SOME THOUGHTS ON SCHEMATA

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I will try to summarize here a few ideas and questions that have arisen from efforts over the past few years to develop a model of what I call verbalization: the set of processes by which a person converts nonverbal knowledge into a verbal output. I have been thinking mainly in terms of a person who has experienced something which he later decides to tell about, although the examples given below will be of verbalizations of secondhand experience, acquired from hearing someone else tell about it. Even in the latter cases, however, I will assume that much of the knowledge being talked about has been stored in nonverbal form, so that the same kinds of verbalization processes must be applied.

I find the most interesting processes in verbalization to be those in which the speaker has to make a choice of some kind. The need to make choices arises because experience is particular -- it involves tokens which are localized in time and space -- whereas language has to operate in terms of types. Elements of experience have to be interpreted as instances of types in order to be verbalized. And much of this kind of interpretation takes place while the speaker is speaking. He may have in mind, for example, some particular event or object, but he cannot express that idea in words until he has decided on an interpretation that will help to communicate more or less effectively what he is thinking of. Evidently some interpretation of this kind takes place during perception, and probably some of it is accomplished while the material is stored in memory. There remains much more, however, that has to be decided on while the speaker is talking. The most direct evidence that this is so comes from (1) the fact that the same speaker may be found to make different choices in verbalizing "the same thing" at different times and (2) the fact that speakers hesitate a great deal in speaking, these hesitations occurring at points where such decisions are being made.

While all these choices are alike in that they involve the interpretation of a particular as an instance of a type, they seem to be classifiable into three distinct kinds, defined by the nature of the particulars as well as by the nature and function of the types to which the particulars are assigned. I like to think of verbalization as beginning with a speaker who has, at the outset, a holistic idea of some incident or story he wants to communicate through language. This initial chunk is too full of content to be communicated directly in anything more than a gross summary ("A funny thing happened to me this morning"), and must therefore be broken down into smaller chunks. This process of "subchunking" is evidently governed by the existence in the speaker's mind of patterns which I have been calling schemata. He might, for example, interpret the initial chunk as an instance of schema X, which then dictates that certain smaller chunks may or must be included. Each of these smaller chunks may in turn be interpreted as an instance of some schema, and so on in a largely hierarchical fashion.

My discussion here will mainly involve these schemata, but I need to say a little about the other two kinds of choices that are made during verbalization. What the speaker is aiming at in breaking down larger chunks into smaller ones is to arrive at chunks that are of optimum size to be converted into sentences. When he has reached that stage, the speaker is able to take a chunk and, instead of schematizing it further, to interpret it as an instance of what I have been calling a frame (in the sense of "case frame"). Typically the chunk at this stage will be an event. Instead of choosing a schema, then, by which this event will be broken down into subevents, the speaker chooses a frame by which the participants in the event are factored out and assigned roles within it -- roles such as agent, patient, or beneficiary.

The third and last kind of choice that has to be made during verbalization is motivated by the need to find words or phrases that will communicate the ideas the speaker has of events and of the individuals involved in them. This is the kind of process that has been called categorization. The choice of a category, while it is still far from being fully understood, has been studied more than the other two kinds of choices and has at least the potential of shedding some light on the nature of all three.

I will try at this point to illustrate something of the nature of schematization (and, in passing, of framing and categorization) with reference to the following American Indian folktale. It was recorded in the Caddo language (in several versions by the same narrator at different times), but the points to be made can be illustrated in English translation.

The Wildcat and the Turkey

It is said that once, long ago, Mr. Wildcat was digging roots in order to make a garden. Presently he heard someone talking. Mr. Turkey was standing there. Mr. Turkey said, "Well, well. You are busy. What are you doing?" "I'm digging roots to make a garden. What are you doing?" "Nothing. I'm just looking around." "You'll be in my way," said Mr. Wildcat, and he caught him, plucked him, and said "Go over to my house where my wife is. Tell her to cook you so I can eat you for lunch."

Mr. Turkey went off and came to where Mrs. Wildcat was. She was pushing a cradle and singing. Mr. Turkey said, "Your husband over there sent me to tell you that you should make some parched corn for me. After you've made it I'll go along." She got the corn, made the parched corn for him quickly, and he left.

He went some distance, until he came to a place way over there where a little deer was lying by a big log. Mr. Turkey climbed up on top. The little deer yawned and said, "kakkudikí;nu?,nu?." [This means in Caddo "I´m sleepy." The last syllable, nu?, which the deer repeated, means "turkey".] "Oh," said the turkey, "he knows my name!" The deer kept yawning and repeating, "kakkudikí:nu?,nu?."

Just at that time Mr. Wildcat arrived home. "Did you cook him?" he asked. "What do you mean?" asked Mrs. Wildcat. "The turkey I sent." "No. He came and said I should fix him some parched corn. After I made it for him he put it on his back and left."

Mr. Wildcat followed him and caught up with him some distance away.

That is why he eats him raw.

The initial chunk from the speaker´s memory, the chunk which constitutes the entire story, seems first to have been broken down into the plot-plus-moral schema. That is, the speaker knew -- or decided -- that this was a story to be organized into a plot followed by a brief sentence in which the plot was said to be an explanation of some well known general phenomenon; in this case the fact that wildcats eat turkeys raw. There is much to be said regarding this initial schema, including the possibility that it is not a native American schema at all, but one that was introduced from Africa by way of Uncle Remus type stories. But the point here is that this story is one instance of a schema that came to be very frequently used among these and other Indians.

The first breakdown of the plot itself is into five episodes, each clearly definable in spatio-temporal terms. That is, each has to do with something that happened at a coherent location during a coherent segment of time. It may be that the schema to which the organization of these episodes conforms is unique to this particular story. On the other hand, further study of Caddo stories might show that the set-up in Mr. Wildcat´s garden, followed by the trick played on Mrs. Wildcat, followed by the diversion with the deer, followed by the discovery of the trick, and ending with the disposition of the turkey conforms to a more generally used schema. It would not, at least, be surprising to find other stories in which these elements are put together in the same way.

In any case the schema by which each of these episodes is itself broken down is one that is used very frequently. This is what may be called the visit schema. In it, protagonist A is engaged in some background activity as the episode opens. Then comes protagonist B´s arrival on the scene. There follows a conversation between the two. Then some action is taken, usually by protagonist A but affecting protagonist B, and finally there is the departure of the latter. This visit schema appears over and over, not only in this story but in numerous other stories that these people tell. Furthermore, it appears to be a favorite pattern for the organization of much of Caddo real experience, in which visiting is an extremely common activity. Certainly it is of considerable interest that schemata are not just ways of organizing what one talks about, and not even just ways of interpreting reality, but also ways of organizing one´s everyday behavior.

Given this schematic organization, we might also use this example to glance at framing and categorization, the other two verbalization processes involving choice. As an illustration of framing we can take the clause in the last sentence of the second paragraph which reads, "[she] made the parched corn for him." In this version the speaker chose to frame the event in terms of an agent (Mrs. Wildcat), a patient (the parched corn), and a beneficiary (Mr. Turkey). At another time when this speaker told the same story she expressed the same event with the words, "She pounded it." Here the frame was different, being no longer benefactive but expressing rather an action performed on an object. And in this version a different categorization was chosen also. The event was interpreted as an instance of pounding, not of making.

But to return to schemata, there are a number of unanswered or only partially answered questions regarding schematization, of which I will mention here only three. First, what are the essential ingredients of a schema? Studies of actual verbalizations suggest that a schema must define a set of event (and situation) types (such as background activity, arrival etc). A chunk of (direct or recalled) experience is evidently interpreted as an instance of the schema when some of the events included in the chunk conform to these types. How a person establishes such conformity is not at all clear, but presumably the process is similar to that involved in categorization. A schema must also involve the relations between these included events: temporal and causal relations, for example. In the visit schema the arrival must occur while the background activity is in progress, and so on. One would like to know more about the kinds of relations that are found here. And the chunks within a schema quite clearly have different degrees of salience. In the visit schema the arrival and conversation events seem to have the highest salience, as judged by the fact that they are usually mentioned while other elements may not be. It would be nice to know more about the determinants and effects of salience.

The second question is best understood against the background of another example. (One problem with discussing discourse is that each example occupies an entire page.)

London Bridge

Once there was a man in Winchester who dreamed that if he went to London Bridge he would hear something that would be very useful to him. A week later he had the same dream again, and a week after that he had the dream a third time. So he decided he would see whether there was anything to it. He traveled to London and stood on London Bridge for many hours, until his patience was nearly exhausted. Finally he was accosted by another man who asked him why he had been waiting there so long. After some hesitation, he told about his dreams. The other man laughed, and said that he too had had a curious dream the night before, to the effect that if he went to a town named Winchester and dug under a certain tree he would find a pot of gold. He ridiculed the whole idea, however, and said that he did not even know where Winchester was. The first man decided there might be some advantage in secrecy, and said that he did not know either. But he immediately returned home and dug under the tree which the man in London had described. He found a pot full of gold, and on the lid of the pot was an inscription in a language which he did not understand. The pot together with its lid were put on display at the village inn, and one day a scholar stopped at the inn and was able to translate the inscripion. It said, "Look lower; where this stood, is another twice as good." The man who had found the pot heard of this and returned to the tree, where further digging uncovered another pot which contained twice as much gold as the first.

At the highest level this story consists of two major parts, the second of which begins with the words, "and on the lid of the pot was an inscription..." If the story ended before these words (as in fact in some versions it does), it would still be a perfectly good and complete story. But of special interest is the fact that there is a schema in the first part which is used again in the second. This schema consists of a puzzle being presented (through the dreams or through the inscription), of a solution to the puzzle being provided by some stranger, and of a payoff resulting from the solution. But this schema seems less obvious than the visit schema in the Caddo story. It is not so directly defined by the overt events, and is something that people who hear the story are not likely to be immediately aware of. It is also less directly reflected in the way the story is told. (One may note that the two instances of this schema, the two major parts of the story, are not even separated by a sentence boundary, let alone a paragraph boundary.) The question, then, is whether some schemata are more abstract than others. Again, the determinants and effects of the degree of abstractness are not wholly clear.

The third question is a methodological one. I don't believe it is realistic to search for a discovery procedure for schemata. Given a particular verbalization there is unlikely to be a recipe anyone can apply to it to come up with a schematic analysis. Like other theoretical entities, a schema takes imagination and intuition to ferret out. But we might nevertheless hope that there are objective ways of validating and demonstrating the existence of a schema, once hypothesized, so that different investigators will agree. I gave the London Bridge story to a class of fifty people who had been told a little bit about what schematc analysis involves, to see how many of them would come up with the puzzle-solution-payoff analysis to which my own intuition had led me. Just over one quarter of the class produced analyses essentially identical to mine. Probably the percentage could be raised with further training of the analysts. But one is left with the question of how objective any such analysis is, and how the methodology of schema research can be made to conform to acceptable scientific standards.