

Sentence Processing

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I. The Aim of the Study

Because the sentence is the basic unit of language, and to understand it is a prerequisite for understanding the supersentential levels of language, this study aims at investigating the structural properties of a sentence as well as the speaker-listener relationship which helps to establish a mutual understanding of each other's intention. Besides, the present study also aims at finding out the reasons behind ambiguity in sentences and how to disambiguate such sentences. The study involves investigating the perceptual mechanisms utilized by the listener and helps him/ her to understand the meaning of the sentence he hears or listens to .If the listener understands what the speaker means or intends to convey, the conversation can continue and the speaker can realize his aim by encouraging the listener to establish a social relationship which is one of the basic

functions of any human language. But if the listener fails to understand the speaker, no communication can continue between them. Not only this, but misunderstanding or misinterpreting the speaker lead to adverse results that may spoil social ties instead of enhancing them.

II. Introduction

The power of language as a tool for communication comes when words are joined into sentences and collections of sentences. Understanding speech at the sentence level is called sentence processing which means how listeners rapidly decipher the structure of sentences and gain access to the meaning of a sentence as a whole (Gleason.1993:200)

One of the striking features of connected speech is the very rapid rate at which it arrives the listener. In fluent speech, individual words run in together and are often not as clearly articulated as they might seem to be. The listener imposes the isolation of individual words by himself. The surprising lack of clarity of articulation of many words in connected speech has been demonstrated long ago by Pallact and Picket (1964), who found that in many cases not only were words unrecognizable, but

they hardly sounded like words at all. The listener has to isolate words of connected speeches, decode the grammatical structures of sentences and arrive at the semantic relations between the words. He may also resolve semantic ambiguities and draw logical inferences and implications that lie beyond the literal meanings or the sentences themselves Cutler and Normis (1979:113) state that psycho-linguists have no way of observing the sentence comprehension process. Therefore, they have assessed the complexity of sentence processing by means of global measures of comprehension difficulty. On the other hand, they have invented tasks that might be expected to reflect the operations of processing mechanisms during comprehension.

III. Structural properties of sentences

The Structure of language can be defined in terms of sets of rules, that show how words string together to make a sentence and convey meaning. In order for the listener to understand a speaker, he should share him a common knowledge and the same set of rules. Real world knowledge can supply constraints that operate as part of the structure of our language. The properties of language give rise to regularities in the language that

makes possible a degree of predication whenever we listen to natural speech.

Some words are more predictable than others. When words are heard within a context this predication is even further increased. Suppose that someone was speaking to us, and suddenly he stopped. If we asked what the next word might be, in fact, there is a good chance that we would be able to know whether the next word is a noun, a verb, an adjective and so forth. For instance when a speaker says: the train pulled into the; we might complete such sentence with the word “station” or tunnel. So, from our knowledge of language we have a very high expectation for either a noun or an adjective. In addition to this, our experience contributes in helping us to complete the sentence in addition to the general meaning of the sentence (Gleason, 1993:201-202).

IV. Where do people pause when speaking?

Listeners knows a lot about the structure of their language. The speech we hear has an intonation pattern and rhythm that can give the listener hints about what is to be heard. One of these hints comes from periodic appearance of pauses in spontaneous speech whether they are filled with “uhms” and “ahs” or by silence.

Pauses occur when the speaker thinks of what to say or how to say it. Speakers may pause at least 20 percent of the time of their speech.

Systematic studies show that pauses tend to occur just before words of low probability in the context.

Some theorists claim that syntactic structure and semantic analysis are conducted independently, while others claim that they occur at the same time. (Clark and Clark 1977:223) believe that speakers of a language plan where to start, what to include and what to omit. Speakers talk in order to have some effect on their listeners. They may assert things or ask questions to get some information. So listeners may make use of these facts and then have better chances to comprehend utterances.

V. Conceiving the Message

A speaker brings to the communication situation a wide variety of general beliefs about the world and also about the hearer's beliefs.

The study of the comprehension process does not suffer from the problems of identifying and manipulating input. The problem in this case understands. It is in fact not so clear what is meant by expressions like: a hearer

understood what the speaker said, or what a speaker meant to communicate. It is generally assumed that the speech recognition capacity identifies as much about speech sounds as it can from the sound wave. The syntactic parsing capacity identifies the words by their sounds and analyzes the structure of a sentence and the semantic interpretation capacity puts the meaning of words together in accordance with the syntactic relations. If the hearer is right in his interpretation, the communication process will continue; otherwise, there will be a breakdown. Many of these processes may overlap both in time and brain activity. The question of the neurological realization of these linguistic capacities is within the field of neurolinguistics. (Akmajian, 1996:398-401).

VI. Component Processes

It has been suggested that language comprehension is supported by four principal types of processing. These are: phonetic, lexical, syntactic and semantic. Phonetic processing involves the segmentation of the acoustic wave form into phonemes. The lexical processing identifies a string of phonemes as a word. The syntactic processing uses parts of speech and other syntactic

information to recover the grammatical relations expressed in the sentence. The semantic processing is responsible for constructing the meaning of the whole sentence.

An alternative model restricts the relations between these components so that they are serial rather than parallel. The serial model may be difficult to find proponents. There are indications that some aspects of sentence processing do not fill this pattern.

There are other possible language comprehension models which order some of the processes serially and arrange others in parallel ways. Using the sentence identification paradigm, i.e. asking “do the items in this string constitute a sentence?” is yet another model of comprehending.

There is evidence of the independence of syntactic processing from semantic processing. It has been found that the time required to analyze a given syntactic structure is approximately constant in spite of wide variations in the plausibility of a particular sentence which has that structure.

However using the lexical identification paradigm “are all the items in this string words?” it was

found that the subjects were able to identify each item as a word depending on the plausibility of the sentence in which it is found (Cooper, 1979:88-89).

VII. Deep structure Vs Surface structure and competence Vs Performance.

The distinction between deep structure and surface structure makes an important point for the understanding of sentence processing. It shows that sentence processing is conducted on two levels in which the listener analyzes the surface structure and uses his information for the detecting of the deep structure. It is the deep structure that conveys the meaning of a sentence which is the main goal of communication (Gleason, 1993:206). As for competence and performances, Foss and Hakes (1978:16-18) argue that the rules we know about the language decide the possible sentences in our language. These rules compose the linguistic competence of the speaker of a language .One of the major tasks of linguistics is to state the nature of these rules, and to develop a theory of linguistic competence, of the speakers of a language. It is that hidden knowledge which enables the speaker of a specific language make

judgments about grammatical and ungrammatical utterances.

A theory of additional knowledge is about linguistic performance. This theory describes the psychological processes involved in using our linguistic competence in all ways that lead to producing or understanding different utterances

Linguistic performance does not always reflect the speakers' intention and so hearers sometimes misunderstand what they hear. Valian in Cooper (1979:3) states that if competence refers to knowledge, and a linguistic theory is one claim about the nature of that knowledge, performance refers to how this knowledge is used. A complete theory of sentence processing should take into consideration both competence and performance.

We may expect the two theories (of competence and performance), to be closely related to each other, though not in a simple or straightforward way. Liles (1971:7) states that "all speakers occasionally stammer, make false starts, use wrong words, get words out of order and change constructions in midcourse ". In addition to that, the speaker may fall under the effect of

different factors and his speech may be affected by physical surroundings, emotions, memory span or other distractions such as chewing a gum or smoking a cigarette. So the listener should take such extraneous factors into consideration when he or she listens to someone speaking.

Bever (1970) in Cooper (1979:10) suggests that the distinction between competence and performance is “artificial”. But in fact this is not always the case. The difference between the two concepts is quite distinct. Competence represents an abstract level, whereas performance represents the concrete level of language i.e. the actual use of language in different daily communications.

VIII: Perception of Constituent Structure

It is a basic linguistic assumption that sentences are not mere strings of words, but they are structured strings of words consisting of hierarchical units. This fact of constituents has been brought to the psychological laboratory by Foder, Bever and Garret. They devised a technique to reveal the presence of phrase boundaries when one perceives a sentence. It is assumed that a perceptual unit tends to resist interruption.

In one experiment, subjects were asked to listen to a sentence during which a click occurred. Then the subjects were asked to tell where the click occurred. The subjects tend to assure that they had heard the click between phrases. One of the sentences given was "That he was happy was evident from the way he smiled". There was a major break between "happy" and "was". A click was then made at different positions in the sentence, but each subject insisted that he had heard the sentence with only one click. Fodor and Bever's finding was that the subjects were accurate in reporting the place of the click between "happy" and "was". Clicks which happened before this break tended to be displaced towards the rights, and those after the break towards the left. It was concluded that the major syntactic break plays an important role in determining the location of noises perceived during our speech. This finding shows that the listener perceives a sentence on the basis of his analysis of its constituent structure, and not because of a special acoustic cue to segmentation (Slobin, 1971)

IX. Meaning Is The Goal of Sentence Processing.

The goal of sentence processing is to arrive at the meaning of the sentence. To achieve this, the listener should analyze the acoustic information arriving at his ear in order to access the lexicon. Studies of sentence processing suggest that under ordinary circumstances, we strive to comprehend the meaning of a sentence as quickly as possible, and then we discard the surface structure to retain the meaning only. The semantic relations derived from sentences are important to people processing sentences and not the surface forms themselves. The semantic relations are durable in memory, while the surface form is not. Many experiments have shown the importance of the meaning of a sentence over its surface form. The goal of a sentence processing is to extract meaning as quickly as possible and the primary focus of the memory system is the conceptual representation of an utterance (Gleason, 1993:211-213)

X. The comprehension of sentences

The comprehension of sentences involves much more than the decoding of sounds, letters and lexical meaning. It also involves the untangling of the semantics of

sentences. Psycholinguists first began to examine the comprehension of sentences by basing their research on the model of sentence grammar, originally proposed by Chomsky in the 1950s. This model claims that all sentences are generated from a phrase structure skeleton which is then fleshed out into everyday utterances by a number of transformational rules. These rules are capable of creating a variety of surface structures by rearranging, deleting, adding and substituting words which are found in the deep structure. Using this model, psycholinguists became interested in comparing the number of transformations used to derive sentences , and the relative difficulty native speakers experience in comprehending them (Scovel,1998:20) Akmajian (1996:406-8) adds that the hearer ,having heard an utterance spoken by a speaker ,must recover its meaning(s). A serious problem with this view is that: in actual speech, sentences are physically continuous streams of sounds, not broken down into discrete units that we call words. The idea that we hear such sequences of individual words as discrete linearly ordered units is only an illusion resulting from the fact that in knowing a language, we perceptually analyze a physical continuum

into individual sounds as well as words and phrases. Although a lot of interesting work on speech perception has been done in the last 25 years, the problem of how speech signals are converted into meaning units remains unsolved.

XI. Ambiguity and Disambiguation

Ambiguity occurs in syntactic and semantic domains as well as in lexical domain. The term local ambiguity is used to describe cases where the syntactic function of a word becomes clarified as we hear the rest of a sentence. If the listener remains uncertain for long, sentences will be hard to understand. For example, the sentence the rat the cat the dog chased bit ate the cheese, is difficult to understand because the listener has to hold too many incomplete substructures before the sentence is finally completed and the full structure is heard and understood. A parser could adopt a "wait and see" attitude in which one waits until more information is available. This way will tax the memory. On the other hand, a pausing strategy that keeps memory load to a minimum would run the risk of making many passing errors at points of local syntactic ambiguity.

The term “standing ambiguity” refers to sentences that remain syntactically ambiguous even when all the lexical information has been received or heard. For example:” the old books and magazines were on the bench” remains ambiguous even when the sentence is finished. This is because it is not clear whether there should be a major syntactic boundary after “books” or after “magazine”. The intended boundary can be marked by using such prosodic features as stress, intonation, and pauses. These features can also be used to resolve local or temporary ambiguity. So we notice that prosodic cues can operate effectively at the early stages of parsing and interpretation of sentences which finally leads to the comprehension of sentences (Gleason, 1993:226-227).

Cooper (1979:135) speaks about intonation and ambiguity saying that investigation only recently has begun on the question of whether intonation may be used as a cue for the selection of one of the meanings of an ambiguous utterance. It is not hard to find theories about the possible effects of intonation on ambiguities. The layman will almost always assume that intonation can indicate which meaning of an ambiguous sentence is intended by the speaker but psycholinguists seem less

ready to attribute such syntactic function to intonation, though they do not deny the role of intonation in modifying the meaning of a certain sentence.

Akmajian (1996:411) wonders whether the memory limitations or time limitation, or the arrival of some structural units (such as the end of a clause) that causes a certain meaning of a word to be selected by the listener. In some cases the speaker can help the hearer to decide on a certain meaning. In one study, subjects were asked to listen to the following ambiguous sentences while the speaker had a particular meaning in mind: "The steward greeted the girl with a smile ". Ambiguity is caused by the phrase, "with a smile" which can modify girl" or "the action of greeting "which was accompanied by a smile. After the study, it was found that when hearers disambiguated the sentence correctly and got the intended meaning: smiling girl, the speaker paused (for as much as 1/6 second between the crucial words (greeted, the girls)), thus giving the hearers a cue to what was meant by the speaker in the first place. This supports the suggestion that speakers can help the hearers to understand the exact meaning that they wish to convey. This again shows how the process of communication

needs a kind of cooperation on the part of the speaker. Interaction can never take place or be effective if there is no desire to continue it by one of the two side of the equation: the speaker and the listener. This is, in fact, emphasized by most sociolinguistic studies which focus on the importance of social context or context of situation (See Hudson, 1980).

XII. Conclusion

Throughout this study, it was found that “sentence processing” is a complex and sometimes vague expression that it does not yield itself to a precise definition. This is due to lack of evidence to support studies in this respect. The present study was just an attempt to open a window on the subject and the researcher hopes that he has done something of significance in this field. There are conflicting views about the subject. Some theorists believe that sentence processing is an active process in which the perceptual system attempts to determine the structure and meaning of the sentence as it is heard. Others see that early levels of sentence processing may be conducted independently of knowledge potentially available from prior linguistic context.

The perception of running speech shows that these auditory phonetic and phonological processes are not enough. Ordinary speech is full with missing and unintelligible words that it cannot be perceived accurately in this simple way. Instead, there may be an active process that makes speech perception consistent with rhythm and intonation as well as with the way speech is to be interpreted and utilized

Such a view is needed to account for the clarity of ordinary speech perception in spite of all the obstacles that impede the speaker from saying things in an absolutely distinct manner.

Finally, we can say that a sentence can not be understood as a separate unit. It should be related to its context. This context may make things clearer. This is in line with the view that the listener often holds and waits for more information to help him to comprehend what he heard previously. Moreover we can say that the listener already has his own conceptions about the reality of things in the world around him. So he weighs his interpretation and comprehension of sentences against what is there around him in the real world.

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الخلاصة

بما ان الجملة هي الوحدة الاساسية في اللغة فان هذا البحث يهدف الى دراسة الخصائص الاساسية في بناء الجملة والعلاقة بين المتحدث والسامع والتي تؤدي الى ايجاد فهم مشترك لما يقصده كل من الطرفين.

كما ان البحث يتناول العوامل التي تؤدي الى غموض الجملة وكيفية ازالة هذا الغموض علاوة على الاليات التي يعتمد عليها السامع في فهم المعنى الذي يقصده المتكلم.

إن هذا الفهم يؤدي الى قيام علاقة تفاهم بين السامع والمتحدث وبدون هذا الفهم لا يمكن تحقيق مثل هذه العلاقة التي هي وظيفة مهمة من وظائف اللغة.

وقد خلص البحث الى ان عملية فهم الجملة هي تعبير معقد وغامض احياناً وان البحث الحالي هو محاولة الى فتح نافذة على الموضوع. ان فهم الكلام المستمر يظهر ان العمليات السمعية والخصائص الصوتية هي ليست كافية لفهم الجملة بل هناك عوامل كثيرة ينبغي ان تؤخذ بالاعتبار مثل طريقة التكلم والنبرة في الكلام والموقف الذي قيلت فيه الجملة.

الجملة ينبغي ان لا تؤخذ كوحدة مستقلة وانما كجزء من موقف او سياق محدد، وهذا الموقف يجعل الامور اكثر وضوحاً . ان السامع ايضاً له دور مهم في تعاونه مع المتكلم حتى يفهم ما يقال له.