The inferential construal of meaning

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Background

One of the questions central to linguistics and the philosophy of language, unsurprisingly, is *what is meaning?* While to an uncritical eye the answer may seem to be straightforward (perhaps that meanings are in the mind and expressions represent them as symbols), the discussions of linguists and philosophers of the last one and half centuries have indicated that the situation is by far not so straightforward. Aside of the representational theories of meaning (which have originated as critical elaborations of the intuitions mentioned above), there emerged theories that perhaps did not go so well with the intuition, but which did away with some problems of the representational theories. The so called *use theories of meaning* identified the meaning of an expression with the way the expression is used within the relevant language games. And this contribution discusses the kind of use theories that see the language games as rule-governed and see the meaning as the role conferred on the expression by the corresponding rules.

1 Use theories of meaning

Traditionally, meaning was construed as something stood for by an expression (this paradigm can be dubbed *semiotic* - see Peregrin 2001). This notion of meaning was prevalent till the first half of the twentieth century. Here is a figure from the (then influential, but now almost forgotten) book of Ogden and Richards (1923):

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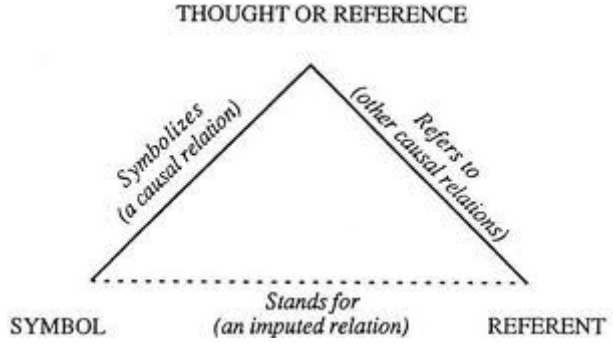

The general picture is clear: we use a symbol to symbolize (express) a "thought or reference" which, by itself, refers to something, and thus we make the symbol stand for the referent. The background assumptions seem to be that (1) we are able to let symbols symbolize our thoughts, and (2) the thoughts, by themselves, refer to thing in the outside world.

However, both (1) and (2) may be disputed. As long as "the thought" in (1) is supposed to belong to the private, inner world of an individual, (1) is problematic. For how would we tie a symbol to a thought? Where would such a tie occur? It seems it could not be in the public world, for the thought is not there. Perhaps it could be in my private, mental world - we could build some kind of association between the thought and the symbol (or some its "mental imprint"). But this obviously is not the right kind of tie: language is an essentially public (intersubjective) matter. Meaning can be so-called only insofar it can be shared, as linked to the public symbol, by different people. So both the meaning and its link to the symbol must be public and shared, not private and sealed within one's mind.

Also (2) is not undisputed. Though many philosophers, following Brentano and Husserl, take for granted that our thoughts are essentially *intentional*, viz. aimed at an object (Searle 1983; Føllesdal 2020), existing beyond it (typically in the outside world), some modern philosophers found this idea unwarranted. Thus Quine (1960: p. 202):

> One may accept the Brentano thesis either as showing the indispensability of intentional idioms and the importance of an autonomous science of intention, or as showing the baselessness of intentional idioms and the emptiness of a science of intention. My attitude, unlike Brentano's, is the second. To accept intentional usage at face value is, we saw, to postulate translation relations as somehow objectively valid though indeterminate in principle relative to the totality of speech dispositions. Such postulation promises little gain in scientific insight if there is no better ground for it than that the supposed translation relations

Note that if (1) and/or (2) are seen as undermined, the whole model of language as a system of symbols becomes dubious. It was for these reasons

that in second half of the twentieth century this construal of meaning obtained a worthy opponent: the so called *use theory of meaning*, according to which what we call meaning is the way the expression gets used in the community of speakers of the language to which the expression belongs. Though I do not mean to say that this was unprecedented[1], the clearest formulation of the theory was given by Wittgenstein (1953: §43):

> For a large class of cases—though not for all—in which we employ the word "meaning" it can be defined thus: the meaning of a word is its use in the language.

Wittgenstein (1953: §11) thus put forward a paradigm of seeing language and meaning different from the semiotic one - language as a set of tools:

> Think of the tools in a tool-box: there is a hammer, pliers, a saw, a screw-driver, a rule, a glue-pot, glue, nails and screws.—The functions of words are as diverse as the functions of these objects. (And in both cases there are similarities.)

Later, Quine found a very illustrious way to show why meaning must be approached via use. He proposed to find out what happens in between the point where one is confronted with an unknown language understanding none of the sounds its speakers elicit and the point when he perceives the sounds as embodied meanings - if we get a grasp on what she learns in between, we have a grasp on meaning. Quine states that it is obvious from this experiment, is that "each of us, as he learns his language, is a student of his neighbor's behavior" and that "the learner has no data to work with, but the overt behavior of other speakers" (Quine 1969: p. 28). It follows that "There are no meanings, nor likenesses or distinctions in meaning beyond what are implicit in people's dispositions to overt behavior" (*ibid.*, p. 29).

Quine himself ultimately repudiated the whole concept of meaning - its removal is, in his words, "a stumbling block cleared away" (Quine 1990: p. 56). But it would be difficult to remove it from colloquial language, and it would be equally difficult to claim that any talk about meaning is totally void. Hence philosophers should explain what the word can mean.

Similarly to Quine, Sellars (1974) concentrates on the time between an infant "begins by uttering noises which sound like words and sentences and ends by uttering noises which are words and sentences" (p. 421). Sellars' conclusion is not far from that of Wittgenstein and Quine (*ibid.*):

[1] In his Dewey lectures Quine (1969: p. 27) points out that Dewey was one of those who rejected the semiotic conception (the "copy theory", as he puts it) of language long before Wittgenstein: "Language is a social art which we all acquire on the evidence solely of other people's overt behavior under publicly recognizable circumstances. Meanings, therefore, those very models of mental entities, end up as grist for the behaviorist's mill. Dewey was explicit on the point: 'Meaning . . . is not a psychic existence; it is primarily a property of behavior.' ... Years later, Wittgenstein likewise rejected private language. When Dewey was writing in this naturalistic vein, Wittgenstein still held his copy theory of language."

> To say what a person says, or, more generally, to say what a kind of utterance says, is to give a functional classification of the utterance.

What does such "a functional classification" look like? In a typical case, we *illustrate* the function of an unknown word by one we are familiar with. Thus, we can, e.g., illustrate the functioning of the word "Hund" in German by means of that of the word "dog" in English. This counts as saying, approximately, "The German 'Hund' is their version of our 'dog' ". In Sellars' own idiosyncratic notation (Sellars 1974: p. 431):

> 'Hund's in German are $\bullet$ dog $\bullet$ s.

Hence it is like when we observe some natives using a *prima facie* strange tool and state: "This tool is their version of our hammer".

What if we would like to characterize the functioning of a word, for which we would not have an equivalent in our language, or we would like to characterize it more directly? We may want to start to find circumstances in response to which the expression is being displayed. These circumstances may be extralinguistic (as in the case when we respond to the occurrence of rain by "It is raining"), but also linguistic (as when we respond to "It is raining" by "So the streets will be wet"). It may also be the case that an action is triggered by an utterance (as when we respond by going out to "Let us go out"). Sellars summarizes this in the following passage (pp. 423-4):

> Essential to any language are three types of pattern governed linguistic behavior.
> (1) Language Entry Transitions: The speaker responds to objects in perceptual situations, and in certain states of himself, with appropriate linguistic activity.
> (2) Intra-linguistic Moves: The speaker's linguistic conceptual episodes tend to occur in patterns of valid inference (theoretical and practical) and tend not to occur in patterns which violate logical principles.
> (3) Language Departure Transitions: The speaker responds to such linguistic conceptual episodes as 'I will now raise my hand' with an upward motion of the hand, etc.

However, what Sellars means by this passage is not simply that the use of expressions can be characterized by means of these "transitions"; he insists that the linguistic behavior is "pattern governed"[2]. This means that the transitions are not just random regularities, that they are brought into being in terms of certain rules. But to see this, we must realize that language is an essentially rule-governed enterprise.

[2]See Peregrin (2014: §6.3)

2 Rules and inferential rules

Wittgenstein (1953) already paid a lot of attention to rules, especially rules governing our use of expressions. His musings about rules are so extensive that it is clear that, according to him, rules constitute an essential ingredient to our language games. This opens up the possibility of characterizing an expression by means of its role *vis-à-vis* the rules, i.e. its *de jure* use, rather than its *de facto* use.

Consider a game like chess. A player may tend to use one of her knights in a way different from that in which she uses the other one. Hence their *de facto* use differs. However, their *de jure* use will be the same (disregarding the fact that they start the game on different squares of the chessboard). And, of course, from the viewpoint of the game it is the role that is important, not *a de facto* use. Therefore, Wittgenstein (1953: §108) himself states: "The question 'What is a word really?' is analogous to 'What is a piece in chess?"'.

It is important to see how different this account for meaning is from the usual representationalist account. It is common wisdom that the word like *dog*, insofar as we understand it, "summons" to our mind an "idea" of dog; hence this idea is what the word "stands for". Use theory in general, and inferentialism in particular, does not deny the existence of mental imagery, but denies that this has a lot to do with meaning. Already (Frege 1892; 1918) stressed that we must distinguish between the idea [*Vorstellung*], on the one hand, and the sense [*Sinn*] or the meaning [*Bedeutung*] on the other. The point is that while the former is enclosed within a subjective mind, language is essentially *inter*subjective - the point of meaning is that it can be shared by different subjects. Only in this way can the language serve its goal of a medium of communication.

Of course that inferentialism does not do away with an interconnection between an expression and what it is intuitively seen to "stand for", e.g. between "dog" and dogs. Among the rules governing "dog" there would be rules linking it to dogs (perhaps the rule that it is correct to say "This is a dog" only when pointing at a dog). But in contrast to representationalist theories, no representations play an essential role. (Again, this is not to deny that there may be a role for representations within the psychological underpinning of some of the rules - but this would be a matter of psychology of communication, not of semantics.)

Hence it would seem that in so far our language games are truly rule-governed, it is the rules we should pinpoint if what we are after is the semantics. But are they?

That language involves rules is uncontroversial. However, it is important to realize that what is meant by rules can be quite different things. The influential exposition of the nature of language due to Chomsky (1986; 1965; 2000) is based on rules - where rules are components of human language faculty, responsible for the production (and comprehension) of language, from its "logical form" to its "phonetic form". It is important to realize that the rules important for Wittgenstein and Sellars are of a different kind: they are akin to the rules of games like chess, which primarily exist, as it were, in the intersubjective, public

space, rather than directly in the human mind. Chomskyan rules, on the other hand cannot be violated: they govern our production and comprehension of language basically in a subpersonal way[3].

Thus, the relevant rules are not engraved within human brains, but not only that: they may not even be recorded anywhere else. The thing is that to record them we would need language, while the rules are to lay foundations to language. Thus, at least some of the rules must be capable of being "implicit" to the practices of using language. This was clear both to Wittgenstein and to Sellars.

So what are the "implicit" rules? Elsewhere (Peregrin 2021; ming) I have argued that they can exist in terms of what Brandom (1994) called *normative attitudes*, specific practical attitudes we assume to each other's actions concentrating only on the nature of the action, not on its protagonists. (Thus, such an attitude renders beating someone as wrong not only if the one who is beaten is the one who evinces the attitude). And the most rudimentary form of an implicit rule is constituted by normative attitudes resonating across a society. Thus also the rules of language are often held in place by such attitudes.

Why, we may ask, did the rules of semantics not become explicit at least after language had been constituted? (After all, the rules of syntax could be recorded also only after language was in place.) They did, but only in part. The thing is that some of them could not be theoretically articulated, at least not in a nontrivial form. Such are those corresponding to Sellars' language entry transitions. Take the rule stating that asserting "This is a dog" is correct when the asserter points at a dog. This explanation is obviously trivial, for to understand it, a hearer would already have to understand "dog", which involves knowing this rule. The point is that such rules are learned practically; they are not capable of nontrivial theoretical articulation.

Hence what are the rules which are constitutive of semantics and which can be, at least as a matter of principle, articulated? They are those which correspond to Sellars' intralinguistic transitions, they articulate interrelations between sentences, and consequently between their parts. Take the relationship between "cat", "dog" and "mammal". Whenever it is correct to display "This is a dog", it is also correct to display "This is a mammal", and it is *in*correct to display "This is a cat". (After the development of language proceeds so that the "displaying" diversifies into different kind of speech acts, this keeps to hold especially for assertions.)

The rules, it is important to stress, are more than regular transitions. They are not mere habits or tendencies. They are something that determines what should be done - in the sense in which, when playing chess, you should move the bishop only diagonally. What differentiates them from the habits are the normative attitude that bring in the *correctness* and the *should* implied by them.

All in all, knowledge of the meaning of a declarative sentence has to do with the knowledge of when to assert the sentence, depending on both extralinguistic

[3]As Partee (2018: p. 173) characterizes the Chomskyan notion of rules: "There is no such thing as 'not knowing' the syntactic rules of your language—what you know defines what your language is."

and linguistic circumstances, and what are the consequences of the assertion - to know, that is, what the sentence follows from and what follows from it. Insofar as this amounts to relation to other *sentences* (rather than extralinguistic circumstances), it amounts to the relation of inference. To say that "This is a mammal" is correctly assertable whenever "This is a dog" is to say that the former sentence is inferable from the latter; and to say that whenever "This is a mammal" is correctly assertable, also "This is not a fish" is, is to say that the latter is inferable from the former.

It follows that meaning of a sentence, from this vantage point, is at least partly determined by what can be called its *inferential potential*, what the sentence is inferable from and what is inferable from it. (We may talk about its quasiinferential potential if we add the circumstances in which the sentence is assertable and the actions warranted by it). The (quasi)inferential role of an expression is then the contribution it brings to the (quasi)inferential potentials of the sentences of which it is a part. While inferential potential is easily graspable as an object (e.g. certain set-theoretical construct based on sentences), there is no such straightforward way of capturing inferential roles.

3 Logical inferentialism and proof-theoretic semantics

Consider some simple words for which the quasiinferential potential coincides with the inferential one. Take the connective *and*. What does it mean to understand this word? A reasonable answer seems to be that to understand it is to know that to assert a complex sentence produced by means of *and* is correct if and only if it is correct to assert each of the two component sentences. If we divide this into what Gentzen (1934; 1935) called the introduction and elimination rules for *and*, we can say that

(a) A *and* B is inferable from A together with B; symbolically

$A, B \vdash A$ *and* B

(b) both A and B is inferable from A *and* B; symbolically

A *and* $B \vdash A$, and

A *and* $B \vdash B$.

The functioning of *and* in English, to be sure, is somewhat more complicated: sometimes it is used to indicate time succession etc. Therefore in logic we use its *regimented* version, $\wedge$, to indicate that we restrict its functioning to what is captured by the three inference rules:

($\wedge$I) $A, B \vdash A \wedge B$

($\wedge$E1) $A \wedge B \vdash A$

($\wedge$E2) $A \wedge B \vdash B$

These three rules (or the *inferential pattern*, as such a cluster of rules is sometimes called) thus can be seen as characterizing the inferential role of $\wedge$ (and consequently the core of the role of *and*). Gentzen, putting together his calculus of *natural deduction*[4], indicated that also other logical words can be treated in a similar way. This opens up the road to *logical* inferentialism: it turns out that the characterization of logical words in terms of inferential roles may be easy and illuminating.

Note that the three rules are tantamount to the well-known truth table. If we read an inference as claiming that whenever its premises are true, so is the conclusion, i.e. that it is not possible that the premises are true and the conclusion is false, then ($\wedge$I) states that $A \wedge B$ is true if both A and B are true, while ($\wedge$E1) and ($\wedge$E2) state that that it is true *only if* they both are true.

True, already the inferential patterns governing simple logical words other than *and* are more complex. Take *or*, or its regimented version $\vee$. It is clear that $A \vee B$ is inferable from both A and B; hence

($\vee$I1) $A \vdash A \vee B$

($\vee$I2) $B \vdash A \vee B$

But it would seem that now we need an elimination rule for $\vee$, especially the rule establishing that $A \vee B$ is true only if A is true or B is true. And this is not easily articulated as an inferential rule. To capture it, Gentzen introduced "generalized" inferential rules whose premises can be not only sentences, but inferences. Then he supplemented the above two rules by the following "generalized" one (where $[A]C$ denotes the inference from A to C):

($\vee$E) $[A]C$, $[B]C$, $A \vee B \vdash C$

The idea behind this is "for the disjunction of A and B to entail C it is enough that each of A and B entails it". Now this is clearly the case if the disjunction is true only if at least one of A and B is true. But this rule does not wholly exclude the possibility of A and B being false and $A \vee B$ true, it only approximates it.

Negation causes even bigger problems. It would seem that what we need is that $\neg A$ if and only if not A, but this cannot be established in terms of inferences. The closest we can come to it in their terms is something like

($\neg$E) A, $\neg A \vdash B$

($\neg$I) $[A]B$, $[A]\neg B \vdash \neg A$

The first rule says that if both A and $\neg A$, then anything (and insofar as we expect that not everything is the case, not both A and $\neg A$). The second one says that if we can infer from A to a contradiction (B and $\neg B$), then $\neg A$; hence if A cannot obtain, $\neg A$ must. But again these rules do not entirely exclude either both A and $\neg A$ being true, or both being false.

[4]See Prawitz (1965); Pelletier (1999).

Given these obstacles, there are two possibilities. We may reject our intuitions, such as that $\neg A$ if and only if not A, or that $A \vee B$ iff one or both A and B. (This pre-understanding of the connectives is called *classical*, we can define the connectives in terms of truth tables). Repudiating it may lead us to *intuitionist* logic, which takes the logical operators to be established by inferential patterns. The other possibility is to see the inability of logical inferentialism to delimit the classical semantics of the operators as a failure and conclude that semantic goes beyond inferential patterns.

Gentzen himself introduced a generalized versions of inferences which may have more than one premise, but also more than one conclusions (thus forming his *sequent calculus*[5]). The conclusions are then understood as alternatives: the inference

$$P_1,...,P_n \vdash C_1,...,C_m$$

is then construed as "if P_1 and ... and P_n, then C_1 or ... or C_m".

It is then easy to articulate the also the elimination rule for disjunction

$$(\vee E^*)\ A \textit{ or } B \vdash A,\ B.$$

Thus, this generalized form of inferences is able to delimit the classical semantics of the operators.

Intuitionist logic, aside from being different from classical logic in terms of some theorems (for instance the *law of excluded middle*, $A \vee \neg A$, is notoriously known to be valid in classical, but not in intuitionistic logic) has always been associated with a slightly different view on logic. Its initiator, L. E. J. Brouwer, considered mathematics, in connection with which he studied logic, as a matter of mental constructions, and saw logic consequently as treating of realizability of such constructions. Thus, $\exists x F(x)$ states that an object with the property F is constructed, while $\exists x F(x) \rightarrow \exists x G(x)$ says that any construction of an object with the property F can be transformed into a construction of an object with the property G.

The person who pioneered the view of meanings from the vantage point of intuitionistic logic, was Michael Dummett (1977; 1991; 1978). He urged that what we should take as the basis of the meaning of a sentence are not its truth-conditions, but rather the justification conditions, *viz.* the conditions under which it has been conclusively justified or proved. In intuitionistic logic, there had already been a tradition to identify the semantic value of the sentence with the set of its proofs; and Dummett strove to generalize this. This line of thought led him to the conclusion that the meaning of a sentence consists in what counts as a proof of it - especially, but not only, in mathematics[6].

This must be seen in the context of development of logic in the second half of the twentieth century, when the agenda of logic came to be partly divided between proof theory and model theory (or, as it is sometimes termed, I think

[5] See Kremer (1988); Negri and von Plato (2008).

[6] See Prawitz (1987).

misleadingly, between logical syntax and logical semantics[7]). Proof theory is the theory of provability, inference and of axiomatic systems (Hendricks et al. 2000; Negri and von Plato 2008). Many logicians believe that if what you are after is meaning, you must go for model theory, because it is the home of semantics, but Dummett thought otherwise. For him if a sentence was true, it was not thanks to some state of affairs obtaining in the world or in a model, but rather thanks to there being a way of finding whether there is such a state of affairs, or, more generally, of its verification.

One of the offspring of the Dummettian approach is the so called *proof-theoretic semantics*, which was elaborated especially in the beginning of the twenty-first century (Wansing 2000; Prawitz 2006; Francez 2015; Piecha and Schroeder-Heister 2015). It is an attempt to build semantic theory staying within proof theory, i.e. avoiding employing concepts such as truth or denotation as our basic building blocks. It builds on the concept of justification. In contrast to inferentialism, which stems from the philosophy of language and from a specialization of use theories of meaning, it originated in logic on the basis of the generalization of Gentzenian rules of natural deduction.

The goal of proof-theoretical semantics is spelled out by Francez (2015: p. 13):

> For (affirmative) sentences, replace the received approach of taking their meanings as **truth-conditions** (in arbitrary models) by an approach taking meanings to consist of **canonical derivability conditions** in the meaning-conferring ND—system from suitable assumptions). ... In a sense, the proof system should reflect the "use" of the sentences in the considered fragments, and should allow recovering pre-theoretic properties of the meanings of these sentences such as entailment, assertability conditions and consequence drawing. For subsentential phrases, down to lexical units (logical constants in logic, words in natural language), replace taking their denotations (extensions in arbitrary models) as meanings, by taking their contributions to the meanings (in our explication, canonical derivability conditions) of sentences in which they occur.

Montague (1974) built the notable bridge between logic and linguistics: he equipped a fragment of English with a model-theoretic semantics (based on possible worlds), whereby he indicated that the methods of logic may be useful also for linguistics. Now proof-theoretic semantics attempts to indicate that even methods based on proof theory may be as interesting as those based on model theory: that even they are capable of building a formal model of semantics of natural language (Francez and Dyckhoff 2010; Francez 2015).

[7]This terminology goes back to Carnap (1934; 1942).

4 Inferential roles

Brandomian inferentialism goes beyond logical inferentialism, it maintains that all meanings are inferential roles - to which I add that in case of empirical words they are the quasiinferential roles. What are they? What is the inferential role of, say, "dog"?

The answer is that the role is so complex that no one has been able to specify it explicitly yet. But before one starts to see this as a *reductio ad absurdum* of inferentialism, one must realize that this is not a peculiar feature of inferentialism. No other theory of meaning - at least to my knowledge - fares better. No theory of meaning is able to explain all the nuances of our usage of the term that are perceived as correct. This is the reason why we are often left, as we saw, with *illustrating* the role ("The German 'Hund' means 'dog' " understood as "The word 'Hund' is used, in German, analogously as 'dog' in English").

Take the sentence

(F) Fido is a dog and he barks

There are a lot of sets of premises this sentence follows from like a conclusion, e.g.

Fido is a dog, Fido barks

If Fido barks he is a dog, Fido barks

Fido barks or meows, Fido does not meow and he is a dog

Chicago is large, If Chicago is large then Fido barks and grass is green, If grass is green then Fido is a dog

etc.

Likewise, there are a lot of conclusions that follow from it given various other premises (dividing the collateral premises from the conclusion by the sign "→"):

→ Fido is an animal

All dogs are black → Fido is black

If a dog barks, then he is hungry → Fido is hungry

Every dog is a mammal, Everything that barks moves → Fido is moving mammal

etc.

The most straightforward way is to see the inferential potential of a sentence as two sets. The first comprises everything that the sentence is inferable from; hence in case of (F) it will be:

{{Fido is a dog, Fido barks}, {If Fido barks, he is a dog, Fido barks}, {Fido barks or meows, Fido does not meow and he is a dog}, {Chicago is large, If Chicago is large then Fido barks and grass is green, If grass is green then Fido is a dog}, ...}

The second set will comprise everything that is inferable from the sentence together with any collateral premises, *viz.* in our case

> {<∅, Fido is an animal>, <{All dogs are back}, Fido is black>, <{If a dog barks, then he is hungry}, Fido is hungry>, <{Every dog is a mammal, Everything that barks moves}, Fido is moving mammal>, ...}

In general, we can represent the inferential potential IP(A) of a sentence A as follows

> IP(A) = $<A^{\leftarrow},A^{\rightarrow}>$, where
> $A^{\leftarrow} = \{\{A_1,...,A_n\} \mid A_1,...,A_n \vdash A\}$
> $A^{\rightarrow} = \{<\{A_1,....,A_n\},A_{n+1}> \mid A_1,...,A_n,A \vdash A_{n+1}\}$[8]

These sets are, needless to say, infinite. (Hence representing the potentials in this way can have nothing to do with considerations regarding the process of understanding or the representation of meaning in the mind/brain.) But there is a way of simplifying them. Suppose we know the inferential potential of *Fido is a dog* and *Fido barks*. Then, given some platitudes about inference[9], it is the case that

> $\|$Fido is a dog and Fido barks$\|^{\leftarrow} = \|$Fido is a dog $\|^{\leftarrow} \cap \|$Fido barks$\|^{\leftarrow}$.

Unfortunately, something similar does not hold for $\|...\|^{\rightarrow}$:

> $\|$Fido is a dog and Fido barks$\|^{\rightarrow} \neq \|$Fido is a dog$\|^{\rightarrow} \cap \|$Fido barks$\|^{\rightarrow}$.

There are conclusions that may be inferable from *Fido is a dog and Fido barks* without being inferable from either *Fido is a dog* or *Fido barks* alone (like *Fido is a barking dog*). But still, the inferential role of the conjunction can be recovered from those of its conjuncts; for example, it holds that

> $\|$Fido is a dog and Fido barks$\|^{\rightarrow} = \{<\{A_1,....,A_n\},A_{n+1}> \mid$
> $\exists$D(D$\in$t($\|$Fido is a dog$\|$)$\wedge<\{A_1,....,A_n,D\},A_{n+1}>\in\|$Fido barks$\|^{\rightarrow}$)),
> where t($\|$A$\|$) = {B | {B}$\in\|A\|^{\leftarrow} \wedge$ <∅,B>$\in\|A\|^{\rightarrow}$}

[8] Here we assume that the premises of an inference can be taken as constituting a set, hence that they can be reordered, that duplicities do not count etc. Alternatively, we can take them as constituting a sequence, and then we would have to define $A^{\rightarrow} = \{<A_1,...,A_{i-1}>,<A_{i+1},...,A_n>,A_{n+1}> \mid A_1,...,A_{i-1},A,A_{i+1},...,A_n \vdash A_{n+1}\}$.

[9] The platitudes are also known as "structural rules" (where A, B, C are sentences and X, Y are sequences of sentences):

for every A, $A \vdash A$
for every A, B, X, Y, if $X,Y \vdash A$, then $X,B,Y \vdash A$
for every A, B, X, Y, if $X,A,A,Y \vdash B$, then $X,A,Y \vdash B$
for every A, B, C, X, Y, if $X,A,B,Y \vdash C$, then $X,B,A,Y \vdash C$
for every A, B, X, Y, if $X,A,Y \vdash B$ and $Z \vdash A$, then $X,Z,Y \vdash B$

Though they are eminently natural, we may also consider their rejection, which then results into what is called substructural logics (Restall 2000).

It is not so easy with other logical constants: a solution for multiple-conclusion calculus (leading to classical logic) was presented in the dissertation of Kaplan (2022), the single-conclusion variant (leading to intuitionist logic) is - to my knowledge - still largely unexplored.

Anyway, it would seem that we can reduce at least some inferential potentials of logically complex sentences to those of their subsentences. For conjunction we need only three rules of inference

Fido is a dog, Fido barks $\vdash$ Fido is a dog and Fido barks

Fido is a dog and Fido barks $\vdash$ Fido is a dog

Fido is a dog and Fido barks $\vdash$ Fido barks.

This also lets us get a grip on the inferential role of *and* for when we abstract from the specific sentences, we get the pattern

A, $B \vdash A$ *and* B

A *and* $B \vdash A$

A *and* $B \vdash B$

which is precisely Gentzen's pattern constitutive of conjunction.

Can we isolate a simple inferential pattern "responsible for" all correct inferences featuring a word like "dog"? The word can occur in many different kinds of sentences, the simplest one of them appears to be *X is a dog*, where X is a name, or *This is a dog.* Can we specify an inferential potential of such a sentence? (If so, then perhaps we would have a core of the inferential role of *dog.*)

It seems that a prototypical introduction rule would be that which states in which extralinguistic situations it is proper to assert the sentence (it is, roughly, when pointing at a dog). What about the elimination ones? There appear to be a lot of candidates, such as *This is a mammal*, *This barks* or *This is an animal of the species Canis familiaris.* We can also think of extralinguistic consequences of denoting something as a dog - such as that it cannot be killed at will.

Hence all in all, the tenet of inferentialism is that to learn the meaning of an expression is to master some inferential pattern (co-)determining the (quasi)inferential potential (sometimes very complex) of the sentences containing it. Spelling the pattern explicitly is possible for some simple words (typically the logical ones), it is practically impossible for other ones.

5 Understanding

On the representational construal of meaning, understanding is a matter of acquiring the correct representations. Indeed, understanding a language is to have the right kind of representations associated with its expressions, i.e. understanding is a matter of sharing meanings. Inferentialism is then sometimes taken to be undermined by the impossibility of sharing inferential roles: it would mean

that either everybody would need to know all the inferences in which a given word occurs, which is unrealistic, or she would need to know only the meaning-constitutive ones, which would mean an introduction of the analytic/synthetic boundary, discredited by Quine (Fodor and Lepore 2001; 2007).

This critique is not a knock-down one. As I have argued elsewhere (Peregrin 2014: §3.6), it ignores, besides others, the fact that inferentialism is not interested in *de facto* inferences, but in *de jure* ones - it is interested in the *rules* of inference. Hence the inferential role, which amounts to meaning, is constituted by the *rules* concerning the expression in question. And as we saw in the previous sections, it concerns only the most basic of the rules, the other ones being derivable from them, possibly with the help of rules concerning other expressions.

Thus, consider the rule of disjunctive syllogism, which concerns disjunction and negation and is thus co-responsible for their inferential roles ($A \vee B, \neg A \vdash B$). Given the elimination rule for negation ($A, \neg A \vdash B$) and that for disjunction ($[A]C, [B]C, A \vee B \vdash C$), this rule can be derived, and hence it need not be part of the basis the mastering of which would be necessary for understanding either the negation or the disjunction. Similarly, if I know that a dog is an animal and every animal is mortal, then I know that a dog is mortal, without having to master this inference separately.

True, not all rules are meaning-constitutive, or at least they are not meaning-constitutive to the same extent, so the problem reappears, possibly in an attenuated shape, for rules. But we must see that according to inferentialism meaning is not really an object. True, we do sometimes present it as an object, as a sharply delimited inferential role, but this is a theoretical construct, which we use when we want to present a perspicuous (though simplified) model of language. In fact, the inferential role which we must master to get the meaning is not sharply delimited - it is a matter of degree.

The fact that from the inferentialist perspective we must see understanding not in terms of sharing of meanings, but rather as a resonance of linguistic performances, is discussed, in detail, by Drobňák (2022)[10].

6 Meaningful talk as an ability

What is important about inferentialism is that it sees the main problem of semantics not in getting hold and analyzing peculiar things called meanings, but in understanding the way in which emitting certain sounds comes to amount to meaningful talk, in which we gain the ability to make sounds into contentful words and sentences. And what sets it apart from other varieties of use-theories of meaning is the way it explains this: sounds become meaningful in that they acquire roles within our rule governed practices.

Hence one part of the inferentialistic construal of meaning is that it is more a matter of know-how than of knowledge in the know-that style. To understand an expression is to master the way it is used. However, inferentialism goes

[10] See also Kaluziński (2022).

further - it maintains that the ways in which expressions get *de facto* used are established by the rules constituting the relevant "space of meaningfulness" - the rules being the pillars of the arena in which meaningful communication becomes possible.

To elucidate this, it is good to return to the comparison of the communication with chess, which has been invoked already at several places of the article. Just as the rules of chess make a piece of wood (or something else) into a knight, the rules of our language game make a sound, say, into a report that it is raining. The thing is that rules are capable of creating normative spaces in which it is possible to perform actions not available outside of such spaces - such as meaningful communication.

Therefore, for inferentialism, it is *normativity* that is crucial for meaning. It is systems of norms that create webs of roles that can be assumed by various sounds; and it is the roles that amount to their meanings. From the perspective of inferentialism, therefore, it is an essential mistake to see the meaning as something that is *represented* by a sound – meaning is a role the sound has within the elaborate edifice of the rules of language.

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