Lecture III

Conceptual Issues in Child Language Acquisition (CLA):

Nature of the learning organism
The learnt system
The learning environment

The field of CLA has been host to a series of debates on an issue that lies at the core of the science of cognition -- the nature of cognitive and linguistic representations in the human adult, the nature of the initial state of these representations in the child, and the nature of mapping from the initial to the adult state.

Some very critical developments in the field of CLA over the last 50 years coincide with the emergence of Generative linguistic theory. So much so that at least within the field of linguistics, interest in CLA is perceived to be an offshoot of the generative linguistic paradigm, which defines its own goals in terms of five specific questions regarding the Knowledge of language (KOL).

The five questions:  
What is KOL?  
How does it arise in the mind?  
How is KOL put to use?  
What are the biological correlates of KOL?  
How did KOL evolve in the species?

However, it would be inappropriate to regard CLA as a subfield of linguistics, as many linguists tend to do; CLA research has fairly broad based linkages with the fields of education, psychology, and more recently, cognitive science. It is indeed true that the growth of generative grammars in mid 60’s gave to CLA a certain legitimacy, which is quite ironical because the generative linguistic theory share a somewhat ambivalent relationship with the field, for considerations that are partly conceptual and partly methodological – the idealization of Instantaneous Acquisition (to be discussed later in the course).

The central focus of CLA: nature of linguistic and cognitive representations – and initial state to adult state mapping of these representations. We may break down the issue into specific questions, interrelated though, and sometimes overlapping, regarding the learning organism, the learnt system, the learning environment, and the learning process. Related to these is also the issue of methodology in CLA.

The learning Organism

Nature of the Learning Organism -- what kind of learning organism are we dealing with? What is the learning mechanism that it is endowed with? Ranging from a nearly empty organism with an ability to respond to environmental stimuli and form associative links between S-R, language being an instance of such behaviour, to an organism endowed
with general cognitive mechanisms adapted to language acquisition, in between, an organism endowed with a dedicated potential for Ig.

Is the learning mechanism as impoverished as the S-R chains would point to, or a rich cognitive one (what are its specific endowments) or a specifically linguistic one?

If it is a rich one, ling or general cognitive, is this richness to be captured in symbolic or subsymbolic terms?

Empiricist (&Behaviorist) / Rationalist debate
Constructionist / Maturationist debate
Symbolical / Subsymbolical debate

Empiricist (&Behaviorist) / Rationalist debate:

Differ on the issue of what the initial state of KOL is.

Empty organism, organism endowed with the ability to induce and generalize, or an organism endowed with linguistically specific knowledge structures.

Narrow behaviourist view: S-R associations: verbal stimuli giving rise to response patterns, and the positively reinforced responses getting strengthened as learnt verbal behaviours. A string actually heard leading to the formation of associative links: syntax, as also word meaning. (The dog barked: dog as the stimulus which evokes the response barked).

Rationalism: Actual vs potential – projection problem in CLA
(analogy not an adequate computation – surface structure of an utterance is never an adequate representation of its underlying structure, e.g., Morphology: trainee, draftee, awardee, escapee, devotee – thematic relation between the underlying verb and the suffix varies.)

The broad Empiricist view: Induction as the learning mechanism available to the organism

Grammar that is acquired cannot be induced – Why?
Generalizations are deeper than the surface level,
Poverty of stimulus: extent, content and quality of input not good enough for an inductive grammar.

The picture is painted by a new artist/ The picture is painted by a new technique.
A new artist painted the picture/*A new technique painted the picture.

Something is preventing the user from making this generalization, something deeper than the surface structure.
Structure dependency: A loves himself/*him; A’s father loves *himself/him

Underspecified meaning: The word *kutta* in Hindi, and what it means for the child: a moving object, a furry animal, an animate object, etc?

Rich initial State: UG/LAD (Invariant core underlying language)

**Linguistic Evidence:**

Differences across languages:
Auditory quality: segmental + pitch and other suprasegmentals (stress-timed/syllable-timed lgs)
Sound patterns (choose from an array: examples)
Syllable structure
Morpho structure (how gram info is encoded; inflectional system: rich/poor)
Lexicalisation patterns (cultural experience determines them – kinship vocabulary, the most telling instance of this)
Synt structure: Head initial or final across phrases – order of elements
subordination types: morpho vs syntactic

The differences are so systematic that it is natural to assume that there might be some underlying similarities

Similarities across languages:
Phonological constraints
Morphological processes: inflectional/derivational
Nominal and verbal phrases- a noun in one language translates a noun in another
Corresponding modifiers
Spatial and temporal modifiers for verbs (pps, tense, aspect)
Relativising nouns
Phrase structure invariance
Argument structure,
Sem structure: polarity, interrogation (wh/yes-no/tag/rhetorical), emphatics
 Dependencies, implicit arguments, elliptical structures

**Principles and parameters:** parameterization, lexical parametrisation hypothesis: Pro-drop parameter related to morphological feature of agreement

**Evidence from Language Acquisition:**

Species Specificity: Only humans acquire language.
Necessity : Humans can acquire any language.
Uniformity: Developmental order is invariant.
Time: Critical period – the mechanism getting deactivated.
Input-output mismatch: the input is incommensurate with the output: limited exposure, unstructured, degenerate data - the logical problem of LA.
Sifting the genetically given from the learnt – principles and parameters: What is KOL and how it arises in the mind - both the questions are answered by this construct.

Empiricism Vs Rationalism : Unrestricted hypothesis space / restricted hypothesis space

**Constructionist / Maturationist debate:** Cognitive precursors to lg – Autonomy vs dependence on cognition (language is a **cognitive and perceptual process** and follows the stages of cognitive development)

**Stages in cognitive development:**

Sensory motor stage (Birth to 2 years):
- Rudimentary perceptual abilities
- Reflexive movements
- Non-random movements in response to sensations
- Inability to mentally represent unseen objects

Pre-operational stage (2 to 5 years)
- Representational thought
- Can make mental transformations on ideas/images
- Unstructured flow of thought
- Egocentric thinking
- Cannot solve conservational problems
- Difficulty with transitive relationships

Concrete Operations stage (5 to 11 years)
- Has mastered the concept of conservation
- Can take other's perceptual perspectives
- Can perform operations on concrete ideas and objects
- Cannot perform mental operations on abstract or hypothetical elements
- Difficulty understanding relationships among relationships

Formal Operations stage (11 years to adult)
- operations on abstract or hypothetical elements
- understanding relationships among relationships

( Egocentric thinking - cannot take another person's perceptual perspective.

Conservational problems - an element which moves in spaces does not change it's fundamental properties. For example a quantity of water is the same regardless of the shape of the container. Depends upon the mental operation of reversibility.

Transitive relationships- Bill is taller than Bob, and John is taller than Bill. Deduce that John is the tallest)
Knowledge schemas are acquired by an Assimilation - Accommodation mechanism, assimilation refers to making associations between new information and what is already known, and accommodation refers to changing the existing knowledge structures, "Schemas", to accommodate new learning. Piaget argued that language structures are not innate. Language has roots in sensory motor intelligence, and it is strengthened in the pre-operational stage when the child embarks on representational thought.

Chomsky: language acquisition follows its own independent course, it is acquired before other cognitive abilities come. Displaced reference would be impossible for sensory motor intelligence, but language is very much there.

**Symbolical/ connectionist debate**: Cognition, linguistic cognition included, is a result of structured symbolic expressions Vs. activation levels in vast networks of densely interconnected units (neurally realistic)

The classical view: cognitive structures are represented by strings of symbols. The connectionist claims, on the other hand, that information is stored non-symbolically in the connection strengths, between the units of a neural net. Generative linguistic theory provides an instantiation of how the basic properties of a cognitive domain can be represented in terms of symbolic paradigm. The generative linguist posits representations and operations that are highly structured symbol systems. (More on this debate later.)

**What is the nature of the learning organism?**

Is it endowed with rich linguistic/cognitive structures?
How are these structures represented?

In answers to these questions lies a theory of language acquisition, and a developmental theory of cognition. We will examine various types of evidence cited for these positions.

**The Learnt System**: Whatever learning mechanism we postulate must be compatible with the system that is to be learnt. What is this system like? What are its internal characteristics? Is the system dedicated to language? What is the nature of interface with other cognitive systems? Is language acquisition correlated with, dependent upon, or independent of cognitive development? In principle, we can conceive of three kinds of relationship between language and cognition: A dedicated language faculty or linguistic modularity / cognition as precursor to language: conceptual basis of language / language as determining cognition: linguistic determinism ( the third hasn’t influenced CLA much.)

Speaking of language, what is learnt?

Rules: formation rules (constituent structure),
derivations (movement),
constraints (subcategorisation)
The Learnt System: Generative linguists are the ones who have paid attention to this question much more than others, and naturally therefore, the answer has a rationalist flavour.

Universals: Substantive and architectural universals, categorial structure, binding relations, displacements

Are we dealing with cognitive or linguistic universals?

Metalinguistic features:

Structure dependency: Operations in language are structure dependent (phonological, morpho, lexical and phrasal structure, thematic structure), Structure dependency in displacement, in disjoint reference

The man who is tall is in the room.
Is the man who is tall in the room?
Is the man who tall is in the room?

Q-formation involves S/A inversion which is structure dependent.

The fact that children never produce c: the principle that syntactic rules are structure-dependent is part of the conditions for acquisition.

Semantic underspecification (when I use a word, it means just what I choose it to mean – neither more, nor less – Humpty-Dumpty; the question according to Alice is, whether you can make a word mean so many different things?) Why H-D might have been right. A metalinguistic principle very much at work in CLA: “Mommy sock”

Two models of linguistic competence:

Modularity: Minimalism (Chomsky, 1995)

Nonmodularity: with different conceptualizations of the interaction between the modules (Jackendoff, 1990)

The Learning Environment: Nature of the input – Poverty of stimulus argument: language acquisition is underdetermined by external control; limited exposure: limited time; quality of exposure: degenerate data, Structured/unstructured,

Degenerate data: Maclay and Osgood Study of adult speech: errors, hesitations, breaks in construction, retracings, pauses and other kinds of disfluency

Contested in the literature on CLA
Fernald ‘92 reviews evidence suggesting that there exist universals in how human adults communicate with their offspring – slow, high-pitched speech with smooth, exaggerated intonation contours, Motherese, used by both males and females while talking to their offspring (Child Directed Speech – Snow, Newport an others)

CDS Structure: higher overall pitch, wider and smoother pitch excursions in intonation contours, slower tempo, longer pauses between utterances (Fernald ‘92)

Linguistically specific motivations for CDS: grammatical and phrase boundaries are marked by prosodic features such as pause or a change in pitch, and thus prosodic and pitch differences may give the child a clue as to how to parse the adult utterance, and therefore to acquire the syntactic structure of their language. (Gleitman and Wanner)

CDS is optimal:
Exaggerated pitch and intonation contours
Other ways in which parental input is optimal:
Rate, pauses,
Repetitiousness,
Simpler words (whatever might be the notion of simplicity – varying with adults)

Crosslinguistic evidence supporting this.

Doesn’t find favour with anthropologists: (Heath ‘83): Everyone talks about the baby, nobody talks to the baby. Schieffelin (‘79) talking for the baby: working among the Kaluli (Papua New Guinea), the expression elema (closest gloss: say it like that) punctuated each of the child directed utterances.

Input is virtually perfect from the grammar point of view – a reliable source of “positive evidence” (tokens of grammatical S’s) in the course of grammar development. Some scholars have speculated about the possibility of negative evidence – information as to which S’s are ungrammatical. . No explicit correction, but there could be other ways of indicating this. If there are robust and universal correlations between children’s ungrammatical S’s and adult behaviour, and if children are sensitive to these correlations, then negative evidence might have some role to play in language development, particularly with respect to how children recover from error.

Several studies in recent times have explored this issue and it has been found parents respond in diff ways – some tend to repeat the ungrammatical ones more often than they repeat the gram ones. However such effects are weak, apply only to very young children, and most important, occur only in some parent-child dyads studied. And despite this all children acquire lg, and there is no evidence that those with laissez-faire parents are fated to be linguistically retarded.

Extensive parent-child interaction – not a norm in all social groups, children acquire lg in radically diff contexts, (growth of creoles (Bickerton) and signed systems where children had no exposure (Goldin-Meadow and Mylander, 1990) seem to point to insignificance
of input. For these reasons there is a growing consensus that negative evidence cannot play an essential role in LA.

Input is not tokens of grammatical S’s is isolation, but these embedded in a context – the need for some mapping between children’s linguistic structure and their construal of the world is most obvious for word learning, but may also apply to acquisition of syntax.

**Role of input** – input as essential, facilitative, a mere trigger, positive evidence, indirect negative evidence, **CDS as a fine-tuned input** – empirical issues, which researchers like Ferguson and Snow have devoted sometime to.

Selected Readings from the following:


Chomsky, N., 2000, *New Horizons in the Study of Language and Mind*, CUP.


