1. Introduction

Basic Assumptions about Language

Basic assumptions:

- **Embodiedness**
  - "Language affected by and transmitted via *the body*"
- **Embeddedness**
  - "Language affects and is affected by *social situations*"
  - brain's evolution is co-determined by social developments
- **Mental Models**
  - "Humans *represent* the world *internally*"
  - includes perceptual, spatial, emotional, causal and temporal info
- **Incremental Processing**
  - "Humans process language *over time* and *in parts*"
  - when analyzing messages, stores info is compared to the incoming signal (lexically, syntactically, semantically and world-knowledge-y) including emotion and motor aspects

Language and Communication

Communication: *"Every action with which a person exchanges information (about needs, desires, perceptions, knowledge or affective states). Can be intentional or unintentional."*

- No principled separation between language and other cognitive domains, since cognitive systems are modular (as can be seen in sign language).

Types of context:

- **Physical**
  - e.g. location, time, temperature, situation of participants
- **Historical**
  - shared information (i.e. common ground)
- **Psychological**
  - perception of self and others
- **Cultural**
  - shared knowledge systems (e.g. attitude, values, behaviours)

Message: *"Consists of complex meanings, expressed via both verbal and non-verbal symbols"*

Symbol: *"Can be words, sounds and actions. Supported by facial expressions, gestures and intonation"*

Encoding: *"Turning ideas and feelings into messages"*

Medium (of the message): *"Any technology that created extensions of the human body and senses"*

- The "form" of the message (e.g. how spoken words are said)
- Considered as part of the message:

- ◦ media create their own environments. Which are beneficial to some messages and hostile to others. Which influence the interpretation of the message.
  ◦ people might be unaware of the effects of the environment their messages reside in, because they don't know any better

Language can be seen as a medium that extends human senses, in the sense of:

- **motor behaviour** (expressions can be seen as actions)
- **perception** (getting information from far away, e.g books)
- **emotion** (e.g. hearing a sad story makes you sad)
- **memory** (using language to record a memory)

Humans communicate via their 5 sensory channels. Using multiple channels *simultaniously* increases the chance for successful communication.

Noise: *"Any stimulus that disrupts the sharing of meaning"*

- includes internal stimuli like being tired
- **Semantic noise**: "unintended meaning"

Feedback: *"Any reaction to messages that indicate that the message came across/is understood"*

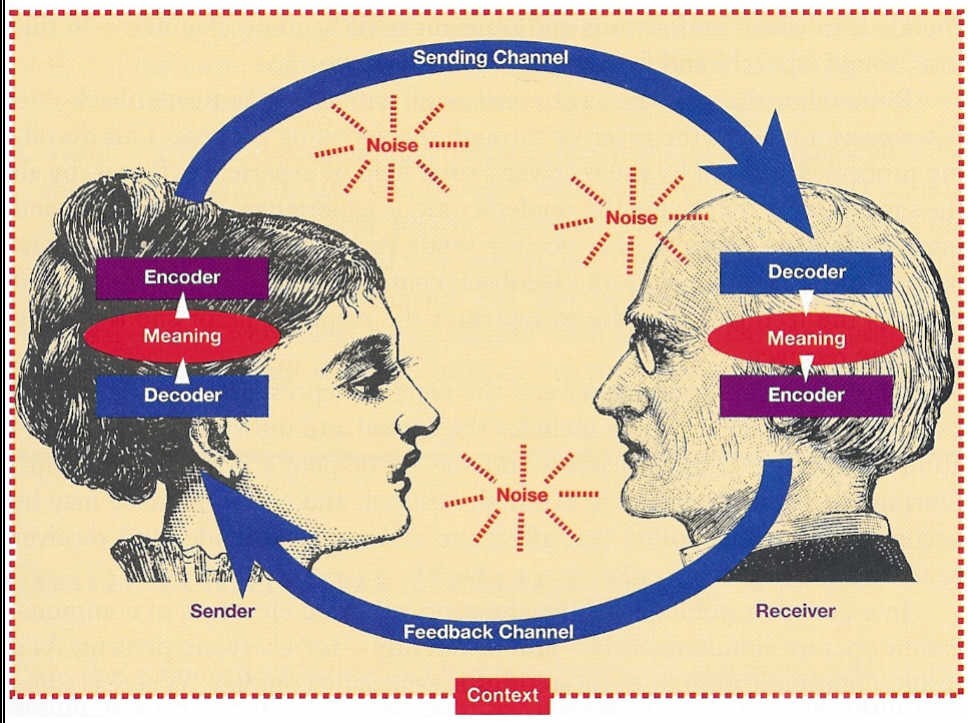
Evolution of language

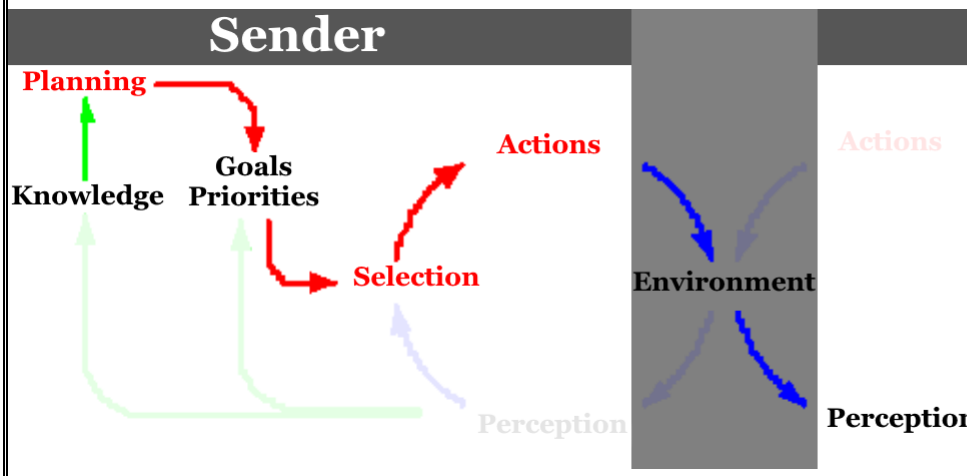
- Broca's area was likely already present 2 million years ago
- We've had fundamental speech apparatus structures for 60.000 years
- The shapes of our tongues, mouths and throats allows us to make many different sounds but also gives us too many teeth and an increased risk of choking
- **Two theories** of evolution of language:
- ◦ **Discontinuous**: language arose suddenly and spread quickly due to evolutionary advantages and passing the ability to offspring.
  ◦ **Continuous**: gradual co-evolution of language and other human capabilities.
- **Theory** on why **communication** was beneficial for evolution:
- ◦ Internal representation of the world proved to be a huge advantage in protecting the body.

MacWhinney's 4 periods of co-evolution:
(Continuous theory)

Name	Features	Period
Two Legs	cognitive control planning	8 - 4 million years ago
Social Cohesion	vocal-auditory neuronal changes	4 - 2 million years ago
Mimesis	gestures signs singing	2 - 0.1 million years ago
Phonological and Lexical systematization	-	0.06 million years ago - now

Sender-Receiver Model	

Sender-Receiver Model	
The sender encodes meaning into a message and sends it through a channel.The receiver decodes the received message into meaning. Certain factors (such as noise) can result in differences between the encoded and decoded message. The Sender-Receiver model can be seen as a simplified version of two "perception-action models" interacting. This is also in line with the **LUF**	
Two "perception-action models" interacting	

Two "perception-action models" interacting	
Here the receiver approximates the mental state of the sender via **prediction** or **integration**. **Prediction:** *"(could be defined as) activating information that will come up before it's even there"* **Integration** happens when feedback is used to update your mental model about the situation.	

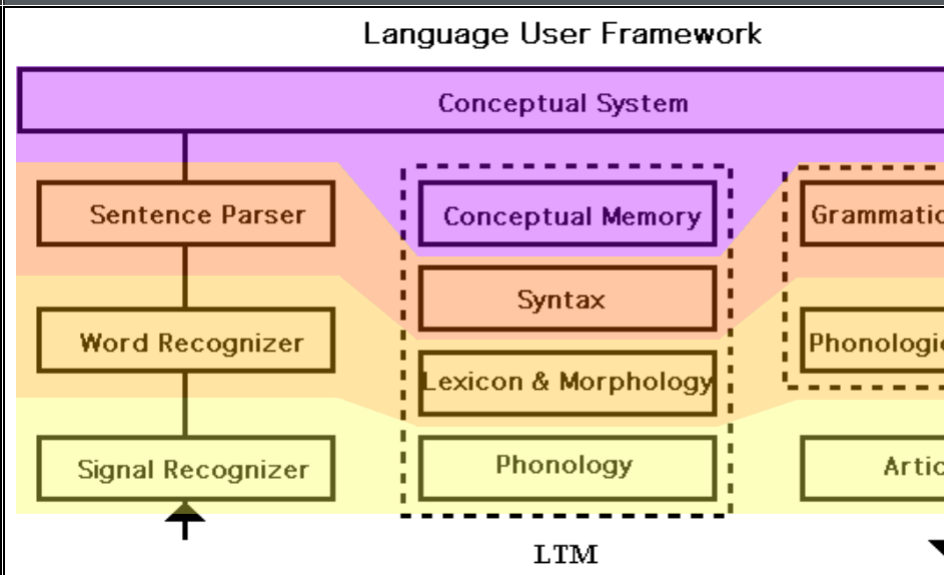
Language User Framework

Framework instead of *model*, because models are much more specific and specifies interactions, it's more like a "systematic inventory of all you need when you listen or speak"

Distinguishes between **Language Comprehension** and **Language Production**.
The Sender-Receiver Model can also be explained via the LUF.
The LUF needs a certain number of components for this:

- **Representation & Rules** (LTM)
- **Processing Components** (e.g. sentence parser)
- **Working Memory** (STM)
- **Cognitive & Attentional Control, and Monitoring**

Language User Framework	

Language User Framework	
Magenta: concerns **thought** (incl. meaning, changing ideas, mental models). Also connects to other systems, such as emotional or musical. Yellow to orange: concerns **representation of language** and is **hierarchical** Lexical, Syntactic and Semantic information is processed **IN PARALLEL**.	

Units of Language Processing:

Level	Linguistic Disciplines	Examples
Supralexical	Syntaxis	phrases, sentences, discourse
Lexical	Lexicology Morphology	words
Sublexical	Phonetics Phonology	letters, sounds, syllables

Linguistic Disciplines:

Disipline	Unit	Regards	Example
PHONETICS	*phones*	raw speech sounds	
PHONOLOGY	*phonemes*	abstract sound categories	
LEXICOLOGY	*words*	words	walk
MORPHOLOGY	-	word structure	

Disipline	Unit	Regards	Example
SYNTAX	*sentences*	sentence structure, word order	
SEMANTICS	-	meaning	
PRAGMATICS	-	intended meaning	

Psycholinguistic Levels:

Levels	Example
PHONETIC	[gɒʔnɪ'tʃɑɪndʒ]
PHONOLOGICAL	/ gɒtenɪ'tʃeɪndʒ / + intonation
SEGMENTATIONAL	got # any # change
LEXICAL	have got = [POSSESS]; change=[MONEY] [SMALL]
SYNTACTIC	(have you) got any change? NP: you VP: [have got] [any change]
PROPOSITIONAL (abstract meaning)	□□?
PRAGMATIC	[I want you to give me money]

Linguistics is concerned with **structure**, **psycholinguistics** with **processes**

Information Stream Types:

- **Autonomic:** one-way
- **Interaction:** two-way

Language Process Types:

- **Automatic:** involuntary, unconscious, doesn't affect the attentional system or its resources
- **Controlled:** voluntary, conscious, affects the attentional system and its resources, *SERIAL* (doesn't occur simultaneously with another process)

2. Research Techniques

3. Spoken Word Recognition

4. Printed Word Recognition

5. Sentence Processing

6. Word and Sentence Meaning

7. Language Production