Background: HS221

- **What is the course about?**

The course approaches language studies from the perspective of cognitive science by positioning itself as a pillar of the discipline.

- **What are the components?**

- Beginning: chart the history of cognitive science, language studies, its evolution etc. what is cognition, what are the cognitive processes and where does language fit into it? The issue of culture.
- Studying language-cognition interface through topics like categorization, concepts, schemas, metaphors etc.
- Language processing: Understanding the psychology of language. Theoretical understanding. Topics would cover perception and production in the areas of language acquisition, bilingualism etc.

For centuries, philosophers argued on the nature of 'mind'.....

roles of the senses and experience versus reason, logic, and certainty.

Rationalism

- (Plato, Descartes, Kant)
- knowledge is based on reason alone

Empiricism

- (Aristotle, Locke, Hume, Mill)
- knowledge is based on experience

Descartes

- Descartes was the most looming figure among the rationalists. He set out to find the basis of certain knowledge.

- he was aware of hallucinations and illusion. he asked, 'if the senses can be fooled, how can the knowledge gained by the senses be certain?' Hence it is Reason. Mind must be separate from matter.

- Cartesian Dualism – the mind-body problem

Birth of cognitive science

- 1946-1953: Macy conferences
- Engineers, logicians, mathematicians, physiologists, psychologists, anthropologists… got together
- This group came to be known as the 'Cybernetics' group.
- Deliberated upon the question of 'how the human mind works'.

Their main convictions:

- Thinking is a kind of computation, not in the sense of a human manipulating arbitrary symbols but in the sense of algorithms.
- Physical law can explain why and how nature appear to us to contain meaning, finality, directionality, intentionality

- This kind of ideological stand point started the mechanization of the human mind, rather to humanize the machine.

goal

- Create a human brain
- Can a machine think?

The philosophical argument against this:

- There is a confusion about simulation and duplication.
- Digesting a pizza is not the same thing as running a computer programme that simulates the biochemical processes of the human stomach
- But what if the process (mental) is itself a simulation? Like money (as in currency) itself is a (false) belief creating a truth.

- Neumann' creation of computer was a result of this idea
- It is not the physical world that determines the evolution of ideas but rather ideas that generate scientific and technological development

In short

- We are back to the question of mind and matter

and to quote Thomas Nagel,

"a solution to the mind-body problem is nowhere in sight".

New developments

- A lot has happened in the intervening decades
- Neuroscience has taken giant steps
- AI overshadowed second-cybernetics group
- Linguistics (Chomsky) put language in the main loop of the mental faculty
- Psychological tools and experiments brought out new knowledge about the mind

Psychology:

- Experimental psychology began in 19th century: but it became dominated by behaviorism and believed,

- psychology should restrict itself to examining the relation between observable stimuli and observable behavioral responses

- denied the existence of consciousness and mental representations

Meanwhile in linguistics,

Chomsky: language is a generative system, innateness hypothesis

- rejected behaviourist assumptions about language as a learned habit and proposed instead to explain language comprehension in terms of mental grammars consisting of rules.

George Miller (1950's)

- showed that the capacity of human thinking is limited, with short-term memory, for example, limited to around seven items
- proposed that memory limitations can be overcome by recoding information into chunks, mental representations that require mental procedures for encoding and decoding the information

Other developments

- Cognitive Psychology
- Artificial Intelligence

- Developments in these fields set the stage for the

cognitive revolution

Cognitive science

Some possible definitions:

"The interdisciplinary study of mind and intelligence"

"Study of cognitive processes involved in the acquisition, representation and use of human knowledge"

"Scientific study of the mind, the brain, and intelligent behaviour, whether in humans, animals, machines or the abstract"

What is cognition?

- The primary subject matter of cognitive science is *COGNITION.*
- It refers to knowing. The collection of mental processes and activities used in thinking, understanding, perceiving, learning and remembering
  - and the act of using those processes

Cognitive processes

- Learning and Memory
- Thinking and Reasoning (Planning, Decision Making, Problem Solving …)
- Language
- Vision-Perception
- Social Cognition
- Dreaming and Consciousness

- Necessarily, it will involve two entities: the agent who knows and the subject of that knowing

The knower : the subject

The known : the world

- So, the question is: how do we know?

- **Mind**: what about it? How does one find out what is mind? And its functions without falling prey to the cultural universe we are set in?

- **Brain**: less problematic than others. It is visible. Can be tested.

- **Behavior**: interpreting behaviors is complicated. The interpretation depends as much on the observer as on the incident itself.

- The mind/brain issue:

Are they same? Or separate? What is the relationship between them?

We need language to discuss this.

But,

- ✓ Some languages do not even distinguish between them.
- ✓ Even when they do, the language that is used it not dependent on facts but on the cultural constructs.

In this backdrop, studies involving language structure and function has become involved with the questions;

- how is language intertwined with other mental functions? Does it merely give those processes a 'voice'?

- or, does it play a role in facilitating/inhibiting those processes?