

F7

Cognitive Systems

2020 edition

*Marcio Lobo Netto
João E. Kogler Jr.*

PSI 3560 – COGNITIVE SYSTEMS

class F7

Marcio Lobo Netto
João Eduardo Kogler Junior



Polytechnic School of the University of São Paulo
Department of Electronic Systems Engineering
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SOCIAL COGNITION

Language, Communication, Emotion

Session F7

Summary

- First session (7:30 – 9:10)
- F7 - Social Cognition
 - Communication, Language, Emotion
 - Coffee break
- Second session (9:20 – 11:00)
- T7

Section 1

Social Issues

- Living together
- Working together
- Sharing experiences
- Feeling empathy and affection
- Understanding each other
- Teaching and Learning

Social Cognition

- Understanding each others mind
- Sharing ideas, concepts
- Ability to watch things from others perspective
- Communicating ideas, facts
- Bridging mental maps
- Imagining yourself on others side
- Participating in culture development

Social Issues – simple beings

- Sharing Tasks / Cooperating
 - Emergence
 - Collective / Swarm behavior
 - School of fishes / Flock of birds
 - Complex behavior can be observed
 - Instinctive individual basis

Social Issues – simple beings

- Communication through signals exchange
 - Pheromone (smell)
 - Noise (sound)
 - Movements (visual)
- Communicating through warnings
 - Signals with unique messages
 - Pure reactive behavior
 - Easy recognition
 - Instinctive
 - Messages
 - not compositional
 - Understanding
 - direct association signal - meaning

Social Issues – more complex beings

- Sharing Tasks / Cooperating
 - Joining individual and collective goals
 - Establishing and following rules
 - Groups of wolves or lions
 - Strategy and planning
 - Hierarchy

Social Issues – more complex beings

- Communication through signals exchange
 - Smell
 - Noise (sound)
 - Movements (visual)
- Communicating through warnings
 - Signals with compositional messages
 - More elaborated behavior
 - Sophisticated recognition
 - Not pure instinctive
 - Messages
 - compositional
 - Understanding
 - Complex association signal – meaning
 - Involving knowledge

Social Issues – humans

- Sharing Tasks / Cooperating
 - Joining individual and collective goals
 - Establishing and following rules
 - Developing communities and societies - culture
 - Strategy and planning
 - Hierarchy

Social Issues – humans

- Communication through language
 - Oral and written / draw
 - Body (face) expressions

Social Issues – humans

- Developing Culture
 - Producing art
 - Comprehending and admiring art



Section 2

The Human Quest

- Human Universals
 - Language acquisition
 - Detecting emotions
 - Sense of self
 - Perception of status
 - Color terms
 - Object recognition
 - Landscape preferences
 - Mental maps
 - Food aversion, flavor preferences
 - Deception, humor, gossip, nepotism, envy,
 - Sexual attraction, romantic love, jealousy, pregnancy sickness
 -
 - Substrate (brain/body) providing guides for anything else

Communication and Language

- Insects
 - Sharing of basic information
 - Colony survival
- Mammals
 - Sharing of more elaborated concepts
 - Hunting plans, feeding and mate strategies
- Humans
 - Sharing of ideas, knowledge, culture
 - Humankind cultural evolution

Communication and Language

Signal

Sounds

Simple Message

Voice

Composite Message

Speech (Language)

Communication and Language

- Language as an instrument
 - Communicating
 - Ability to share ideas upon a common basis (constructed)
 - Many kinds of language
 - Verbal, gestural, pictorial, etc.
 - Self Reflection
 - Building / Structuring Concepts
 - Language Centers
 - Broca and Wernick areas
 - Some level of specialization (language)
 - But general (any language)
 - » This leads to the universal concept of language
 - Noam Chomsky – universal grammar structures



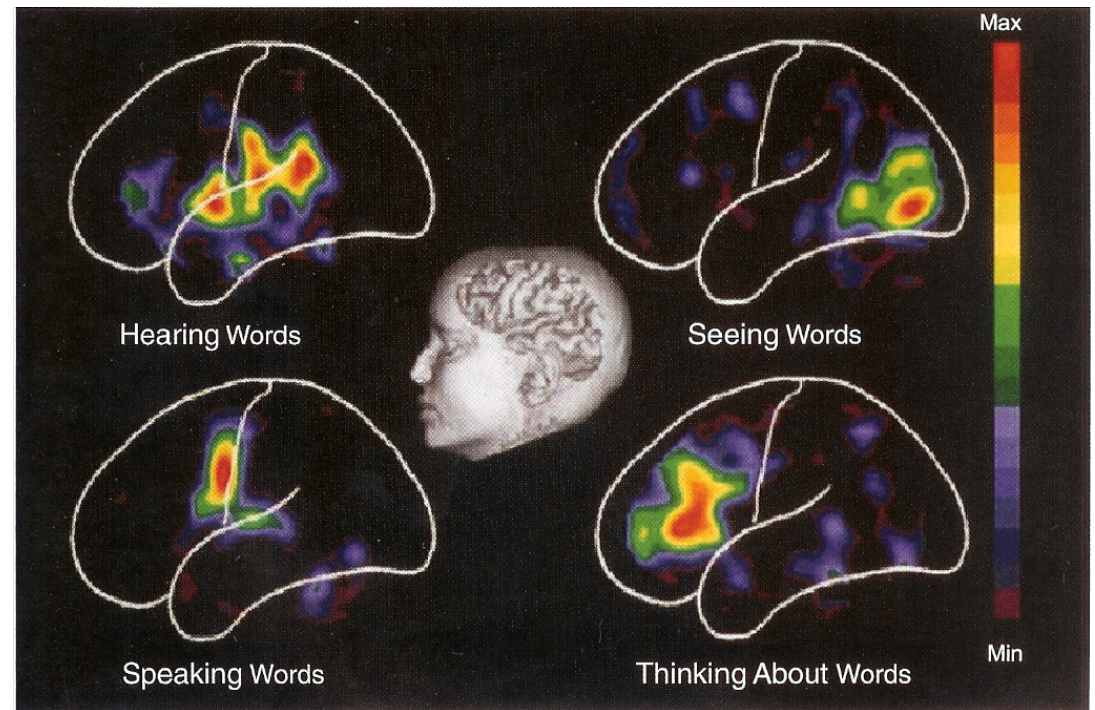
Communication and Language

- Syntax
 - Rules – composition of words in sentences and sentences in speeches
 - Possible combinations to carry comprehensible meaning
- Generative grammar
 - Key features behind any natural languages
 - Enabled by special neural circuits specially in humans
 - Common basis for language development



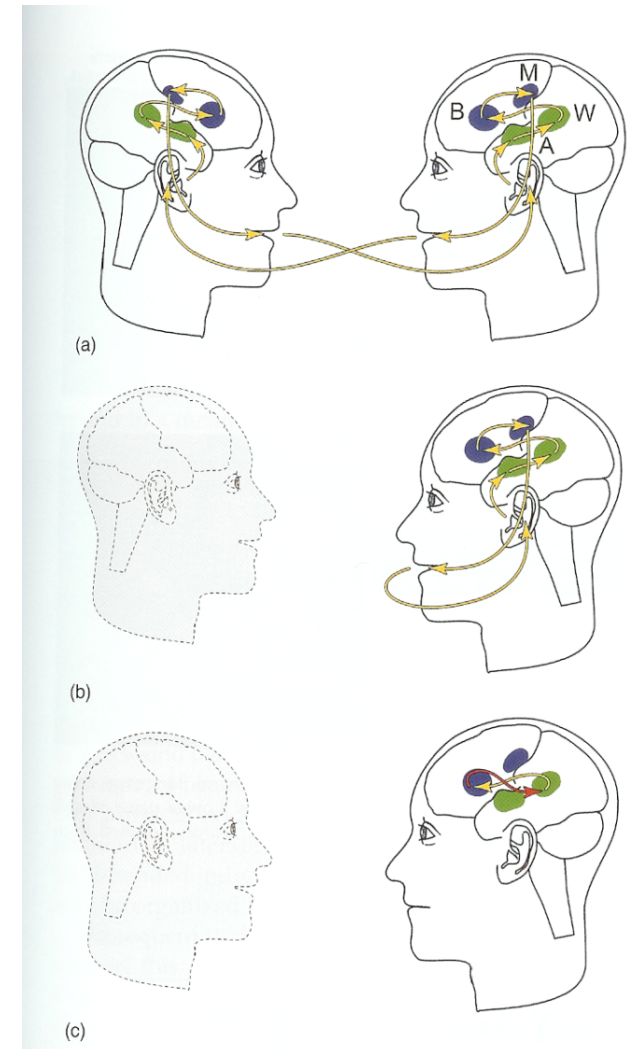
Communication and Language

- Neuroscience
 - Language Centers
 - Cortical areas
 - Broca & Wernick
- Cognitive Linguistics
 - Study of linguistics funded by scientific knowledge acquired about cortical areas and their associated mental functions
 - Expression (speech)
 - Broca area
 - Comprehension (Listening and Comprehension)
 - Wernick area



Communication and Language

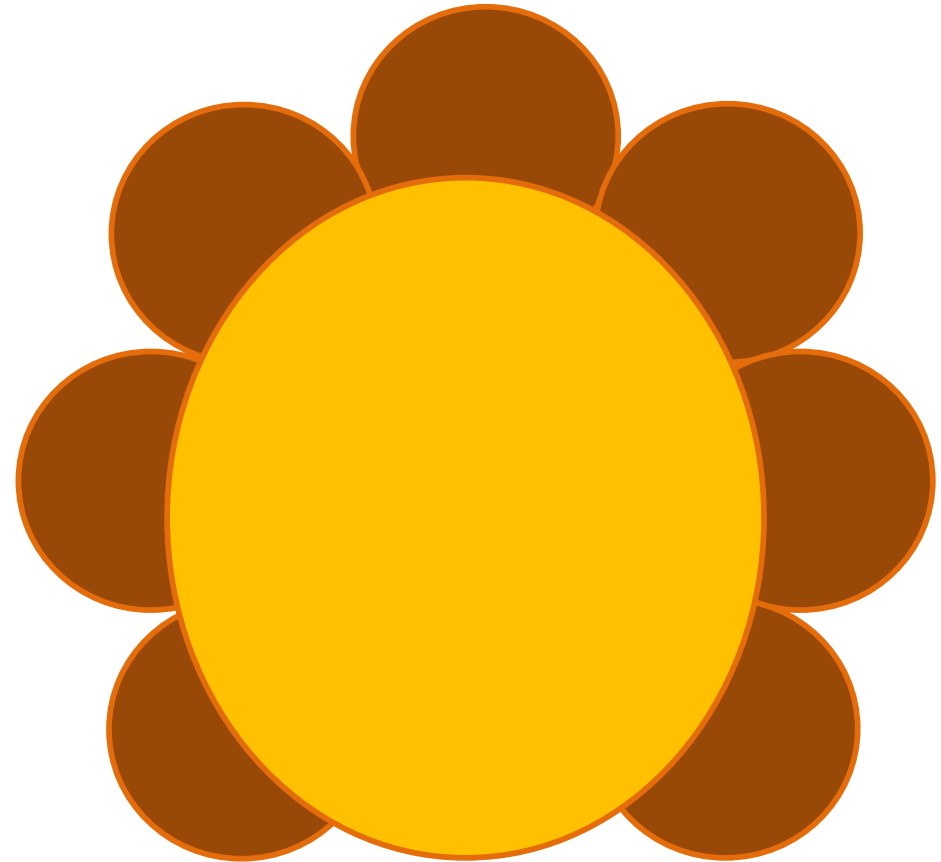
- Language and Communication
 - Dedicated centers for linguistic processing
 - Interlocution (Speaking/Listening)
 - Communication supported by Language
 - Thought (Self Reflection)
 - Reasoning supported by language
 - Loud and internal speak (closed circuit) – speaking to yourself



Section 3

General versus Special Purpose

- The cathedral concept
 - Many specific centers (chapels) around a central place (nave)
 - Coexisting: specific (chapels) and more general / integrative functions (nave)



Emotion

- Modulator
 - Cognitive processes modulated by emotional conditions
 - Emphasized / Stimulated or Attenuated
 - Acting as filters or enablers from those process that are more important on some circumstances
 - Attention
 - Self preservation
 - Danger avoidance

Emotion

- **Body Mind Binding**
 - Sadness and happiness
 - Biological connection to mental states
 - Mental connection to biological states
 - Cognitive states reflecting body (organs) conditions

Emotion

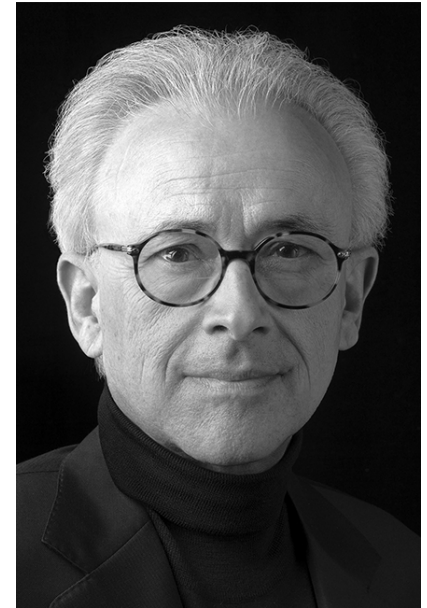
- Fear
 - Angry
 - Happiness / Joy
 - Sadness
 - Disappointment
-
- The evolutionary advantages brought by emotion

References

- Hereafter you find some references

Antonio Damásio

- Descartes Mistakes (1995)
- *The Feeling of What Happens: Body and Emotion in the Making of Consciousness* (2000)
- *Looking for Spinoza: Joy, Sorrow, and the Feeling Brain* (2003)
- *And the Brain created the man* (2009)
- *The Book of Consciousness* (2010)
- *The strange order of things: life, feeling and make of culture* (2017)



Coffee break

10 minutes