Language

Language

- shared symbolic system of communication, Communication is verbal, non verbal e.g., handshake etc.
- organized means of combining words in order to communicate. By using symbols we can refer to ideas, relationships, that are not currently present, we can refer to things that never existed e.g. elves.We can refer to abstract concepts e.g. truth.
- Through language we can create mental representation of situation, so that we understand the situation and communicate about it.
- Linguistics is the study of the structure and change of language.
- Psycholinguistics-is Psychology of language, how people learn and use language, the production and understanding of language.
- Relationship of brain , cognition, and language is studied by neurolinguistics. Sociolinguistics-deals with social relationships and language. Computational linguistics is study of language via computational methods.
- **Properties of Language**
    - communicative
        - allows us to construct a mental representation of a situation and enables us to understand and communicate
    - arbitrarily symbolic
        - relationship between symbol and its referent is arbitrary (in Spanish Si, in Hindi Haan, each language has its own jargon)
    - regularly structured- particular pattern of sounds and letters form meaningful words, particular pattern of words form meaningful sentences
    - multiple levels of representation/analysis- any meaningful utterance can be analyzed at more than one level e.g. she sells sea shells on the shore--------------
    - generative (productive)- although we have to conform to rules yet language is created. Ease, clarity, succinctness of ideas vary from one language to another.
    - Dynamic e.g. Wicked- awesome, bad.

Linguistic Universals [Hockett]

In particular,

- Semanticity- Meaning e.g. coughing in class on the remark of the professor (Paralinguistics)
- Arbitrariness- Through this we name everything e.g. word processor(mixie-grinder), computer. Language users have to learn connections between symbols and their referents, since connections are not built in there is no inherent connection between units of sound employed in a language and meaning referred to by those e.g. whale is a small symbol for a big thing,

microorganism is a big symbol for a small thing. Connections have to be stored for rapid retrieval .There is flexibility, and also naming allowed through arbitrariness- as in using newer terms when older terms become outmoded e.g., hep in the 80's is hip now, cool, the multifaceted use of the word de<u>licious</u>

- Displacement-language gives us the ability to talk about something other than the present moment, as in referring to the past or referring to something as having a futuristic orientation. e.g., imaginary hugs.
- Generativity (Productivity)-language is novel, speakers literally invent sentences, create.

Iconicity (be able to provide example) see text.

- The characteristic of a language in which a language unit has a physical resemblance to its referent, e.g., a map.

Animal Communication - only seems to have arbitrariness and (some) semanticity. Lacks displacement and Grammar. e.g. rraup of a monkey—eagle, chutter—snakes, chirp—leopards.

Premack taught chimp Sarah a vocabulary of more than 100 words. Language facility of humans far exceeds those of any other species.

Fundamental Aspects of language

- receptive-comprehension and decoding of language input.
- expressive -encoding and production of language output.
  - Encoding is transforming thoughts into a form that can be expressed through speech, writing, signs.
  - Verbal comprehension and verbal fluency are the abilities needed to produce language output.

Levels of Analysis of Language

1. Phonological analysis- study of the production and perception of language sounds.
2. Syntactic analysis- study of structure of sentences, rules determining order of words and phrases in those sentences.
3. Semantic analysis- study of word meaning e.g. bachelor and his wife went to the movies.

Phonology - the sounds of language

Phone- a single vocal sound

Phoneme – made up of vowel and consonant sounds, basic sounds that compose a language e.g Hawaian has 13 phonemes, English uses 47-52)

- Phonemes differ by place of articulation (location in vocal tract)
    1. Articulation of consonants depends on place of articulation, manner of articulation, and voicing e.g. b,p,r are bilabial. Vowels differ in placement in the mouth and tongue position.
- Phonemes differ by manner of articulation (the way airflow is disrupted)
- Phonemes differ by voicing (vocal cords do/do not begin vibrating immediately w/ disruption of airflow)

Morpheme - Smallest unit that denotes meaning within a particular language e.g. study is the root and its meaning can be changed by removing y and adding ent, simply adding ing.

Lexicon- entire set of morphemes in a given language.

Morphological Analysis -- working out meaning based on the morphological units.

Syntax- how words are put together to form sentences, using noun phrase, verb phrase

Speech perception is fundamental to language use in everyday lives. We are able to perceive speech with amazing rapidity e.g. when we are fluent in a language we perceive as many as 50 phonemes per second. How does this happen? This happens through coarticulation which occurs when phonemes or other units are produced in a way that overlaps them in time. One or more phonemes begin while other phonemes are still being produced, the articulations coincide. This is viewed as necessary for the effective transmission of speech information. e.g. bag, b ae g more than one phoneme at a time is affecting articulation.

Categorical perception – simply means discontinuous categories of speech sound. Although we hear sounds that comprise a continuum of variation in sound waves we experience speech sounds categorically. K and c belong to the same phoneme category in English, s and z sounds are different phonemes in English. English differentiates between l and r where as Japanese don't make this distinction.

McGurk Effect - image you are watching a movie which involves synchronizing of visual and auditory perceptions, you hear the sound track da but the actors lips clearly make the sound ba you synthesize and hear a sound such as tha . The perceptual system must integrate auditory and visual processing to yield the unitary experience of a single speech sound. (McGurk & MacDonald, 1976)

Phonemic Restoration Effect (Warren, 1970)-this effect involves integrating what we know with what we hear ,when we perceive sounds. In an experiment you are listening to a sentence –"It was found that the *eel was on the --." For the final word either axle, shoe, table, orange is inserted, the speaker inserts a cough

instead of the initial sound where the asterisk appeared in eel. The sound the subjects recall having heard differs according to the context. Phonemic restoration is similar to the visual phenomenon of closure as explained by the Gestaltists.

The problem of invariance - the problem is not a problem at all. We would never comprehend if we perceived speech by segmenting the signal into individual phonemes because the individual phones change so much depending on the sounds around them. We produce and perceive speech with the help of context. It is through conceptually driven processing that we produce and perceive speech. In a study by Miller and Isard(1963) grammatical and ungrammatical sentences were presented to the subjects with varying background noise they were to repeat immediately afterwards what they heard. Results showed that the grammatical sentences were repeated correctly.

Phonemic illusion: there is often no pause between phonemes of different words, even though we might think that we "hear" the sounds as if the words were separated by pauses. The detection of phonemes and word-breaks depend heavily on context. Actually the pauses we produce while speaking are longer within words than between words e.g. "John said that the dog snapped at him."

Creole - a new language generated by a collision between two existing languages. The original "creole" will be syntax-free pidgin. The creole will develop with the development of grammatical rules. These grammatical rules (hallmark of a true language) will start with the children of the originators.

Semantics

Denotative; dictionary definition of meaning

Connotative; emotional overtones included / non-explicit meanings. We think of words as representing concepts, they are economical ways in which to manipulate related information e.g. think of the word tree.

Syntax - word order, words / phrases. This is a systematic way in which words can be combined to make meaningful phrases and sentences. Focus is on grammar prescriptive and descriptive approaches to grammar(Queens and Kings English) Psycholinguists are interested in descriptive grammar e.g. why did you bring that book that I don't want to be read to out of up for? Syntax allows analysis of language in manageable units, it offers many possibilities for exploration, there is also syntactical priming of sentence structures e.g. if we have heard someone using a sentence in a passive voice we will use the same, at times we show aptitude for syntax in the speech errors we make as in saying "I put the oven in the cake". But we will not say "I put the cake oven in the". Hence we have a mechanism for classifying words according to syntactical categories.

Linguists have analyzed phased- structure grammars which analyze the structure of phrases as they are used. Phrase- structure rules govern the sequences of words. For

doing so linguists use tree diagrams that demonstrate that sentences are organized into hierarchical structures of embedded phrases.

Sentence----→Noun phrase + verb phrase

Chomsky's Transformational Grammar (captures productivity/generativity, but not semantics)-

e.g., "visiting relatives can be boring."

Chomsky fixed the ambiguity in this grammatically correct , yet ambiguous sentence by proposing the TG approach, studying the transformational rules that guide the ways in which underlying propositions can be rearranged to form various phrase structures. These are rules that map tree structure of one sentence onto others.(page 328,fig.9.2)

Sentences exist at the

-Idea level

-at the level of an abstract Deep structure-which refers to an underlying syntactical structure that links various phrase structures through application of various transformation rules.

-at the level of an overt Surface structure –this refers to any of the various phrase structures that may result from such transformations.

Transformational Grammar had a set of rules for inserting vocabulary into the deep structure, but blindly inserting words could lead to sentences like "colorless green ideas sleep furiously". All said and done a sentence may be syntactically acceptable yet it must be meaningful.

Case Grammar Approach - set of semantic rules for language comprehension and production; depends on semantics, not syntax, these are a set of rules stored in memory. Semantic roles are played by the content words in the sentences.

1. case roles: Agent(doer), Patient(recipient), Instrument(the means by which action is implemented), Location(the place where the action occurs), Time
2. Evidence for case grammar approach: eye-gaze is simply recording where and how long the eyes gaze at words during reading e.g. "after the musician had bowed the piano was quickly taken off the stage". This is an easily readable sentence. But if the sentence is "after the musician had played the piano was quickly taken off the stage". We generally slow down when we come to the word

'was' this is a garden/path sentence because the early part of the sentence "sets you up" and we have to retrace our steps back up the path in order to reassign earlier words to different cases. (eye-movement research w/ garden path sentences).

- o supports claim that listeners/readers begin to analyze sentences immediately as soon as word is presented and that each word is assigned to a particular semantic case role (which contributes to sentence comprehension).

3. semantics can overpower syntax
    - o "John dressed and had a bath". When the sentence is paraphrased subjects failed to see any difference from the originals.

Mental lexicon is our mental dictionary of words , phonology and syntax, a mental list of words (e.g., the word chase)

Stages of Language Acquisition (note: large overlap between stages) infants respond preferentially to their mothers voice, they prefer to listen to someone speaking in their native language, respond motorically in synchrony with the speech of the care giver

1. Prelinguistic stages
    - o reflexive crying (at birth)
    - o cooing(vowels)- infants can discriminate amongst all phonems but as they reach the babbling stage they loose the capacity to make discriminations that are not relevant to their language, laughing (at 8-20 weeks)
    - o vocal play (at 16-30 weeks)
    - o reduplicated babbling(mum mum) (at 25-50 weeks)
    - o jargon babbling:(vocabulary of 3 to 100 words, children commit over extension errors e.g. doggie is for all animals) syllable-like phoneme combinations (at 9-18 months)
2. One word utterances: (hollow phrases to convey intention, desire, demand e.g. car, baby,cookie) most words *general nominals* (names) stressing action-oriented dynamic things (at 10 to 13 months)
3. two word utterances (at 18-24 months)(telegraphic speech) vocabulary may be upto 300 words at two years of age.
    - o MLU: mean length of utterance; counting unique (& independent) morphemes as a measure of complexity
    - o MLU = 1.0 to 2.0
4. three word plus utterances
    - o MLU = 2.0 to 2.5
    - o MLU = 2.5 to 3.0 (vocabulary may be upto 1000 words)
        - ▪ adds semantic relations and some syntax (e.g., -ing)
    - o MLU = 3.0 to 3.5

- ▪ adds relative clauses
- o MLU = 3.5 to 4.0
  - ▪ beyond 4.0 MLU is not a good measure of sentence complexity

By about 3 to 4 years children understand syntax despite errors of overregularization (Jordan hitted me).

By age 10 children's language is much the same as that of adults.

Receptive vocabulary is always greater than expressive vocabulary

- Verbal comprehension is broader than verbal fluency
- Language acquisition device (LAD)- Children seem to have a knack for acquiring an implicit understanding of rules of language structure. It seems we are predisposed to acquire language if an adult learns new language, may do so while retaining the original accent.

Metacognition:- is our understanding and control of our cognition. e.g. metacognition helps depending on how similar a new language is to the language we already know.

Imitation: Modeling

Child directed speech using exaggerated vocal inflection using simpler sentences- motherese.

- • Rising intonations to gain child's' attention and falling intonations for comfort and rapid fire explosions of speech for warning.

Conditioning:-

Verbal comprehension and verbal fluency