

Eng124: Language and Society

Lecture Notes - VI

Natural language Understanding:

The problem of meaning making

Two dominant perspectives on language

- Language as a cognitive potential
 - A biological faculty humans come endowed with as they are biologically programmed to learn/use language.
 - Language is an organ of the mind/brain.
 - *We are homo loquens.*
- Language as a cultural artifact
 - Language has a critical place in socio-cultural interactions; it finds a place among leading social practices across communities.
 - Language is a social practice like learning, teaching, politics, art, music, science, governance, business, literature.
 - It is a cultural tool: *instrumentum linguae.*

Problem of Meaning

- How does language mean whatever it means?
- Problem of meaning is central to linguistic enquiry.
- The problem cuts across both the perspectives.

Four Kinds of expressions

- If we take well-formedness and meaningfulness as the two criterial features of human language expressions, then we can logically think of four kinds of expressions in human language.
 - Well-formed and meaningful expressions
 - Ill-formed and meaningful expressions
 - Well-formed and meaningless expressions
 - Ill-formed and meaningless expressions

Examples

- Ram loves Sita.
- Ram says that himself loves Sita.
- Colourless green ideas sleep furiously.
- Sita Ram understand give book movie.

A different possibility

- All human language expressions are meaningful, except when they are a random assortment of words.
- There is nothing like a meaningless expression of language.
- Any well-formed sequence of words can be assigned a meaning in an appropriate context.

Can you make a story?

- Colourless Green ideas sleep furiously.

Prize-winning entry at Stanford (1985)

Thus Adam's Eden-plot in far-off time:

Colour-rampant flowers, trees a myriad green;

Helped by God-bless'd wind and temp'rate clime.

The path to primate knowledge unforseen,

He sleeps in peace at eve with Eve.

One apple later, he looks curiously

At the gardens of dichromates, in whom

colourless green ideas sleep furiously

then rage for birth each morning, until doom

Brings rainbows they at last perceive.

A.H. Byatt

How do we understand everyday texts?

- The question has two aspects:
 - 1) How does language mean whatever it means?
 - a language-centred question
 - 2) How do we, the users of language, construe the meaning of what we speak/hear?
 - a user-centred question
- An unresolved problem in Cognitive Science

How do we understand?

- How does language mean whatever it means?
 - a language-centred question
- How do we, the users of language, construe the meaning of what we speak/hear?
 - a user-centred question

Language centred question

- Two tools that language makes use of:
 - Reference
 - Combinatoriality

The two tools

1. Reference: A sign system

- Sign and referent -- an arbitrary relationship
- The triad of sign, object and concept

2. Combinatoriality: A rule system

- Combinatorial possibilities and restrictions
- Many levels of representation including the level of sound

Reference

- Symbolic signs
 - sign and referent relation is arbitrary.
 - reference is conventionalized.
- Iconic signs
 - referent resembles the sign; the relation is not arbitrary.
- Indexical signs
 - referent is in the immediate context
- Signs in human language are largely symbolic, sometimes iconic and sometimes indexical.

The Gavagai Problem

- The problem of how we know the referents of signs
 - How does the child know the meanings of words?
 - The meaning space is potentially unlimited.
 - And so is the hypothesis space for the learner.
- W.W. Quine
- One of the challenges of language acquisition by the human child

The Helen Keller Experience

- Discovering reference
- The discovery that everything had a name had the effect of changing her world.

Rule system

- Combinatorial possibilities
- Combinatorial constraints
 - Combinatorality – units of composition
 - **phoneme, morpheme, word, phrase, sentence, leading up to discourse**
 - Progressively larger units of composition at each level
 - Phonology, Morphology, Syntax
 - Antidisestablishmentarianism

Combinatoriality in Syntax

- An example:

**The tall woman walked her unfriendly dog in
the neighbourhood park.**

- Rules/procedures of language: a finite set generating infinite sentences
- **Unbounded recursion**
 - No finite limit to the length of a sentence
 - No finite limit to number of sentences a language can have
- **Ambiguity**
- Visiting relatives can be a nuisance.

A point to think over

- Phonological combinatoriality: finite set of sounds manipulated to form infinite utterances
- Morphological combinatoriality: Morphemes (minimal meaningful units) combining to form words - a highly productive process of inflecting existing words and forming new words
- Syntactic combinatoriality: words combining to form phrases and phrases combining to form sentences – a recursive process
- **How do the three differ?**
- Concatenative and recursive combinatoriality

The two tools

- Reference: ability to map thoughts and experiences into language
- Combinatoriality: ability to produce and understand ever new expressions of a language

The two tricks in languaging

- Lists (Declarative knowledge)
- Procedures (Procedural knowledge)

The User-centred question

- How do we, the users of language, construe the meaning of what we speak/hear?
- The human *linguaging* potential consists of a knowledge of *lists* and *procedures*.
- Lists: the ability to map thoughts and experiences into language
- Procedures: the ability to produce and understand ever new expressions of a language

The languaging ability

- Knowledge of LISTS and PROCEDURES
- Declarative and procedural knowledge
 - Knowledge of Reference
 - Knowledge of Combinatorial procedures/rules
- How do the two abilities differ?
 - Explicit knowledge vs. implicit knowledge

What is innate?

- Lists: reference is innate but words are acquired.
- The ability to use symbols
 - Helen Keller: the innate potential was triggered late.
- Procedures: Certain core procedures, invariant across languages, are innate. The rest are acquired through exposure to a language.
- Linguistic Universals
 - E.g. All languages have assertions, interrogations, negations
 - All languages have several types of interrogation (Content question, Yes/No question, Tag question, Rhetorical question, and others such as Uncertain question)

The Third Dimension-I

- **Invoking the context of utterance**
- Shared experiential knowledge: *Common Ground*
- Contextualising the linguistic utterance in terms of our non-linguistic knowledge about our world
 - unplayed pianos: gloom (what is the natural thing to do with musical instruments?)
 - newspaper reference: decision making in the adult world (what is the right time for marriage?)

The Third Dimension -II

- **Intention attribution to the source**
- The *theory of mind*: the ability that the humans have to make assumptions about other minds
 - The newspaper and marriage association was *intended* as sarcastic by the author.
 - The description of the woman gazing out of the window for the next 50 years was *intended* as a comment on the institution of marriage.

- The ability to invoke a shared, common ground and the ability to ascribe intentions to others are both unconscious processes at work in all human interactions.
- In most cases, the two work together.

Example Text 1

- What sense does the following interaction make?

A: I have a fourteen year old son.

B: Well, that is alright!

A: I also have a dog.

B: I am sorry!

Common Ground

- This fragment of speech interaction may not make any sense to us.
- But it makes perfect sense to the interlocutors because **they share a common body of knowledge** about the context of the interaction.
- **Invoking a shared non-linguistic knowledge**

Example Text 2

Attributing intentions to others:

A: Can you tell me the time?

B: The milkman has just arrived.

Example Text 3

- Both *Common Ground* and *Theory of Mind* working together:

A: Have you seen Aditya?

B: I saw a red bicycle outside the
Computer Centre.

Act of Communication

- Source
 - A belief x , and the intent to communicate the belief x ,
selection, combination, articulation
- Recipient
 - Audition, decomposition, disambiguation, intention/belief
attribution, understanding, acceptance/rejection of the belief x

Take Home Assignment I

- Read a poem, and write what you understood of it in about 125-150 words.
- The poem “In My Spare Time” by the Iraqi poet Fadhil al Azzawi, Translation: Khaled Mattawa

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In my spare time

During my long, boring hours of spare time

I sit to play with the earth's sphere.

I establish countries without police or parties

and I scrap others that no longer attract consumers.

I run roaring rivers through barren deserts

and I create continents and oceans

that I save for the future just in case.

I draw a new colored map of the nations:

I roll Germany to the Pacific Ocean teeming with whales
and I let the poor refugees
sail pirates' ships to her coasts
in the fog
dreaming of the promised garden in Bavaria.
I switch England with Afghanistan
so that its youth can smoke hashish for free
provided courtesy of Her Majesty's government.

I smuggle Kuwait from its fenced and mined borders
to Comoro, the islands
of the moon in its eclipse,
keeping the oil fields in tact, of course.
At the same time I transport Baghdad
in the midst of loud drumming
to the islands of Tahiti.
I let Saudi Arabia crouch in its eternal desert
to preserve the purity of her thoroughbred camels.

This is before I surrender America
back to the Indians
just to give history
the justice it has long lacked.
I know that changing the world is not easy
but it remains necessary nonetheless.

Fadhil al-Azzawi (Iraqi poet)

Translation: Khaled Mattawa

In My Spare Time

- A sense of finality associated with cartography.
- We forget that it is engineered by humans and not God.
- Territoriality is a human artifact - territorial divisions are of our making and unmaking.

- Imaginative geography born out of a sense of discontent with the prevailing world order.
- If map-making is about fixing our ideas of space then this poem is an exercise in a revolutionary cartography.
- Recasting political geography to rethink the equations that hold in the world as we know it.

- Questioning or challenging the world order driven by the imperialist adventurism etc., written as it is after the Iraq war though there is only one reference to Baghdad
- Wants to recast the world order, undo what he considers historical wrongs born out of an unequal distribution of power.
- An overtly political poem born out of an anger against an unequal world which must be changed.

- A satirical poem about American adventurism in the Middle East dealing with themes of war, boredom, and consumerism.
- When people talk about war they talk about its human costs but combat may not have been the typical experience for most Americans who served in Vietnam, nor was it the primary characteristic of the decade-plus long U.S. presence there.

- Soldier experience in Vietnam had less to do with combat and was focused instead on the backroom activity, where the vast majority of American troops served, working in hospitals and offices, as truck drivers and reporters, on bases large enough to be self-contained cities. [Armed with Abundance: Consumerism and Soldiering in Vietnam War. Meredith Lair 2011]
- The same argument can be extended to the American interventionism in Iraq.

- War is long stretches of boredom interrupted by moments of extreme terror. Fascination with violence to overcome boredom. War glorified as a means of restoring our ability to act in contemporary times.
- A game that the poet is playing in his spare time.
- In their spare time, the big powers go all out to change the world map – a deeply ironical tone.