the first is so produced to elicit the second and the second so designed to address the first. However, they can also serve to structure considerable portions of conversation, as in the following:

A: Where's the nearest post office?   (Question 1)
B: Well, you know the town hall?   (Question 2)
A: Yes.   (Answer 2)
B: Just down from there.   (Answer 1)

Note that although the answer to the first question is not adjacent to it, the second question is interpreted as preparatory to the still relevant answer. Adjacency pairs are also utilized to coordinate joint actions, as in the exchange of greetings and partings that achieve orderly initiation and termination of conversations.

Responses to adjacency pairs may be delayed (as in the above example), but they are nevertheless due. Nor are all possible responses equal in kind. For example, an invitation acceptance is usually immediate, brief, and simple ("Sure, we'd love to come"), whereas a rejection is likely to be hesitant and hedged with excuses ("We'd love to, but . . ."). Responses that are simple and direct have been termed "preferred," in the sense that the asymmetry of response types favors that kind of response. A small pause (or

other sign of hesitation) after an invitation, offer, or request will be interpreted as a preface to the "dispreferred" or rejecting action, providing a powerful SEMIOTICS of pauses.

There are other kinds of recurrent sequences. For example, requests or invitations (themselves first parts of adjacency pairs) are often preceded by "presequences":

A: Are you busy?   (Pre-request)
B: Not too bad, why?   ("Go ahead")
A: Could you possibly help me move this filing cabinet?
B: Sure.

Pre-sequences typically check whether the forthcoming request or invitation is likely to meet with success, a motivation apparently being to avoid the dispreferred response (a refusal). One kind of sequence is basic to the maintenance of effective communication, namely, a procedure for indicating problems of hearing and understanding and for effecting resolution of those problems. Known as the system for "repair," it often engenders sequences such as:

A: John's got an Amstrad.
B: He's got a what?
A: An Amstrad computer.

Here a specific syntactic pattern ("echo-question") is used by a puzzled recipient to indicate the word causing the communication problem and to request an amplification or correction. In this example B has initiated (requested) repair of the preceding turn in the following turn, requiring the speaker of the problem word to explain. Often, however, the speaker may detect (e.g., from the recipient's pause) that what he or she has said so far is unclear, so that the speaker may continue the turn and without explicit prompting deliver a correction or amplification. This "self-initiated self-repair" is in fact the preferred option; the recipient may delay a response specifically to invite such a self-correction.

These kinds of procedures, which operate across a few turns at a time and which may be invoked at almost any point, are the essential characteristics of conversational exchanges. But such procedures occur selectively outside conversations proper—even, for example, in courtroom interrogation (but not in sermons, lectures, or other forms of monologue). Mostly these other kinds of exchanges are characterized partly by a selection from the wide range of procedures available in conversation; British or U.S. courtroom testimony, for example, is restricted almost entirely to question-answer adjacency pairs. They may, however, involve systems of turn taking alien to conversation, as when speakers' turns are allocated in advance by an agenda or selected by a chairperson in a committee. In either case our understanding of these other kinds of talk exchange is greatly enhanced by attending to the selection or alteration of conversational procedures.

In addition to these conversational procedures (which appear to have considerable cross-cultural generality) conversations, as opposed to other kinds of speech exchange, have recognizable (and here culture-specific) overall structures. Conversations have conventional opening sequences (of the "Hello, how are you" sort) and closing sequences and, at least in the case of telephone calls, an expectation that the overt reason for engaging in talk will be produced immediately after the opening sequence in what is recognizably "first topic" position. Thus we can say that a conversation is characterized not only by employing conversational procedures (most forms of talk use at least some of those) but also by conforming to certain expectations about how the whole exchange will be structured.

Inferential basis for conversational coherence. In addition to the organizational procedures that may be seen to guide conversational interaction there are other ways of analyzing conversational process. One mode of analysis, derived from speech act theory (*see* SEMANTICS), seeks to explain the sense of cohesion in conversation in terms of an underlying level of action: each utterance, or turn, performs an action (e.g., the utterance of an interrogative sentence performs the act of requesting the addressee to supply the indicated information), to which the next utterance responds by performing the relevant next action (e.g., the utterance of an assertion, which performs the action of supplying the questioner with the requested information). Thus cohesion lies in the rule-governed sequence of interlocking actions, each expressed linguistically or nonlinguistically. Such an approach has been promoted by both sociolinguists and workers in ARTIFICIAL INTELLIGENCE, but it has numerous difficulties. It is hard to specify by invariant rule which utterances perform which actions and which action sequences are allowable.

Another related approach seeks the cohesion in conversation in unstated inferential links. English philosopher H. Paul Grice has proposed that conversation is governed by the presumption of cooperation, which gives rise to numerous unstated, nonlogical, but nevertheless reasonable inferences. For example, if A asks, "What time is it?" and B responds, "Well, the newspaper has just been delivered," we interpret the response as a connected answer to the question even though superficially it appears unrelated; what transforms the response into an answer is the inference that "the time is just after whenever the newspaper is normally delivered," but this inference is only warranted on the assumption that B is being cooperative and not, for example, introducing another topic.

Grice's ideas have stimulated much work on infer-

ence in conversation, and this has shown the great extent to which our understanding of discourse is based on inferential principles. Meanwhile in LIN-GUISTICS and artificial intelligence other ideas are being explored about how these inferences are made and how, for example, pronouns are linked to the nouns for which they do duty. It is to be hoped that future work will be able to synthesize the best in these various traditions.

See also INTERACTION, FACE-TO-FACE.

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COOLEY, CHARLES HORTON (1864–1929)

U.S. sociologist whose work has significantly influenced the study of communications. Born in Ann Arbor, Michigan, Charles Horton Cooley spent his entire academic career at the University of Michigan in the Department of Economics but early on shifted his research and teaching interests to sociology.

Some authors, like Edward Jandy and Robert Cooley Angell (the latter Cooley's relative and disciple), stress the intimate relationship between Cooley's early years and the nature of his later scholarly work. Apparently ill of digestive maladies for long periods while growing up, Cooley came to appreciate his mind as his most important possession. He treasured the mental abilities of the human species and gave the mind a central place in his work. There are two fundamental propositions of Cooley's thought: the mind is social, and society is a construct of individual minds. The first proposition is now taken almost for granted, especially by sociologists and social psychologists, in the explanation of individual human development. Nevertheless, it should be stressed that Cooley's work, together with that of WILLIAM JAMES, JOHN DEWEY, and GEORGE HERBERT MEAD, laid the foundations for such an explanation. On the other hand, the proposition that society is a collective mental construct was controversial from the beginning. Mead, for instance, disagreed with Cooley. According to Cooley, the ideas we develop about others are the real fabric of society. But Mead affirmed the objective existence of the social self independent of the individual's perception or idea of it.

The originality of Cooley's work is evident in his studies of the self and the group, especially his coinage of the terms *looking-glass self* and *primary group*. He built his theory of self-development by observing his own three children, but he was greatly influenced by James's explanation of the social self in *Principles of Psychology* (1890). Cooley was also in debt to Dewey's activism and James Mark Baldwin's dialectics of personal growth in developing his own explanation of the group as an organic whole that behaves in a tentative fashion. Cooley's concepts of the self and the group have repeatedly contributed to the study of human communication. The first concept, the self, has been instrumental to our understanding of LANGUAGE ACQUISITION and use and the emergence of consciousness, reflective mental skills, and empathy. Cooley's discovery of the primary group has influenced the study of how information flows through society. For instance, the concept of the primary group helped communication scholars to eliminate the notion—or, for some authors, the myth—of the mass media as all-powerful. The "sociological argument," as Elihu Katz has named it, explains that the information originating from the media passes through different steps and gets filtered and reinterpreted before it reaches the target audience. The information passes through the social milieu that surrounds the individual receiver: the group.

This explanation helped bring about the conception of the mass media's limited effects (*see* MASS MEDIA EFFECTS), based on the work of KURT LEWIN regarding the DIFFUSION of new habits. Another important theoretical development in mass communication studies grounded in the notion of primary groups is the anchoring of people's ATTITUDES (political and otherwise) in their respective reference groups. This research tradition originated in social psychology with the Bennington studies carried out by Theodore Newcomb and later evolved into MASS COMMUNICATIONS RESEARCH, especially in the study of the effects of persuasive messages (*see* PERSUASION).

Cooley was also directly interested in communication as a process of both personal and social development. In the second part of his *Social Organization* (1909) he devoted five chapters to the analysis of the nature and importance of communication in society. For Cooley communication was "the mechanism through which human relations exist and develop—