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Inferentialism

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INFERENTIALISM – SUMMARY

The dissertation is composed of my public papers bringing various contributions to the development of the philosophical doctrine of inferentialism. Inferentialism, basically, is the conviction that to be meaningful in the distinctively human way, or to have a 'conceptual content', is to be governed by a certain kind of inferential rules. The term was coined by Robert Brandom as a label for his theory of language; however, it is also naturally applicable (and is growing increasingly common) within the philosophy of logic.

The rationale for articulating inferentialism as a fully-fledged standpoint is to emphasize its distinctness from the more traditional *representationalism*. The tradition of basing semantics on (such or another variant of) the concept of representation is long and rich. The basic representationalist picture is such that we are confronted with things (or other entities) and somehow make our words stand for them (individual philosophers vary, of course, about what is to be understood by *stand for*).

Inferentialism puts forward a very different picture; the picture according to which we come to employ types of sounds in the way that some of them are *incompatible* with others, while some are *inferable* from others. It is this kind of *inferential articulation* that furnishes the sounds with meanings. Of course not any inferentially articulated set of sounds can be seen as acquiring *meanings* in the usual sense of the word – a very specific kind of articulating, based on a very specific assortment of inferential rules is needed. Roughly, the set must incorporate what we have come to call logic. Thus it must be the case that each of the relevant sounds (which thus come to count as *sentences*) must have something as *negation*, each two of them have *something* like *conjunction* and disjunction etc. Only thus can these sounds be considered as 'expressing propositions' and their components as 'expressing concepts'.

My particular version of inferentialism builds on the foundations that were laid down by Brandom, but elaborates them in a slightly

different direction than Brandom did. As I see the situation, we, individuals of the species *Homo sapiens*, have come to acquire the peculiar ability of holding what our conspecifics do for correct or incorrect. I take this to be a kind of a primitive attitude, which is manifested by a complicated behavioral syndrome, consisting of (i) tending to do what is correct, (ii) tending to praise those who do what is correct and reprove those who do what is incorrect; (iii) tending to say that what is correct is correct. This ability I believe further furnished us with the ability of establishing systems of rules that provide room for carrying out brand new kinds of actions.

My idea is that one of the most important of such rule-constituted spaces is what can be called the *space of meaningfulness*: the space constituted by the rules of our language which provided for a very specific kind of new actions: meaningful talk. In this way, the inferentialist alternative to the representational construal of meaning is elucidated from a new angle: an expression does not become meaningful in that it is made to stand for something, but rather because it becomes a vehicle of a type of action which, being embedded into the rule-constituted space of meaningfulness, becomes what we call *meaningful utterance*. And just like in chess a piece's becoming, say, a *rook*, does not consist in its being made to represent some 'rookhood', a kind of sound's becoming, say, *a sentence saying that it rains*, does not consist in its being made to represent a proposition.

The dissertation consists in six of the many papers in which I develop (various aspects of) this idea.

INFERENTIALISM[1]

How I came to be an inferentialist

In the early nineties, I was obsessed by the phenomenon of meaning. (Well, in a sense I am obsessed by it until now, but as I now understand it better, it does not so completely clog my mind.) I was convinced that what I took to be the standard way of thinking about meaning, viz. thinking of it as an entity that is stood for or represented by the meaningful expression, is misguided; but it was not quite clear to me what should replace this misguided picture.

I was working on a manuscript of a book, which appeared in 1995 under the title *Doing worlds with words*, in which I tried to show that formal semantics, viz. the enterprise of modeling meaning by model-theoretic and set-theoretic means, does not necessarily presuppose the representational construal of meaning; but by the time I was still unclear about what would amount to an adequate construal. I became familiar with the later Wittgenstein and with the subsequent "use-theory of meaning", which, I was sure, went in the right direction, but not far enough - in my eyes it was to general and lacked a more concrete elaboration.

It was only then that I first saw Bob Brandom's book *Making it explicit*, which gave my thought the impetus which it needed. In contrast to the general use-theory of meaning, Brandom claimed that what gives our words their meanings are not the ways we use them, but rather the rules which govern their usage. This was a revelation for me: it solved a lot of problems I saw in connection with the use theory; however, at the same time it opened a Pandora's box of other problems that I set out to wrestle with during the upcoming decades.

[1] This thesis incorporates passages from Peregrin (2008b) and Peregrin (2012c).

Which problems did it solve? It was obvious to me that very many items have uses, but not all of them have meanings of the kind expressions of our language have. A hammer, for example, certainly, has a use, but it seemed to me to be preposterous to say it has a meaning is the same sense of the word in which we say that a word has meaning. The difference seemed to me to be a difference in kind, not merely in degree. Hence it seemed to me that the meaning of an expression (such as the sentence It rains) is something categorically different from the use of a tool such as hammer. And the normative version of the use-theory of meaning, proposed by Brandom, brought a solution: while tools like hammers have only uses, expressions have roles, which can be conferred on them only by rules. (Moreover, they have peculiar kinds of roles conferred on them by a very specific conglomerate of rules that underlie languages.)

In this way I found a novel way to consider meaningfulness. While up to the point I did not see any robust alternative to the standing for or representation, which I dismissed, now I came to have one. I came to appreciate the comparison of language and chess as it was put forward by Wittgenstein: chess pieces are basically pieces of wood (or some other material) which come to be pawns, rooks or bishop just because they are, each in its own peculiar way, subordinated to the rules of chess. Could it not be that the sounds we emit come to be expressions meaning various things just because they are, each in its own peculiar way, subordinated to the rules of language?

This has subsequently lead me to a revolutionary view of functioning of human communities: I came to the conclusion that we humans can do so many things that our animal cousins cannot (especially engage in meaningful talk) because, to put it in a nutshell, we are able to produce systems of rules which as if open up spaces in which we gain access to brand new kinds of actions. This is clearly visible on the simple example of chess: the system of rules of chess opens up the space in which we can castle, attack our opponents with our pawns and knights, sacrifice a piece for an attack, check or mate. And my idea was that the rules of language open up another space,

incomparably more important and more complicated, in which we can do various kinds of meaningful utterances.

But in this way we got too much ahead of the story; in the nineties I was by far not able to formulate these conclusions, and I saw lots of obstacles in the way of the Brandomian approach to meaning which were to be overcome. True, Brandom's opus magnum was largely self-contained and the picture it presented was both internally coherent and substantiated; still I saw a lot of questions to be answered and a lot of details to be filled in. Brandom also had a number of critics, who sometimes raised substantial objections, to which Brandom himself never paid much attention.

Hence I thought that to accept Brandom's picture as the solution to the problem of meaning it is necessary to provide it with some reinforcements. Working on such reinforcements I came to entertain a version of the Brandomian approach which was no longer the same as Brandom's; hence I came to develop my own version of "inferentialism" (which was the label for Brandom's attitude to meaning coined by Brandom himself). Before I return to Brandom's, and then my own, version of inferentialism, let me explain the main ideas of inferentialism.

What is meaning?

Of course that the question *what is meaning*?, i.e. *what is it that makes some types of sounds or inscriptions meaningful*?, is one of the most basic questions anybody who deals with language must - sooner or later – face. (It is therefore somewhat surprising that a name for the "science of meaning", *semantics*, did not materialize until the late nineteenth century[2].) Moreover, even in the twentieth century, investigation into the nature of meaning was held as a more pressing task by philosophers than by linguists (particularly, of course, following the *linguistic turn*

[2] The first appearance of the term is usually taken to be Bréal (1897).

which took place in the first half of the twentieth century[3], and which stimulated the idea that to understand meaning might be *the* task of philosophy).

Hence, what *is* meaning? It is helpful first to distinguish between various senses this question may have. Let us start with the most obvious: taking it to ask about the *substance* of which a meaning is made. What kind of stuff makes up the chunk that must be glued to a type of sound or inscription to make it *meaningful*?

The most exposed cases of such an alleged gluing are evidently the events of baptism, through which a (proper) name becomes associated with a tangible object (typically a human infant), and thus we may be tempted to think that meanings are *generally* tangible things, elements of our physical world. This answer, however, soon falls into disrepute; for the physical world can not provide enough suitable entities to furnish all our linguistic expressions with meanings. (Problems arise already with common nouns, since the *meaning* of a general word like *table* cannot be any one tangible thing, any one concrete table; and the situation is exacerbated when we move to verbs, not to speak of prepositions and the like.) Nevertheless, though meanings cannot be *generally* identified with tangible things, it may still seem that naming these things, or referring to them, is a central function of language in the first place; and indeed many philosophers have used this to argue that at least some expressions of our language (besides proper names also natural kind terms) cannot but mean tangible things[4]; or alternatively it has been used to argue that we should build semantics around the relation of reference or designation, by-passing the concept of meaning altogether[5].

However, admitting that naming/referring/designating is a semantically important enterprise does not alter the fact that if what we want to capture is the concept of *meaning* (an entity that makes the difference between a mere shriek and a word), then the physical world

[3] See Rorty (1967).

[4] See Kripke (1972) and Putnam (1975).

[5] See, e.g., Devitt (1981).

does not offer us sufficient types of entities. This may prompt us to turn to another world for assistance, one that would be more generous in this respect. And here the obvious candidate seems to be the world of the mental. It contains inexhaustible riches of entities, and, moreover, of entities apparently qualified to be seen as meanings; for surely it is the human mind that effects furnishing expressions with any semantics they may have. Many theoreticians of language do embrace this answer[6]; but there are others who argue vigorously that meaning *cannot* be mental[7]. The trouble with mental entities is that they lack an important property that meaning requires, namely intersubjectivity. The very point of meaning seems to lie in its ability to be shared by many[8]; whereas mental contents are inevitably subjective, locked in one's own mind[9].

If we want to say that the sentence *London is huge* expresses the thought that London is huge, it can be neither *my* thought (an episode within my brain), nor *your* thought, nor indeed the thought of any other one individual, it must be a *type* of thought which can be instantiated within *many* minds. Hence the thought must exist somehow outside of the minds, possibly with the capacity of being included into them, but so that such an inclusion would not compromise its intersubjective existence and its readiness to be included into other minds.

More generally, if the physical world is suitable in respect to its intersubjectivity but insufficient as to its richness, and if the mental world is, *vice versa*, suitable in respect to its richness but insufficient as to its subjectivity, we would need a world that combines the positive

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[6] An important current semantic school favoring this line is the 'cognitive' school originating with Schiffer (1972) and Fodor (1975; 1987).

[7] The arguments go back to Frege (1918/9). Quine (1969) criticizes the idea that semantics consists in the mind's linking of signs to objects as the "museum myth".

[8] As Davidson (1990, p. 314) puts it, "that meanings are decipherable is not a matter of luck; public availability is a constitutive aspect of language".

[9] Recently, there have been attempts to develop 'externalist' theories of mind according to which this is not the case. But this attitude usually blocks the order of explanation from mind to language, for it comes to rest mind on language.

qualities of these other two worlds. And many philosophers have concluded that such a world is the world of ideal entities, so colorfully described at the dawn of philosophy by Plato and, during the last century, largely re-housed under the legislation of set theory. Hence, many semanticists inferred that meaning must be an ideal entity of the kind of, say, a number. Principal promulgators of this tradition were Frege (1892; 1918/9), Carnap (1942; 1947) and Montague (1974).

Semantic structure and its explication

But notably in the last quarter of the twentieth century, a diffrent answer to the question what kind of stuff meanings are made of started to flourish: no stuff at all, for the talk of meaning is metaphorical, it is a mere *façon de parler*. What we mean when we say that a word means something is not that it has an entity glued to it, but rather that it has a property, for example that it is employed by members of a society in a certain way.

This answer has been endorsed by various kinds of theoreticians: by the later Wittgenstein and his followers; by ordinary language philosophers following Austin and Grice; and by those who, like Quine, revived American pragmatism. I think that an apt name for the onslaught of this heterogeneous movement is *the pragmatic turn*[10].

However, although these philosophers and linguists agreed that the question *what is meaning*? in its substantial sense was unanswerable, this did not mean they thought nothing could be asked about meaning - or at least about semantics. An alternative to the substantial construal of the question is one that I will call *structural* - it interprets the question as asking not what meanings are made of, but rather how meanings (whatever these may be) of grammatically related expressions are related to one another. An example of a crucial statement belonging to

[10] Egginton & Sandbothe (2004) have employed this term is a slightly narrower sense.

the semantic enterprise corresponding to this interpretation is the celebrated *principle of compositionality*[11]:

> The meaning of a complex expression is uniquely determined by the meanings of its components and the mode of their combination.

But wait; is this supposed to be a construal of the original question? Is it not, at most, only its *part*? Surely, to inquire what is meaning, is not to call for a response citing how meanings relate one to another? It seems that we must *first* find out what meanings are, in the substantial sense, before being able to inquire about their properties and relations, e.g. whether they do compose.

However, there already exists a strong tradition which claims, in effect, that this is *not* the case, and, indeed, that the structural reading of the question is the *only* viable reading. Classical Saussurean structuralism (as presented by de Saussure, 1931) was the prototype for this stance; but as I have argued elsewhere (see Peregrin, 2001), certain semanticists quite unrelated to the structuralist tradition, such as W.V.O. Quine or W. Sellars, can also be read as endorsing views which are structuralist in the broad sense entertained here. And the idea I will pursue for the remainder of this article is that insofar as there is something as meaning, it is a *purely structural* matter. But I will zoom in on a particular place on the structuralist landscape; a place where *semantically relevant* structure amounts to *inferential structure*.

Before I do so, let us illuminate the structuralist outlook by an analogy with numbers. Over the last one and a half centuries, many philosophers have wrestled with the question *what is a number*? (usually because they take this to be a reduction of the question *what is mathematics about*?). Many answers have been proposed. Thus, Edmund Husserl ventured that numbers are general ideas, devoid of any qualitative properties and reduced to pure quantity. Gottlob Frege and Bertrand Russell proposed, in effect, seeing numbers as classes of

[11] See Peregrin (2005a).

equinumerous classes of things. John von Neumann and Ernest Zermelo both identified the number zero with the empty set, but von Neumann went on to identify any other number with the set of its predecessors whereas Zermelo identified it with the one-element set constituted by merely its predecessor. But as time passed, it became increasingly clear that none of the answers really tell us what natural numbers *are*, but only how to *explicate* them, in the sense of *explication* introduced by Carnap (and elaborated by Quine).

This is worthy of attention. In his *Foundations of Arithmetic* (1884), Frege, before dealing with the question *what is a number?*, considers a simpler question, namely *what is a direction of a line*? His conclusion was that though there is no substantial answer to this question, what we may do is identify the *direction of the line a* with the set of all lines parallel with *a*. Saying that the direction of *a* is a set brings about some problematic consequences (for example the direction then 'contains' lines), but, Frege insists, if we are aware of this fact, in other contexts this identification would be not only unproblematic, but helpful. And analogously, Frege claims that, with this proviso, we can identify the *number of objects falling under a concept C* with the set of all concepts *equinumerous* with this *C* - i.e. such that the objects falling under them can be mapped, in the one-to-one manner, on those falling under C.

Carnap (1950, pp. 3-4) then generalized this method of attacking concepts and introduced the term *explication*.

> The task of explication consists in transforming a given more or less inexact concept into an exact one or, rather, in replacing the first by the second. We call the given concept (or the term used for it) the *explicandum*, and the exact concept proposed to take the place of the first (or the term proposed for it) the *explicatum*. The explicandum may belong to everyday language or to a previous stage in the development of scientific language. The explicatum must be given by explicit rules for its use, for example, by a definition which incorporates it into a well-constructed system of scientific either logicomathematical or empirical concepts.

...

> A problem of explication is characteristically different from ordinary scientific (logical or empirical) problems, where both the datum and the solution are, under favorable conditions, formulated in exact terms (for example 'What is the product of 3 and 5?', 'What happens when an electric current goes through water?'). In a problem of explication the datum, viz., the explicandum, is not given in exact terms; if it were, no explication would be necessary. Since the datum is inexact, the problem itself is not stated in exact terms; and yet we are asked to give an exact solution.

Applied to meaning, it gives us the approach articulated by David Lewis (1972, p. 173):

> In order to say what a meaning *is*, we may first ask what a meaning *does* and then find something which does that.

Above we have considered four kinds of answers to the question *What is meaning*? construed in the 'substantial' way: (1) meanings are physical entities; (2) meanings are entities of the mental world; (3) meanings are ideal entities of a Platonic realm; and (4) there are no such entities as meanings, talk about them is a metaphor. Now it is important to realize that structuralism, broadly construed, can be seen as embracing answer (4), as its message can be interpreted as *there are no meanings, there is only semantic structure*. But the concept of explication alleviates the tension between this answer and answer (3); the fact that there are, strictly speaking, no such objects as meanings, does not prevent us from *explicating* meanings as objects. And in many contexts it is not unreasonable to simply *identify* a meaning with its explication.

However, it is important to keep in mind the basic difference between answer (3) and the combination of answer (4) with explication, both of which may foster a picture of language as a system of expressions mapped onto a system of objects. If we embrace answer (3),

then we will see the interconnection between an expression and the corresponding object as a result of activities of language-users and consequently we will want to ask how the interconnection was established and how it is sustained (and here we are likely to invoke concepts like *naming*, *representing* etc.[12]). On the other hand, if we accept that the object is merely the result of explication, then we will see the interconnection as fall-out from the theoretician doing the explication, and will recognize that the pursuit of its inauguration by language-users is misguided .

Explicatum vs. *explicandum*

Consider what may happen if we *forget* that the object we are referring to as meaning is in fact its mere explication. Returning to the Fregean example, imagine, for instance, how somebody who might have forgotten that *the set of all parallels of a* is not the direction itself, but its explication, might then wrestle with the question of how the direction of a line could possibly have come to contain other lines. We may analogously imagine a semanticist who forgets that an object is merely an explication of meaning and subsequently feels the need to research how the speakers manage to interconnect that object with the corresponding expression.

To flesh out this idea, let us consider the thesis, taken by many semanticists for granted, that the English connective *and* denotes the truth-function characterized in the well-known truth table

[12] Note that unlike in the case of the theories mentioned above, which invoke such concepts to characterize relations between words and their referents, in this case they would have to amount to the relation between words and their *meanings*, which is much less feasible.

A	B	$A \wedge B$
T	T	T
T	F	F
F	T	F
F	F	F

(Disregard for now that the functioning of the English *and* has additional complexities, that it, for example, often expresses temporal succession. The point would remain the same even if *and* were taken to denote some more complicated function, such as that proposed within various versions of dynamic semantics.)

The trouble is that this assumption could delude us into thinking that *and* is the name of such a function in an analogous sense to which the name *Julius Caesar* is the name of the historical person. And from this it takes only a small step to wondering whether there is an act of baptizing of the above truth-function by *and*, analogous to the act by which Julius Caesar was baptized. (Not, of course, that anyone would be suggesting an act quite analogous to Julius' christening; but the usual wisdom is that the interconnection of the word and the truth table is a matter of *convention*, which *does* indicate some act of deliberate decision.)

The same may be the case if we move from merely logical words, like *and*, to other parts of the vocabulary. Frege proposed explicating the meaning of a predicative expression like (*to be a*) *dog* as a function mapping individuals onto truth values, dogs on *the truth* and every other individual on *the falsity*; a function that may obviously be identified with a set of individuals, in the case of (*to be a*) *dog* with the set of all dogs. Carnap urged that this would not yield us a feasible explication of *meanings* and added *possible worlds*: the explication of the predicative expression became a function mapping possible worlds onto their respective sets of dogs. And then came others who have tried to further improve on this proposal.

In any case, Frege's proposal clearly reflects the fact that a predicate like (*to be a*) *dog* forms *true* sentences with some names (*viz*. names of dogs), and false with others. Carnap's improvement is then exposed as

reflecting the fact that what is and what is not a dog depends on the state of the world; and further improvements may then reflect further semantic aspects of predicates. Whatever the resulting function may be, it is not to be seen as something that came to be *named* by the predicate, but rather as something that tries to capture the functioning of the predicate.

Hence, asking how an expression has come to name the entity like the truth function or the Carnapian intension is precisely the kind of misguided question that might be engendered by not observing the distinction between the *explicatum*, the explicating object, and the *explicandum*, the explicated phenomenon. A function is a *thing*, and what comes naturally when we consider the establishment of a relationship between an expression and a thing is some relation of the kind of naming. This may lead to the idea that the whole language is simply a huge system of interconnected *names*. And indeed this view has informed the notion of language held by many theoreticians of language (originally more philosophers and logicians than linguists, but recently probably mostly linguists influenced by logic).

Meanings, rules and inference

What alternative did the pragmatic turn offer? Ludwig Wittgenstein, whose early *Tractatus* significantly contributed to the notion of language as a great system of names, stimulated the turn when he later concluded that we should see the meaning of an expression as the way in which the expression is used by speakers, i.e. as its role within our language games:

> 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. (1953, §43)

He also pointed out that what is crucial to the constitution of our language games are (various kinds of) *rules*. In this light, we can

compare language with chess: the 'meaning' of the wooden pieces we use to play the game, their being *pawns, rooks*, *bishops* etc., is also determined by the rules of chess. This indicates that meaning can be conceived of as a role conferred on an expression by the rules of our language games. But what kind of rules are these?

Let us return to the connective *and*. What is it that we must grasp to understand its meaning? The most straightforward answer may seem to be that what we must grasp is that a complex sentence, arising from connecting two sentences by its means, is true only when both the subsentences are (which is what appears to be reflected by the truth table). But what has truth to do with our language games? If what we are after is a role with respect to the rules of these games, then this characterization is helpful only in so far as it can be read as referring to the rules.

But it seems that truth may be seen as a sort of a *correct assertability*. This should not be controversial: it seems that there is a sense of correctness in which an assertion of a sentence is correct iff it is true (needless to say, there are also other senses of the correctness of assertions - an assertion of a false statement may, for example, be correct in the sense that it saves somebody's life).[13] If we admit this, then we can say that *and* is characterized by the rule that

A and B is correctly assertible if both *A* and *B* are,

i.e. by the pair of rules

if *A and B* is correctly assertible, then both *A* and *B* are
if both *A* and *B* are correctly assertible, then *A and B* is

If we now write, as usual,

[13] As we seem unable to specify the kind of correctness in play here without recourse to the concept of truth, this does not amount to a reduction of the concept of truth to other concepts, hence to a theory of truth. Cf. Peregrin (2006a).

$A_1, ..., A_n \vdash A$

in the sense of A is correctly assertible whenever $A_1, ..., A_n$ are, we may further rewrite this as

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

Now the truth table above can be seen as summarizing these rules: the first row says that if *A* and *B* are true, i.e. correctly assertible, then also *A and B* is; whereas the other three say that if either *A* or *B* is false (not correctly assertible), then also *A and B* is (not correctly assertible); in other words that if *A and B* is correctly assertible, then both *A* and *B* are. Hence the claim may be that seeing the connective as a *name* of the truth function is misguided (though in many contexts it does not raise any problems), for in fact the truth function is merely the explication of the expression of the inferential role.

Considerations of this kind are well known from the philosophy of logic, where we have been witnessing, for several decades, discussion between those who are convinced that the semantics of logical constants is essentially inferential (and is to be studied by *proof theory*) and those for whom the constants must be seen as standing for something (and hence must be accounted for by *model theory*). This, however, is not what interests us now; our interest is whether the inferential paradigm can be extended outside the boundaries of logical constants.

Perhaps *and*; but what about *dog*?

It may seem that the proposal to construe the meaning of even empirical expressions in inferential terms is preposterous. What may work for *and* would hardly work for *dog* – it would seem imperative that empirical vocabulary, to become meaningful, must represent

something. Whereas with logical words there may be an issue over the relative merits of grasping their semantics in inferentialist or in representationalist terms, for empirical words there seems to be only the latter option.

However, is this truly so? Consider a person looking into the sky and saying "The sky is blue" and a parrot repeating the same sounds. What makes the difference between the former act, which is an *assertion,* and the latter one, which is a mere emitting of sounds? One answer might be that what makes something an assertion, rather than just the sounds, is the fact that it is a move in a certain game, namely a language game. Just like what makes kicking a ball through the goal posts *scoring a goal* is the fact that it was an act within the space constituted by the rules of a football game.

However, the obvious objection is that what makes the difference between the asserter and the parrot is that the former is *thinking* and hence can associate his sounds with a certain *thought* - and thus gives them their meanings. But even if we waive the doubts of the possibility of the mentalist construal of meanings voiced at the beginning of this paper - what does it mean *to think*? As Alan Turing (1950) observed, there is really no way to find out whether somebody is thinking other than to check whether she behaves in a certain way ('reasonably'), i.e. whether she talks and behaves so that it 'makes sense'. So, though the claim that what differentiates between a human speaker and a parrot are the former's thoughts, is surely true, it is problematic to use it as an answer to our question (*what makes one's emitting of sounds into an assertion*?), for we may need to proceed with the explanation the other way around.

So this is why we may prefer the answer that to talk meaningfully is to take part within certain language games. What kind of language games? It is clear that not any would do. Shouting "Go, go!" at a ice hockey match, though perhaps a kind of a language game, clearly would not be acceptable as a hallmark of thinking. Also, reciting poems would be easily imitable by a non-thinking device, such as a tape-recorder. It seems that if we want to know whether we face a thinking being, we should check whether it is capable of *reasoning*. Hence we

would probably ask questions, and along with receiving the answers, we would check whether the adept of thinking is able to give reasons for what she says. And we would try to challenge some of her claims to find out whether she is capable of defending them. In the course of this, we would probably expect her to challenge *our* claims (our challenges to her claims) and to require *us* to give reasons.

In short, it seems that a particularly suitable language game for the role of a touchstone of a thinker would be the game Brandom (1994) calls *giving and asking for reasons*. It is this game that seems to 'bring thinking into the open'. For this reason, Brandom considers this game the very basis of our language; and thus he moves *inferential rules*, i.e. rules that lead us from a reason to what it is a reason for, to the centerstage of our on-going language game jamboree.

This indicates that even contentfulness of empirical words must be underpinned by certain inferences. No empirical word is meaningful in the distinctively human way (i.e. expresses a *concept*) unless it is a potential token in the game of giving and asking for reasons. A word does not express the concept of *dog* unless it can be used as part of sentences which can in turn be used for reasoning, i.e. from which other sentences can be inferred and which can be itself inferred from other sentences. The English word *dog* would not express our concept of dog if it could not be used to reason from *This is a dog* to *This is not a cat* etc.

Hence I have argued that there is no meaning without inference. But it may still seem that there is, at least for empirical words, also no meaning without a representation. For how could a word like *dog* come to express the concept of dog without, at least *inter alia*, representing dogs? And though there is undoubtedly some truth in this, the inferentialist answer is that the concept of *representing* leads to a very odd way of capturing what is going on between our empirical vocabulary and the world.

As it is only *sentences* that may be used to make a move in a language game, any contact between a word and (a part of) the world must be mediated by sentences. Beside this, what matters is not what the speakers really do with the sentences, but what they take to be

correct to do - the relation is normative. Thus, the link between the word *dog* and the world is a matter of such facts as that it is correct to use the sentence *This is a dog* in certain situations, and incorrect in others.

True, the usage of *This is a dog* may be 'non-inferential' in the sense that its correctness is a matter of directly the extralinguistic circumstances, and hence what is in question is not an inference in the standard sense (from language to language), but an 'inference', as it were, from the world to language. (Similarly, at the other 'end' of language, there are 'inferences' from language to action.) This means that if we want to extend the inferentialist treatment of meaning from expressions like *and* to expressions like *dog*, we have to generalize the concept of inference.

But talking about 'generalized inferences' may not be the best way of seeing the situation. Imagine chess. The move I make responds exclusively to the moves made by my opponents. It cannot respond to anything else, for there is, in fact, nothing else to respond to. The pieces, board and other equipment, strictly speaking, are not necessary - it is clear that we can play chess completely without them. Thus, the rules of chess spell out a pure, disembodied structure. However, as Lance (1998) pointed out, language is more similar to a *sport* like football than to a *game* like chess. Notice that football is less 'disembodied' than chess, in that its rules must take into account the physical properties of the ball or the goalposts. Similarly, the rules of language must reflect the fact that our language games are not games in the sense of being self-contained; they are an important way for us to interact with the world. Thus most of our language games *involve* the world, and hence also the rules reflect the involvement.

As a result, even if you construe semantics in the inferentialist way, we must keep in mind that the inferential rules governing it and conferring meanings on expressions will involve the world. (Brandom, 1994, p. 332 stresses that our linguistic practices cannot be seen as "hollow, waiting to be filled up by things", but rather as "as concrete as the practice of driving nails with a hammer".) Hence, to understand *dog*, we must know not only how the sentences containing *dog* (*This is a dog*,

Every dog is a mammal and others) can be correctly played within the game of giving of asking for reasons in response to utterances of other players (that *This bird is a dog* counts as a challenge to *Every dog is a mammal*, which than can be defended by *But this bird is not a dog*), but, more broadly, how they are correctly used also *vis-à-vis* non-linguistic circumstances (that *This bird is not a dog* is correctly played only when what one is pointing at is a bird etc.).

Language as a social institution

Inferentialism, which gives the use-theory of meaning a normative twist, is based on the assumption that the role of a word within our language game is not a matter of the actual moves their players make, but rather of the rules governing the permitted usage of these words. (Of course, the rules are also a matter of what the players do; however, not of the moves they choose to make, but of their 'taking' certain moves as correct, whereas others as incorrect. In chess, the rules are also not a matter of the moves the players tend to make, but rather of the fact that they take some moves for legal and others for illegal.)

The notion of synonymy, which results from these considerations, is vague, and hence also the resulting semantic structure, and consequently its materialization into meanings, is vague. Therefore we must be aware of the fact that making the step from the structure to an explication of meaning is a nontrivial one - it amounts to drawing sharp boundaries there where there are really none. However, this should not be read as saying that explication is a dubious enterprise. Replacing fuzzy phenomena by their non-fuzzy explications, using idealized models, is a standard part of the methods we use to account and make sense of our world.

Thus the resulting picture is that our linguistic games, especially the central *game of giving and asking for reasons*, are governed by certain rules which are implicit in our practices and hence are not distinct in the way explicit rules can be, but which are nevertheless essential. What we

call meanings, then, are the roles individual expressions of our language acquire *vis-à-vis* the rules.

This brings us to an important moral: inferentialism is not mere preference for one fundamental semantic concept (*inference*) over another (*reference*, *representation* or something else). It involves the conviction that to understand language in its semantic aspect we must turn our attention to the *social background* of language. Hence the idea is that though it is undoubtedly interesting and important to study the psychology of the participants of communication, to understand what semantics is about we must turn our attention to language as a *social institution*.

Let us return to Wittgenstein, whom I listed among the initiators of the pragmatic turn and who also stressed the key role of *rules* within our language games. Why did he abandon the earlier elegant system of his *Tractatus* (1922) and settled for his later haphazard theory of language games, as presented in his *Philosophical Investigations* (1953)? One answer might be that while in *Tractatus* he saw his whole language as a gigantic system of *names*, later he was to realize that the concept of *naming* is too complex to be used as an unexplained explainer.

What does it take to be a name? It is often assumed that a name of a thing is something as a label stuck to the thing. But imagine a society with a habit of doing literally this: sticking labels with inscriptions onto things. By doing so, are they actually *giving names* to the things? Surely not by the labeling alone: the labeling means various other things: the labels may serve as mere decorations, they may bear advice for people encountering them etc. So what decides whether they be considered as names, or as something different? Undoubtedly the ways in which they are treated by the members of the society, the larger practices into which the practice of sticking labels is embedded. And hence I think that Wittgenstein realized, in Coffa's (1991, p. 267) words, that "the ultimate explanatory level in semantics is not given by references to unsaturation or to the form of objects or meanings, but by reference to the meaning-giving activity of human beings, of activity embodied in their endorsement of rules".

And it is just in this spirit that Brandom, the initiator of contemporary inferentialism, sees semantics as underlain by inference: inference is what is needed to oil the wheels of the social practices that make us rational, content-mongering creatures. Inferential structure is crucial (and not only for the logical, but for *any* vocabulary) because it reflects the social background of language. Brandom is convinced that the inferential structure of language is the result of the interplay of *commitments* we undertake and *entitlements* we acquire when engaging within our language games. It is from this viewpoint that it is important to look at language as a social institution - for it follows that what we usually call *meaning* is a matter of this very aspect.

Many initiators of the pragmatic turn, notably Quine, were quite hostile to the very concept of meaning - they praised the turn for ridding us of the concept as an excessive baggage and for letting us concentrate directly on our linguistic practices. In the same spirit, Sellars criticized Carnap for his inclination towards "formal semantics"[14]. However, in this paper I have indicated that the two enterprises, inferentialism as one of the outcomes of the pragmatic turn, and formal semantics as a project of a logico-mathematical explication of meaning, need not be seen as incompatible. Indeed I am convinced that the interconnection of the two projects may help us make sense of many traditional ideas on the boundary between linguistics and philosophy: it may throw new light on some of the ideas of the classical and newer structuralism, it may provide for a new and illuminating way of representing semantics yielded by normative use theories, and it may lead us to a reinterpretation of the Frego-Tarskian formal semantics such that it survives the pragmatic turn.

Brandom's Inferentialism

[14] See Peregrin (2012d) for a detailed discussion of this movement towards "semantics without meanings".

As a pragmatist, Brandom (1994; 2000) sees language as a way of carrying out an activity, the activity of playing certain language games; but unlike many postmodern followers of Wittgenstein he is convinced that one of the games is 'principal', namely the *game of giving and asking for reasons*. It is this game, according to him, that is the hallmark of what we are – thinking, concept-possessing, rational beings abiding to the force of better reason.

It is this conviction that makes Brandom not only a pragmatist, but also an inferentialist (and the initiator of inferentialism as a philosophical doctrine). For if our language is to let us play the game of giving and asking for reasons, it must be *inferentially articulated*: To be able to *give* reasons we must be able to make claims that can serve as reasons for other claims; hence our language must provide for sentences that *entail* other sentences. To be able to *ask for* reasons, we must be able to make claims that count as a *challenge* to other claims; hence our language must provide for sentences that are *incompatible* with other sentences. Hence our language must be structured by these entailment and incompatibility relations.

In fact, for Brandom the level of inference and incompatibility is merely a deconstructible superstructure, underlain by certain normative statuses, which communicating people acquire and maintain via using language. These statuses comprise various kinds of *commitments* and *entitlements*. Thus, for example, when I make an assertion, I *commit* myself to giving reasons for it when it is challenged (that is what makes it an assertion rather than just babble); and I *entitle* everybody else to reassert my assertion reflecting any possible challenges to me. I may commit myself to a claim without being entitled to it, i.e. without being able to give any reasons for it, and I can be committed to all kinds of claims, but there are certain claims commitment to which blocks my entitlement to certain other claims.

Brandom's idea is that living in a human society is steering within a rich network of normative social relationships and enjoying many kinds of normative statuses, which reach into many dimensions. Linguistic communication institutes an important stratum of such statuses (commitments and entitlements) and to understand language means to

be able to keep track of the statuses of one's fellow speakers – to keep score of them, as Brandom puts it[15]. And the social distribution is essential because it provides for the multiplicity of perspectives that makes the objectivity of linguistic content possible.

This interplay of commitments and entitlements is also the underlying source of the relation of incompatibility - commitment to one claim excluding the entitlement to others. Additionally, there is the relation of inheriting commitments and entitlements (by committing myself to *This is a dog* I commit myself also to *This is an animal,* and being entitled to *It is raining* I am entitled also to *The streets are wet*); and also the relation of co-inheritance of incompatibilities (*A* is in this relation to *B* iff whatever is incompatible with *B* is incompatible with *A*). This provides for the inference relation (more precisely, it provides for its several layers).

Brandom's inferentialism is a species of pragmatism and of the use-theory of meaning - he sees our expressions as tools which we employ to do various useful things (though they should not be seen as *self-standing* tools like a hammer, but rather as tools, like, say, a toothwheel, that can do useful work only in cooperation with its fellow-tools). He gives pride of place to the practical over the theoretical, he sees language as a tool of social interaction rather than as an abstract system. Thus, any explication of the concepts such as *language* or *meaning* must be rooted in an account of what one *does* when one communicates - hence semantics, as he puts it, "must be answerable to pragmatics".

What distinguishes him, however, from most other pragmatists and exponents of various use-theories, is the essentially normative twist he gives to his theory. In a nutshell, we can say that what his inferentialism is about are not inferences (as actions of speakers or thinkers), but rather *inferential rules*. This is extremely important to keep in mind, for it is this that distinguishes his inferentialism from other *prima facie* similar approaches to meaning, which try to derive meaning from the episodes of rather than from rules (see below).

[15] The concept of *scorekeeping* was introduced, in a slightly different setting, by Lewis (1979).

This brings us back to the question of the way rules of language exist. Wittgenstein realized that the rules cannot all be explicit (in pain of a vicious circle), and hence we must make sense of the idea of rule implicit to a praxis. Brandom's response to this is that rules are carried by the speakers' *normative attitudes* - their treatings of the utterances of others (and indeed of their own) as correct and incorrect. But though the rules exist only as underpinned by the attitudes, which is a matter of the causal order, the rules themselves do not exist within the causal order. In other words, though we may be able to describe, in a descriptive idiom, how a community can come to employ a normative idiom, the latter is not translatable into the former.

Inferentialism and logic

It is worth noting that the roots of inferentialism can be traced back before Sellars and the later Wittgenstein. Even if we ignore its rudimentary forms which may be discernible in the writings of the early modern rationalist philosophers, such as Leibniz or Spinoza (as Brandom, 1985; 2002, argues) a very explicit formulation of an inferentialist construal of conceptual content is presented by Frege (1879, p. v). This anticipates an important thread within modern logic, maintaining that the meaning or significance of logical constants is a matter of the inferential rules, or the rules of proof, which govern them.

It would seem that inferentialism as a doctrine about the content of logical particles is very plausible. For take conjunction: it seems that to pinpoint its meaning, it is enough to stipulate

$$\frac{A \quad B}{A \wedge B} \qquad \frac{A \wedge B}{A} \qquad \frac{A \wedge B}{B}$$

(The impression that these three rules do institute the usual meaning of $\wedge$ is reinforced by the fact that they may be read as describing the usual truth table: the first two saying that $A \wedge B$ is true only if A and B are, whereas the last one that it is true if A and B are.) This led Gentzen

(1934) and his followers to the description of the inferential rules that are constitutive of the functioning (and hence the meaning) of each logical constant. (For each constant, there was always an *introductory* rule or rules (in our case of $\wedge$, above, the first one), and an *elimination* rule or rules (above, the last two.)[16] Gentzen's efforts were integrated into the stream of what is now called *proof theory*, which was initiated by David Hilbert – originally as a project to establish secure foundations for logic[17] – and which has subsequently developed, in effect, into the investigation of the inferential structures of logical systems[18].

The most popular objection to inferentialism in logic was presented by A. Prior (1960/61, 1964). Prior argues that if we let inferential patterns constitute (the meaning of) logical constants, then nothing prohibits the constitution of a constant *tonk* in terms of the following pattern

$$\frac{A}{A \textit{ tonk } B} \qquad \frac{A \textit{ tonk } B}{B}$$

As the very presence of such a constant within a language obviously makes the language contradictory, Prior concluded that inferential patterns do not confer real meaning.

Defenders of inferentialism (prominently Belnap, 1962) argue that Prior only showed that *not every* inferential pattern is able to confer meaning *worth its name*. This makes the inferentialist face the problem of distinguishing, in inferentialist terms, between those patterns which do, and those which do not, confer meaning (from Prior's text it may seem that to draw the boundary we need some essentially

[16] This works straightforwardly for intuitionist logic, thus making it more intimately related to inference than classical logic, for which this kind of symmetry is not really achievable.

[17] See Kreisel (1968).

[18] One of the early weakly inferentialist approaches to the very concept of logic was due to Hacking (1979).

representationalist or model-theoretic equipment, such as truth tables); but this is not fatal for inferentialism. Belnap did propose an inferentialist construal of the boundary – according to him it can be construed as the boundary between those patterns that are conservative over the base language and those that are not (i.e those that do not, and those that do, institute new links among the sentences of the base language). Prior's tonk is obviously not; it institutes the inference of $A \vdash B$ for every A and B.

Inferentialism in logic (which, at the time of Belnap's discussion with Prior, was not a widespread view) has recently also been flourishing in connection with the acceleration of proof-theoretical studies and the widening of their scope to the newly created field of substructural logics[19]. The controversies over whether it is possible to base logic on (and especially to furnish logical constants with meanings by means of) proof theory, or whether it must be model theory, concern, to a great extent, the technical aspect of logic. But some logicians and philosophers have started to associate this explanatory order with certain philosophical doctrines.

In his early papers, Michael Dummett (1977) argued that basing logic on proof theory goes hand in hand with its intuitionist construal and, more generally, with founding epistemology on the concept of justification rather than on the concept of truth. This, according to him, further invites the "anti-realist" rather than "realist" attitude to ontology: the conviction that principally unknowable facts are no facts at all and hence we should not assume that every statement expressing a quantification over an infinite domain is true or false. Thus Dummett (1991) came to the conclusion that metaphysical debates are best settled by being reduced to debates about the logical backbone of our language.

[19] See Došen & Schroeder-Heister (1993); Restall (2000).

My version of inferentialism

Let me now return to the beginnings of my wrestling with inferentialism: to the point where I was captivated by Brandom's inferentialism and I was facing the obstacles which I saw in its satisfactory implementation. Aside of more specific obstacles, there was a more general one: while Brandom was never very much interested in the empirical results concerning the workings of language (and those of human mind/brain etc.) it seemed to me that to get a truly satisfactory philosophical picture, we need to make it explicitly continuous with the results of empirical science. And it seemed to me, that contemporary science does deliver a wealth of results relevant for the inferentialist picture.

As I see the situation, we, individuals of the species *Homo sapiens*, have come to acquire the peculiar ability of holding what our conspecifics do for correct or incorrect. I take this to be a kind of a primitive attitude[20], which is manifested by a complicated behavioral syndrome, consisting of (i) tending to do what is correct, (ii) tending to praise those who do what is correct and reprove those who do what is incorrect; (iii) tending to say that what is correct is correct. This ability I believe further furnished us with the ability of establishing systems of rules that provide room for carrying out brand new kinds of actions. (Establishing the system of rules of chess makes room for doing things we can do within chess games: castling, checking the opponent, attacking the opponent or defending oneself from the opponent's attacks ...)

My idea is that one of the most important of such rule-constituted spaces is what can be called the *space of meaningfulness*: the space constituted by the rules of our language which provided for a very specific kind of new actions: meaningful talk. In this way, the inferentialist alternative to the representational construal of meaning is

[20] Davidson speaks about the primitive attitude of *holding-correct*; so what I am talking about may be seen as a more general version of this: *holding-correct*.

elucidated from a new angle: an expression does not become meaningful in that it is made to stand for something, but rather because it becomes a vehicle of a type of action which, being embedded into the rule-constituted space of meaningfulness, becomes what we call *meaningful utterance*. And just like in chess a piece's becoming, say, a *rook*, does not consist in its being made to represent some 'rookhood' (though certainly nobody can prevent us from looking at the rook as at a piece of wood possessing/instantiating/representing the 'rookhood'), a kind of sound's becoming, say, *a sentence saying that it rains*, does not consist in its being made to represent a proposition (though nobody can prevent us from looking at the meaningful sound as at a sound possessing/instantiating/representing the proposition).

Given this, I think, in contrast to Brandom, that inferentialism should be underpinned by intensive investigation of the interface between philosophy and various empirical fields, such as linguistics, psychology, sociology and evolution theory. It is, I maintain, only when we see that what the inferentialists says about language is compatible with empirical evidence about the evolution of language and the ways it actually functions that we can seriously propose it as a theory of language and meaning. And I am convinced that my attitude, in which the whole conceptual machinery of inferentialism is founded on the primitive relation of holding-true, is especially suitable for the purposes of confrontation with empirical sciences.

This kind of 'naturalism', however, is not incompatible with such approaches to the nature of meaning as *formal semantics*, which is based on logic and mathematics. What I think is crucially important from this viewpoint is to see that we must distinguish between the claim that meaning is a thing associated with an expression, and the claim that meaning can be *explicated* as a thing associated with an expression. While the former claim is, if not just false, then surely obscure; the latter, I am convinced, is straightforwardly true. Now what I think is that if we want to see and explicate meaning as an object, then it is most adequately seen as a 'contribution' the expression brings to the 'inferential potential' of the sentences which it co-constitutes, *viz*. to the peculiar ways in which the sentences enter the inferential relationships

among sentences. And to individuate this contribution, we need the principle of compositionality – hence the principle if firmly built into the very concept of an inferential role (understood as an object).

As for the explication itself, there is a large spectrum of possibilities: I think that as a matter of fact, nearly any kind of formal or logico-mathematical account of meanings can be (re)interpreted as an explication of inferential roles. Hence I disagree with the view that formal semantics, which works with meanings as set-theoretic objects, reinforces the representational approach to language; I think that any kind of such object can be seen as an explication of an inferential role. Therefore I think that inferentialism is not in conflict with formal semantics, it only completely reassesses its philosophical background.

This also prefigures my view of the inferentialism in logic. During twentieth century, two strands in the history of logic can be detected: the model-theoretic strand, based on the assumption that what logic is really about are certain semantic structure (and that proving is merely instrumental to capturing these structures) and the-proof theoretic strand, which maintains that logic is primarily a matter of proving and hence that model-theory may be at most secondary to proof theory). Now inferentialism largely overlaps with the proof-theoretic strand. Moreover, inferentialism brings about a thesis about the very *point* of logical vocabulary (and hence of "logic"): as Brandom proposed, logical vocabulary is, first and foremost, a means of making the material (i.e. non-logical) inferences explicit. I am convinced this is an idea that deserves to be elaborated much more extensively than Brandom did.

The texts included in the dissertation

The paper *Inferentialism and Normativity*, which appeared in the *Oxford Handbook of the History of Analytic Philosophy*, surveys the historical roots of inferentialism and thus the setting up a stage on which the discussions presented in the following papers took place.

In the following paper, *Inferentialism and the Compositionality of Meaning*, which appeared in the *International Review of Pragmatics*, I concentrate on one of the most frequent objections to inferentialism, namely the objection that inferential roles, that are offered, by inferentialism, as explications of meanings, are not compositional, and hence cannot reasonably play this role. This objection has been most vigorously advanced by Fodor and Lepore (2001; 2007). In the paper I argue that it is misguided: not only are inferential roles compositional, but compositionality is their *essential* property, in that the principle of compositionality is the means of their individuation. I also address the objection that there is no way of distinguishing between those inferences that are meaning-constitutive and those that are not; and that given this inferentialism lapses into an absurd holism according to which any inference any speaker makes alters some meanings. I argue, that given that according to inferentialism, meanings (*qua* inferential roles) are constituted by inferential *rules*, rather than by inferences carried out by speakers, the holism is restricted to a tolerable extent.

In the paper called *Inferentialism and the Normativity of Meaning* I defend the claim that meaning is normative in the sense that it is constituted by rules. This view of meaning has been vigorously attacked by a number of philosophers (Hattiangadi, Glüer, Wikfors, ...). In the paper I try to clarify some issues related to the normativity thesis. In particular, I try to show that the source of the normativity of meaning is not some rule additional to the ordinary rules of language, a rule such as *One should always say the truth* or *One should always say what he beliefs to be substantiated*, but the ordinary rules themselves. With the recourse to Sellars I claim that to ascribe the meaning to an expression is not a description, that it is a speech act that is *sui generis* and contains a normative element.

The following two papers, *The normative dimension of discourse*, which appeared in the *Cambridge Handbook of Pragmatics*, and *Semantics without meanings?*, which was printed in a volume called *Prospects for meaning*, elaborate on the idea of norms constituting virtual spaces which open up, for us, the possibilities of brand new actions, in particular the rules of language constituting the space of

meaningfulness, in which we can enjoy the benefit of meaningful talk. The first of the papers proposes, that while Austin, Grice and Searle developed the theory of speech acts, what we need, from my viewpoint, would be a normative version of this theory, a theory that would characterize individual speech acts in terms of the kinematics of the normative statuses established by the rules of the relevant language games and changed in the course of the particular game. The second paper pinpoints the notion of meaning that comes out of the inferentialist implication and clarifies some *prima facie* problematic issues that may be thought to surround it. It considers the comparison between language and chess, which is very helpful in envisaging the most general features of the inferentialist construal of meaning, clarifies its limits and thus fill in some less obvious details of the inferentialist picture.

The last two papers of this volume, *What is the logic of inference?*, which appeared in *Studia Logica*, and *Inferentializing semantics*, which was printed in the *Journal of Philosophical Logic*, analyze some more technical details of the inferentialist picture, bringing some logico-mathematical results. The first of the paper give a formal shape to the inferentialist tenet that the role of logical vocabulary is essentially *expressive* – it serves to make explicit the material inferential rules that implicitly govern our usage of non-logical vocabulary. In the paper I discuss which kinds of logical operators are needed for such an explicitation – and which thus appear to be 'inferentially native'. I try to show that the most straightforward embodiments of such 'inferentially native' operators are the intuitionist logical operators.

In the last paper I consider the problem of confrontation of inferentialist means of delimiting logical constants with truth-theoretic means, in a very general setting. It is obvious that already some of the operators of classical propositional logic are hard to accomodate within the inferentialist framwork. I consider the problem on a very abstract level, assuming that the truth-theoretical specification of logical constants amounts to specifying which truth-valuations of sentences of a given language are 'admissible'; and I try to characterize those sets of admissible truth-valuations that can be delimited by inferentialist means.

Taking into account inferential rules in wider senses (which I call *semi*inferential resp. *quasi*inferential) I reach a kind of hierarchy, the formal properties of which I study in the paper.

My papers dealing with various aspects of inferentialism (entries marked by asterisk are part of the dissertation)

Peregrin, J. (2003): 'Meaning and Inference', T. Childers and O. Majer (eds.): *The Logica Yearbook 2002,* Filosofia, Praha, 193-205.

Peregrin, J. (2004): 'Logic as 'making it explicit'', L. Běhounek (ed.): *The Logica Yearbook 2003,* Filosofia, Praha, 209-225.

Peregrin, J. (2005a): 'Is compositionality an empirical matter?', M. Werning, E. Machery and G. Schurz (eds.): *The Compositionality of Meaning and Content*, Ontos, Frankfurt, 135-150.

Peregrin, J. (2005b): 'The Nature of Meaning: Brandom vs. Chomsky', *Pragmatics and Cognition* 13, 39-57 (the whole volume reprinted as P. Stekeler-Weithofer (ed.): *The Pragmatics of Making it Explicit*, Benjamins, Amsterdam, 2008, 35-52).

Peregrin, J. (2005c): 'The 'Causal Story' and the 'Justificatory Story'', Boros, J. (ed.): *Mind in World*, Brambauer, Pécs, 145-158.

Peregrin, J. (2006a): 'Brandom and Davidson: what do we need to account for thinking and agency', *Philosophica* 75, 43-59.

Peregrin, J. (2006b): 'Meaning as an inferential role', *Erkenntnis* 64, 1-36.

Peregrin, J. (2006c): 'Developing Sellars' semantic legacy: meaning as a role', P. Wolf and M. N. Lance (eds.): *The Self-Correcting Enterprise*, Rodopi, Amsterdam, 257-274.

Peregrin, J. (2006d): 'Semantics as Based on Inference', J. van Benthem et al. (eds.): *The Age of Alternative Logics*, Kluwer, Dordrecht, 25-36.

Peregrin, J. (2006e): 'Intersubstitutivity', M. Bílková and O. Tomala (eds.): *The Logica Yearbook 2005,* Filosofia, Praha, 149-163.

Peregrin, J. (2006f): 'Consequence and Inference', Kolman, V. (ed.): *Miscellanea Logica: Truth and Proof*, FF UK, Praha, 1-18.

Peregrin, J. (2007): 'Logical Rules and the a priori: Good and Bad Questions', J.-Y. Béziau and A. Costa-Leite (eds.): *Perspectives on Universal Logic*, Polimetrica, Monza, 111-122.

Peregrin, J. (2008a): 'What is *the* logic of inference?', *Studia Logica* 88, 263-294.

Peregrin, J. (2008b): 'Inferentialist Approach to Semantics', *Philosophy Compass* 3, 1208-1223.
*Peregrin, J. (2009): 'Inferentialism and Compositionality of Meaning', *International Review of Pragmatics* 1, 154-181.
*Peregrin, J. (2010a): 'Inferentializing Semantics', *Journal of Philosophical Logic* 39, 255-274.
Peregrin, J. (2010b): 'Two Concepts of Validity and Completeness', *Acta Universitatis Carolinae - Philosophica et Historica (Miscellanea Logica) '07*, 23-39.
Peregrin, J. (2010c): 'The Myth of Semantic Structure', P. Stalmaszczyk (ed.): *Philosophy of Language and Linguistics*, vol. I: *The Formal Turn*, Ontos, Frankfurt, 183-197.
Peregrin, J. (2010d): 'The Enigma of Rules', *International Journal of Philosophical Studies* 18, 377-394.
Peregrin, J. (2010e): 'Brandom's Incompatibility Semantics', *Philosophical Topics* 36, 99-122.
Peregrin, J. (2010f): 'Logic and Natural Selection', *Logica Universalis* 4, 207-223.
Peregrin, J. (2011a): 'The past and future of meaning', *The Baltic International Yearbook of Cognition, Logic and Communication*, vol. 6: *Formal Semantics and Pragmatics: Discourse, Context, and Models*, URL = http://thebalticyearbook.org/journals/baltic.
Peregrin, J. (2011b): 'Logic as based on incompatibility', M. Peliš and V. Punčochář (eds.): *The Logica Yearbook 2010*, College Publications, London, 158-167.
Peregrin, J. (2011c): 'The use-theory of meaning and the rules of our language games', K. Turner (ed.): *Making semantics pragmatic*, Emerald, Bingley, 183-204.
Peregrin, J. (2011d): 'Creatures of norms as uncanny niche constructors', T. Hříbek and J. Hvorecký (eds.): *Knowledge, Value, Evolution*, College Publications, London, 189-198.
*Peregrin, J. (2012a): 'The Normative Dimension of Discourse', K. Allan and K. Jasczolt (eds.): *Cambridge Handbook of Pragmatics*, Cambridge University Press, Cambridge, 209-225.

*Peregrin, J. (2012b): 'Inferentialism and the Normativity of Meaning', *Philosophia* 40, 75-97.
Peregrin, J. (2012c): 'What is inferentialism?', L. Gurova (ed.): *Inference, Consequence and Meaning* (*Perspectives on Inferentialism*), Cambridge Scholars Publishing, Cambridge, 3-16.
*Peregrin, J. (2012d): 'Semantics without meaning?', R. Schantz (ed.): *Prospects of Meaning*, de Gruyter, Berlin, 479-502.
*Peregrin, J. (2013): 'Inferentialism and Normativity', M. Beaney (ed.): *Oxford Handbook of the History of Analytic Philosophy*, Oxford University Press, Oxford, 1082-1097.
Peregrin, J. (forthcoming-a): 'Logic and reasoning', *The Logica Yearbook 2013*, College Publications, London.
Peregrin, J. (forthcoming-b): 'Rules as the Impetus of Cultural Evolution', *Topoi*.

Other references in the text of the theses:

Belnap, N. (1962): 'Tonk, Plonk and Plink', *Analysis* 22, 130-134.

Brandom, R. (1985): 'Varieties of Understanding', Rescher, N. (ed.): *Reason and Rationality in Natural Science*, University Presses of America, Lanham, 27-51.

Brandom, R. (1994): *Making It Explicit*, Harvard University Press, Cambridge (Mass.).

Brandom, R. (2000): *Articulating Reasons*, Harvard University Press, Cambridge (Mass.).

Brandom, R. (2002): *Tales of the Mighty Dead*, Harvard University Press, Cambridge (Mass.).

Brandom, R. (2007): 'Inferentialism and some of its challenges', *Philosophy and Phenomenological Research* 74, 651-676.

Bréal, M. (1897): *Essai de sémantique*, Hachette, Paris.

Carnap, R. (1942): *Introduction to Semantics*, Harvard University Press, Cambridge (Mass.).

Carnap, R. (1947): *Meaning and Necessity*, University of Chicago Press, Chicago.

Carnap, R. (1950): *Logical Foundations of Probability*, University of Chicago Press, Chicago.

Coffa, A. (1991): *The Semantic Tradition from Kant to Carnap*. Cambridge University Press, Cambridge.

Davidson, D. (1990): 'The Structure and Content of Truth', *Journal of Philosophy* 87, 279-328.

de Saussure, F. (1931): . *Cours de linguistique générale*, Payot, Paris. English translation: *Course in General Linguistics*, Philosophical Library, New York 1959.

Devitt, M. (1981): *Designation*, Columbia University Press, New York.

Došen, K. & Schroeder-Heister, P. (eds.) (1993): *Substructural Logics*, Clarendon Press, Oxford.

Dummett, M. (1977): *Elements of Intuitionism*, Clarendon Press, Oxford.

Dummett, M. (1991): *The Logical Basis of Metaphysics*, Duckworth, London.

Egginton, W. & Sandbothe, M. (2004): *The Pragmatic Turn in Philosophy*, SUNYPress, New York.
Fodor, J. (1975): *The Language of Thought*. Cromwell, Scranton.
Fodor, J. (1987): *Psychosemantics: The Problem of Meaning in the Philosophy of Mind*, MIT Press, Cambridge (Mass.).
Fodor, J. & Lepore, E. (2001): 'Brandom's Burdens', *Philosophy and Phenomenological Research* 63, 465-482.
Fodor, J. & Lepore, E. (2007): 'Brandom Beleaguered', *Philosophy and Phenomenological Research* 74, 677-691.
Frege, G. (1879): *Begriffsschrift*, Nebert, Halle; English translation in Heijenoort (1971), 1-82.
Frege, G. (1884): *Grundlagen der Arithmetik*, Koebner, Breslau; English translation *Foundations of Arithmetic*, Blackwell, Oxford. 1953.
Frege, G. (1892): 'Über Sinn und Bedeutung', *Zeitschrift für Philosophie und philosophische Kritik* 100, 25-50.
Frege, G. (1918/9): 'Der Gedanke', *Beiträge zur Philosophie des deutschen Idealismus* 2, 58-77.
Gentzen, G. (1934): 'Untersuchungen über das logische Schliessen I-II', *Mathematische Zeitschrift* 39, 176-210.
Hacking, I. (1979): 'What is logic?', *Journal of Philosophy* 76, 285-319.
Kreisel, G. (1968): 'A Survey of Proof Theory', *Journal of Symbolic Logic* 33, 321-388.
Kripke, S. (1972). 'Naming and Necessity', *Semantics of Natural Language*, ed. by D. Davidson and G. Harman, Reidel, Dordrecht, 253-355. Subsequently published as Kripke: *Naming and Necessity*, Harvard University Press, Cambridge (Mass.), 1980.
Lance, M.N. (1998): 'Some Reflections on the Sport of Language', *Philosophical Perspectives* 12, 219-240.
Lewis, D. (1972): 'General Semantics', Davidson, D. & Harman, G. (eds.): *Semantics of Natural Language*, Reidel, Dordrecht, 169-218.
Lewis, D. (1979): 'Scorekeeping in a Language-Game', *Journal of Philosophical Logic* 8, 339-59.
Montague, R. (1974): *Formal Philosophy: selected papers of R. Montague*, Yale University Press, New Haven.

Prior, A. N (1964): 'Conjunction and Contonktion Revisited', *Analysis* 24, 191-195.
Prior, A. N. (1960/61): 'Runabout Inference Ticket', *Analysis* 21, 38-39.
Putnam, H. (1975): 'The Meaning of "Meaning"', *Language, Mind and Knowledge* (*Studies in the Philosophy of Science* 7), ed. by K. Gunderson. University of Minnesota Press, Minneapolis, 131-193.
Quine, W. V. O. (1960): *Word and Object*, Cambridge, Mass.: MIT Press.
Quine, W. V. O. (1969): *Ontological Relativity and Other Essays*, Columbia University Press, New York.
Restall, G. (2000): *Introduction to Substructural Logics*, Routledge, London.
Rorty, R., ed. (1967): *The Linguistic Turn*, The University of Chicago Press, Chicago.
Russell, B. (1912): *The Problems of Philosophy*, Home University Library.
Sellars, W. (1949): 'Language, Rules and Behavior', S. Hook (ed.): *John Dewey: Philosopher of Science and Freedom*, Dial Press, New York, 289-315.
Sellars, W. (1953): 'Inference and Meaning', *Mind* 62, 313-338.
Sellars, W. (1954): 'Some Reflections on Language Games', *Philosophy of Science* 21, 204-228.
Sellars, W. (1969): 'Language as Thought and as Communication', *Philosophy and Phenomenological Research* 29, 506-527.
Schiffer, S. (1972): *Meaning*, Clarendon Press, Oxford.
Turing, A. (1950): 'Computing machinery and intelligence', *Mind* 59, 433-460.
Wittgenstein, L. (1922): *Tractatus Logico-Philosophicus*, Routledge, London; English translation Routledge, London, 1961.
Wittgenstein, L. (1953): *Philosophische Untersuchungen*, Blackwell, Oxford. English translation *Philosophical Investigations*, Blackwell, Oxford, 1953.