

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 *simultaneously* 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 gestures	4 - 2 million years ago
Mimesis	signs singing	2 - 0.1 million years ago
Phonological and Lexical systematization		0.06 million years ago - now

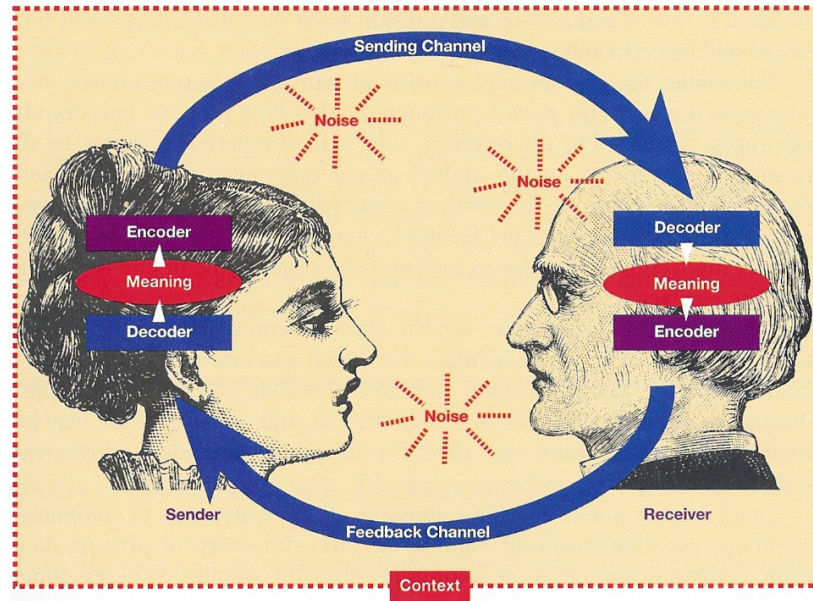
Sender-Receiver Model

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



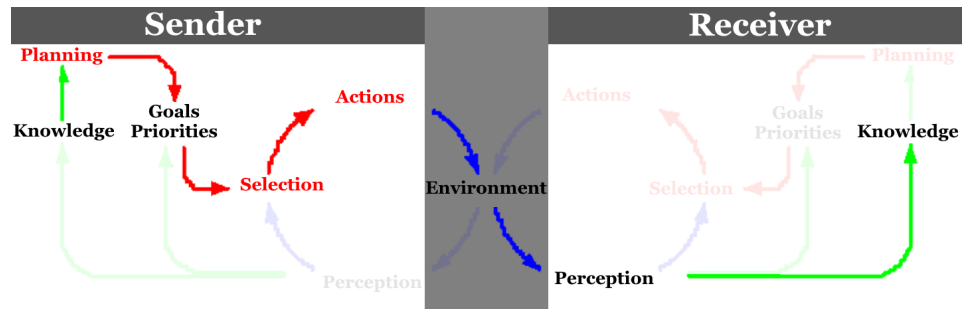
Two
“perception-
action
models”
interacting

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**

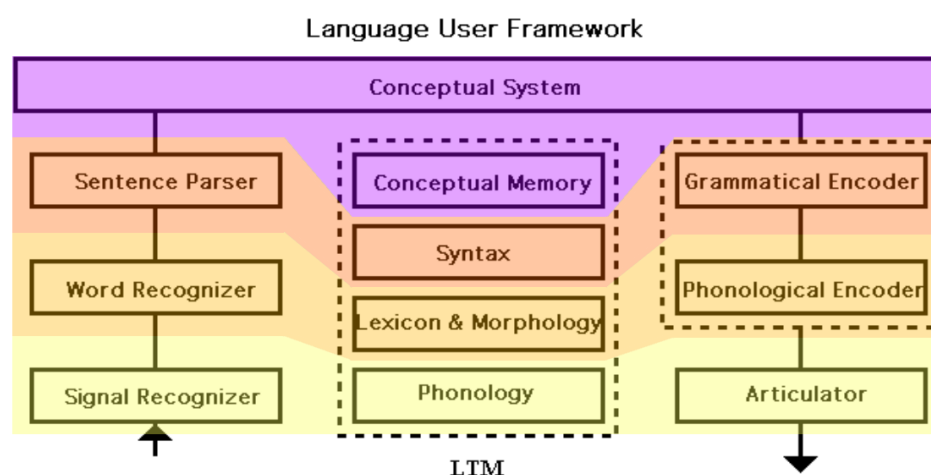
**Language
User
Framework**

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	Syntax	phrases, sentences, discourse
Lexical	Lexicology Morphology	words
Sublexical	Phonetics Phonology	letters, sounds, syllables

Linguistic Disciplines:

Discipline	Unit	Regards	Example
PHONETICS	<i>phones</i>	raw speech sounds	
PHONOLOGY	<i>phonemes</i>	abstract sound categories	
LEXICOLOGY	<i>words</i>	words	walk
MORPHOLOGY -		word structure	
SYNTAX	<i>sentences</i>	sentence structure, word order	
SEMANTICS	-	meaning	
PRAGMATICS	-	intended meaning	

Psycholinguistic Levels:

Levels	Example
PHONETIC	[gɒt'ni'tʃəndʒ]
PHONOLOGICAL	/ gɒt'ni'tʃəndʒ / + 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