

# Why are logic and ontology prior to language?

Work in progress

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IUC Dubrovnik 2011

# Picture theory: no-agent theory

- According to apophantic theory of language (from Aristotle to Wittgenstein's *Tractatus*), also called 'picture theory' or 'copy theory' (Quine), the language is implicitly defined as manifestation of that what is.
- The evidence for theory is alleged structural (or morphological) similarity of grammatical and ontological form: the grammatical form of an atomic sentence (a predicate connecting names) mirrors the ontological form of an atomic state of affairs (a relation connecting objects).
- Apophantic theory of language needs no communicative subject, no agent that uses language as a tool.

# Picture with a language user in it

- The disregard for the social dimension makes the apophantic theory unable to deal with the significant part of language, the part having sentences in other moods than declarative mood.
- It is their communicative role that separates imperatives from other moods.

## Example

Imperative mood sentence is an 'addressed sentence,' a sentence requiring presence of a communicative agent (language user) in the "picture."

- The sentential picture radical framed within imperative mood must contain a figure of a communicative subject (i.e. an entity that in a regular way properly responds to the sentence of the language used) doing or forbearing an action. Belnap, Perloff *et al.* have used the term 'agentive' for "agency ascribing sentence" and advanced the thesis that "the content of every imperative is agentive."
- The imperative sentence is directed towards another communicative actor. We can (using imperative) request of particular actor, or of an indefinite (arbitrary) actor that something be done but cannot request of nobody to do anything.

# Declarative fallacy

- Belnap has coined the name 'declarative fallacy' for the tendency of restricting the scope of theory of language to the class of indicative-mood sentences.
- It comes as no surprise that (comprehension of) the concept of language obtained under indicative-mood reduction does not include the communicative use of language as its essential attribute.

# Expressive theory of language: single-agent theory

The expressive theory of language (advocated *inter alia* by Chomsky) and the apophantic theory are the two sides of the same coin:

- 1 both theories view language as a member of binary relation, the other relatum being thought (expressive theory) or a/the world (picture theory);
- 2 neither theory needs a social context (they construct no-agent or single-agent notions of language);
- 3 both theories tend to commit declarative fallacy.

## Language without communication

[. . .] language is not properly regarded as a system of communication. It is a system for expressing thought, something quite different. It can of course be used for communication, as can anything people do – manner of walking or style of clothes or hair, for example. But in any useful sense of the term, communication is not *the* function of language, and may even be of no unique significance for understanding the functions and nature of language.



Chomsky, N., Belletti, A., and Rizzi, L. (2002).

*On Nature and Language.*

Cambridge University Press.

# A way out

If imperatives are treated as “first-class citizens” of the linguistic realm, several amendments to picture theory and expressive theory are needed in order to accommodate imperatives as sentences expressing desire that certain action is performed by the addressee:

- “picture relation” should be both restricted and extended in its scope:
  - instead of sentence the language relatum of the Tractarian picture relation should be its “radical” part (assuming that in the typical case sentence is composed of modal part, determining the grammatical mood, and radical part);
  - the world relatum in the Tractarian picture relation should include actions (and not only states of affairs);
- the class of mental states that can be linguistically expressed should be extended so that it includes desires as well as beliefs.

# A possible solution

- Dynamic semantics gives a theoretical framework for reconciliation of picture theory and expressive theory and for accommodation of social character of language (instead of no-agent or single-agent language notions).
- The basic hypothesis is that *speaker expresses his mental state by uttering a sentence and thereby can use it to change the mind of hearer as well as the pattern of their mutual obligations.*

## Dynamic view in brief

- In case of non-mixed moods a logical form of a sentence can be represented as  $\circ\varphi$  where  $\circ$  stands for sentence modal element (mood indicator) and  $\varphi$  stands for sentence radical.
- Communicative interpretation consists in appropriate change of hearer's mental state, and it has two aspects: the *dynamic aspect* of interpretation of a sentence is a change of mental state (2); the *static aspect* consists in the fact that the resulting mental state is "appropriate" for the sentence (3).
- Language is regarded as a tool of communication and each sentence is a function taking a given mental state  $\sigma_1$  of a hearer as an argument and delivering a (possibly different) hearer's mental state  $\sigma_2$  (2). Speaker expresses his mental state  $\sigma$  using sentence  $\circ\varphi$  (1). Typically  $\sigma \neq \sigma_2$ .

### Sentences as mental states functions

$$\circ\varphi(\sigma) = \sigma \quad (1)$$

$$\circ\varphi(\sigma_1) = \sigma_2 \quad (2)$$

$$\circ\varphi(\sigma_2) = \sigma_2 \quad (3)$$



# What is language

Language is not just a collection of strings of sounds or marks formed from a given meaningless vocabulary according to a certain grammar, it is not just a set of “syntactical objects” in spite of the fact that it is frequently misleadingly called that way. One can easily imagine two languages sharing the same vocabulary and having the same grammar and yet being different in virtue of meaning relation obtaining between sentences.

## Definition

Meaningful language  $\mathfrak{L}$  is a pair of a set of strings  $L$  together with a meaning relation  $\models$  obtaining between subsets and elements of  $L$ :  
 $\mathfrak{L} = \langle L, \models \rangle$  where  $\models \subset \wp L \times L$  and  $\models \neq \emptyset$ .

If one sets that there is no meaning relation or that it is universal by letting  $\models = \emptyset$  or  $\models = \wp L \times L$ , then these extremes will not be languages. In the first case no sentence entails itself and therefore it does not mean what it means, and in the second all sentences mean the same. Tarskian meaning relation  $\models$  (i.e. the one that is reflexive, transitive, compact, monotonic, and has an “explosive sentence”) is just a variety of meaning relations

# What is logic?

If meaning relations between sentences (i.e. grammatical strings of sounds or of marks) are termed 'logic,' then logic is constitutive part of any meaningful language.

The existence of meaning relation does not presuppose presence of logical terminology in vocabulary. There would be a meaning relation (although trivial) even in a Tractarian protolanguage consisting only of mutually independent atomic sentences with  $\models$  being an identity relation.

# Using language: a structuralist view

- Using meaningful language  $\mathcal{L}$  means using sentences as bearers of meaning relation and not just as purely syntactical objects.
- Using a language means exploiting its constitutive meaning relation.
- Meaning relation, logic of a language is projected to language use in normative way. Use of a language is subordinated to regulative rules of its logic (i.e. meaning relation). The normative projection of language logic to regulative rules of language use has been recognized in the tradition with respect to use of language in reasoning. The normative projection of a language logic to regulative rules of language use is not restricted to formulation and connecting of thoughts: any use of language is subordinated to the norms of its logic. Logic is ethics of reasoning as well as ethics of communication.

# Normative projection of logic to language use

## Substituting communication for thinking

Thinking [Communication], as it actually takes place, is not always in agreement with the laws of logic any more than people's actual behavior is always in agreement with the moral law. I therefore think it better to avoid the expression 'laws of thought' ['laws of communication'] altogether in logic, because it always misleads us into thinking of laws of thought [laws of communication] as laws of nature. If that is what they were we should have to assign them to psychology [sociology].



FREGE, G.

'Logic' (1897): Extract.

In *The Frege Reader*, M. Beaney, Ed. Blackwell Publishers, 1997

# Logical geography, logical anatomy, logical chemistry, logical physics

- Non-trivial meaning relations are theoretically conceived as dependent on logical form. Let us denote non-trivial meaning relations by Davidson's term 'logical geography.'
- Interpretational commitment thesis is the thesis that semantics (of a chosen 'logical anatomy') that is adequate for delineation of 'logical geography' requires an ontological theory.
- According to the thesis semantics is not the final theoretical construction: it ought to be justified in terms of an ontological theory. E.g. if when asked about possible worlds a semanticist says that they are maximally consistent sets of sentences, then a proponent of interpretational commitment thesis will not be satisfied with the answer and will insist that only an ontological interpretation of the term is acceptable.

[...] much of the interest in logical form comes from an interest in logical geography.



Davidson, D. (2001).  
*Essays on Actions and Events*.  
Clarendon Press, Oxford,  
second edition.

### Thesis (Interpretational commitment thesis)

*If meaning relations of a given language can be explicated only by adopting a certain category of semantic systems, then a theory of that language is committed to ontological theory that gives interpretation for the terms being used in the category of semantic systems.*

# Normativity in language use

Using language as a tool of communication means using a sentence, a sentence which is a “structural entity,” an object whose properties are given by its position in the structure. One can not acquire knowledge of an isolated number (“I know what 3 means, but I do not know what 0, 1, 3 mean.”). Similarly, one can not use an isolated sentence, only a (part of) language can be used.

Two types of normativity involved in language use can be distinguished:

- horizontal (logical, internal) norms which are based on and which reflect the meaning relations of the language being used;
- vertical (expressive, external) norms which originate from expressive and communicative function of language.

A game of †violating language norms: **H**orizontal and **V**ertical

Yoko: Close the window if it is raining!

John: Look! It is raining.  
(John closes the window.)

Yoko: Why are you closing the window?

John: You told me so.

Yoko: No, I did not. [†**H**]

John: I see. We are playing the game of violating language norms.

It is raining but I do not believe it. [†**V**]

# A sketch of norms

- If  $\{\circ\varphi\} \models \circ\psi$ , then if a speaker  $i$  says “ $\circ\varphi$ ”, the  $i$  is committed (by horizontal norm of language use) to assent to  $\circ\psi$ .
- Speaker  $i$  is forbidden (by vertical norm of language use) to say “ $\circ\varphi$ ” if  $i$  is not in a mental state  $\sigma$  s.t.  $\circ\varphi(\sigma) = \sigma$ .



## Some examples from the literature: Lewis

Almost general statement of vertical normativity (notice the absence of desires and imperatives!).

Vertical norm: say what you believe and believe what you have been said

My proposal is that the convention whereby a population  $P$  uses a language  $\mathcal{L}$  is a convention of *truthfulness* and *trust* in  $\mathcal{L}$ . To be truthful in  $\mathcal{L}$  is to act in a certain way: to try never to utter any sentences of  $\mathcal{L}$  that are not true in  $\mathcal{L}$ . Thus it is to avoid uttering any sentence of  $\mathcal{L}$  unless one believes it to be true in  $\mathcal{L}$ . To be trusting in  $\mathcal{L}$  is to form beliefs in a certain way: to impute truthfulness in  $\mathcal{L}$  to others, and thus to tend to respond to another's utterance of any sentence of  $\mathcal{L}$  by coming to believe that the uttered sentence is true in  $\mathcal{L}$ .



Lewis, D. (1983).

Languages and language.

In *Philosophical Papers Vol. I*, pages 163–188. Oxford University Press.

# Some examples from the literature: Williamson

A statement of a particular vertical norm.

Vertical norm: assert only what you know

The knowledge rule One must: assert that  $P$  only if one knows that  $P$ .



Williamson, T. (1996).

Knowing and asserting.

*Philosophical Review*, 105(4):489–523.

## Some examples from the literature: Dodgson

A description of violated horizontal norm.

Vertical norm: assert only what you know

'Have some wine,' the March Hare said in an encouraging tone. Alice looked all round the table, but there was nothing on it but tea. 'I don't see any wine,' she remarked.

'There isn't any,' said the March Hare. [†H]

'Then it wasn't very civil of you to offer it,' said Alice angrily.

'It wasn't very civil of you to sit down without being invited,' said the March Hare.



Carroll, Lewis (1866)

*Alice's Adventures in Wonderland.*

# Why is logic prior to language and language use?

## The answer

A logic, i.e. a meaning relation is prior to any meaningful language because it is constitutive for it: no meaning relation — no language.  
A logic, i.e. a meaning relation is prior to language use because it is regulative for it.

# Speak your mind!

- Picture theory and expressive theory of language share the common assumption that there is a relation between world or thought, on one side, and sentence on the other side. This relation can be termed as ‘representation,’ ‘picture relation,’ ‘expression relation,’ ‘copy relation,’ ‘structural similarity,’ ‘morphological similarity.’ The relation of indicative sentence to state of affairs or to judgement is a special case of the picture or expression relation: the one with “word-to-world” direction of fit or the one expressing thought, i.e. mental state with “mind-to-world” direction of fit.
- With the famous list metaphor (shopping list in the hand of a customer and evidence list in the hand of a detective may contain the same items but their “direction of fit” is completely different: the first has brought some changes in the world while the second has recorder them), Gertrude Elizabeth Margaret Anscombe implicitly introduced the distinction between directions of fit in distinguishing types of mental states or sentence moods.

- There is an important difference between representing a world and expressing a mental state.
- Indicative sentences are adequate for describing the world as experienced by our senses. Additionally indicative sentences are suitable for expressing our beliefs.
- But it is the “driving force” of mentality, the ability of willing that something happens, it is the will that cannot be expressed in indicative mood.
- Indicative mood offers no possibility of expressing a desire: a desire can be described as occurring and that is all.
- Therefore, the expression of volitive (bouletic) mind requires some other mood than indicative, namely imperative mood. Not only for a Beatles fan, there is a lot of sense in these sentences: (1) Let it be!, (2) Get back!, (3) Give peace a chance!, (4) Imagine! And yet none of these sentences is designed to represent the world as it is, neither to postdict its past nor predict its future. The will to forbear in (1), the will of change in (2) and (3), and a will addressing other will in (4), all belong to bouletic category.

- There are types of mentality (mental states) distinguishable by their direction of fit: mind-to-(fit to)-world direction of fit and world-to-(fit to)-mind direction of fit.
- In order to express these mental states having different direction of fit, the “language” needs sentences with different direction of fit: word-to-(fit to)-world direction of fit (indicative mood), and world-to-(fit to)-word direction of fit (imperative mood).
- Therefore, the ontological commitments of indicatives and imperatives differ. Imperatives necessary presuppose the existence of future worlds: one being desired (desideratum) and at least one of its non-realized counterparts together with a relation of preference between them.

## Directions of fit

From ... to world	From world to ...
mind-to-(fit)-world belief	world-to-(fit)-mind desire, intention
word-to-world declarative	world-to-word imperative

- The difference in ontological theory brought in by modal element in logical form is not the only ontological difference between indicatives and imperatives.
- There is also an ontological difference in representational contents of the two moods.
- Belnap's imperative content thesis: "Regardless of its force on an occasion of use, the content of every imperative is agentive."



## Actions are not events

It would not be right, I think, to call acts a kind or species of events. An act is not a change in the world. But many acts may quite appropriately be described as the bringing about or effecting ('at will') of a change. To act is, in a sense, to interfere with 'the course of nature'.



VON WRIGHT, G. H.

The logic of action : a sketch.

In *The Logic of Decision and Action*, N. Rescher, Ed.

University of Pittsburgh Press,  
Oxford, 1966

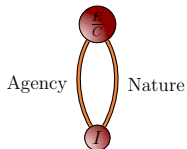
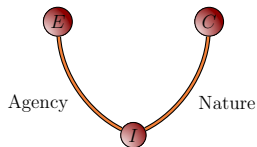


# An act is not a change, but . . . a cluster of changes

So at least two histories must be taken into account in order to represent action:

- 1 agency history: it is the (proper or vacuous) change for which the agent is responsible,
- 2 nature history: it is the counterfactual element in the concept of action, the change that would have occurred if the agent had not interfered with the world, the history in which the agent has been removed as an agent (i.e. has no intentions), but is still present as physical object.

# The minimal cluster of act and omission



Suppose that Von Wright's ontology of acts holds. Several phases are needed in the construction of Von Wright's ontology: states of affairs constitute a world, worlds constitute histories, stream of histories constitutes an act. The structure of histories constituting an act requires temporal comparability: if some Wittgenstein world  $w$  lying on a history path  $h_1$  is a historical alternative for a world  $v$  lying on  $h_2$ , then they share (they co-exist at) the same instant in the non-historical time frame. The hierarchical construction of Von Wright's ontology pleases the eye: starting with world-atoms more complex ontic phenomena can be constructed by aggregation (Wittgenstein worlds), composition (changes and histories), and comparison (acts). Even more Von Wright's ontology is both simple (i.e. reducible to the basic elements) and theoretically fruitful. E.g. different types of act, such as (a) preservative acts and (b) productive acts, which can be further divided into: (a1) acts of maintaining-, (a2) acts of suppressing-; and (b1) acts of producing-, (b2) acts of destroying — a state of affairs. On the other hand, ontology of events (hypostatization of events) offers no typology: if events are not decomposable in their temporal or any parts, they have no immanent properties and consequently no real typology.

The temporal structure of action turns out to be more complex than the temporal structure of changes in nature. First, the time is multiple: there is a natural history, i.e. a (time) order of Wittgenstein worlds with human/social being  $x$  present as a natural body, an organism; and there is an agent history, i.e. a (time) order of Wittgenstein worlds with human/social being  $x$  present as an agent, as a mind, as an intentional system. Second, worlds from different histories are comparable as well, e.g. as being simultaneous or not. There are therefore two categories of time involved: there are time orders between worlds lying on the same history line, and there is the time order of worlds lying on different history lines. The difference between the two time categories is that the first orders worlds (moments) which have no temporality, while the second orders temporal structures, i.e. histories, and therefore can be thought of as a 'second-order temporality.'

According to interpretational commitment thesis semantic theory ought to be interpreted in terms of an ontological theory. The ontology of imperative mood requires a complex setup, most notably it requires branching time. From the perspective of the theory of imperatives doctrines of determinism and indeterminism are not theoretical options that can be freely chosen in accordance with our preferences and reasons. There is no choice of that kind. Use of imperatives commits us to adopt indeterminism.

# Why is ontology prior to language

If semantics that explicates meaning relation in a given language ought to be ontologically founded, then ontology is prior to language by making it meaningful.

The ontological interpretation of available semantic systems for imperatives requires indeterminism. Therefore, semantics is not neutral with respect to ontological theory, but presupposes it.

## Example

Stoic cannot utter an imperative without violating norms of language use.

$$\{(1) \text{ Open the door!}\}$$

$$\models$$

$$(2) (\diamond \text{the door will be open} \wedge \diamond \text{the door will not be open})$$

Stoic cannot assent to (2), and therefore by uttering (1) stoic violates horizontal norm.