rules are modus ponens, universal generalisation and "necessitation" rules for N, G and H.

To me, its most interesting extension seemed QTML with crossworld simultaneous necessity and irreflexivity axiom (which Wölfl shows to be complete with respect to TxW-structures which satisfy the predicate-logic counterpart of the "uniqueness"-constraint, cf. 214). The axiomatics are: Basic QTML, S5-axioms for [-] plus: $[\text{-}]\phi \to N\phi$, $F[\text{-}]\phi \to [\text{-}]F\phi$, as its P-mirror image (204f), $\exists x[\text{-}]$ (Rx & H $\sim$ Rx) (213) and "(Rig -G) $\phi \to [\text{-}]\phi$, where ϕ is *modally* rigid" (i.e., every non-operator sign in ϕ is either a variable or a value of the rigidity function for [-]) (cf. 4, 8, 203f). As an additional deduction rule one needs a "necessitation" rule for [-]. A special syntactical constraint is that every [-]-rigid sign is also an N-rigid sign.

Of the few typos which inevitably occur in such a book two are confusing: Definition 2.2 on p. 13 should have "|J|" instead of "U" throughout, and there is an important "t" missing at the end of the satisfaction clause on p. 204. The detailed comments given here should not obscure the fact that Wölfl has written an extremely skilful and rich book which deserves close study by experts of TML, since it is foundational in the true sense of the word: Wölfl's results in their generality are something to build upon when it comes to inventing ever more complex intensional logics with several independent operators.

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Robert B. Brandom, *Articulating Reasons (An Introduction to Inferentialism)*, Harvard University Press, Cambridge, MA, 2000, 230 pages.

When Brandom's *Articulating Reasons* appeared, I heard a philosopher commenting sarcastically that "it is odd to write a book so big that you have to write a smaller book to give guidelines on how to read the big one". But although Brandom's new book can hardly fail to be taken as a belated *prolegomena* to his huge *Making it Explicit* (hereafter *MIE*), and although the author himself does present the book as an "introduction to inferentialism", it is in fact something else. Rather than being a systematic introduction, it is a not entirely homogenized collection of essays picking up the most difficult and most controversial points of Brandom's doctrine as presented within his *opus magnum* and attempting to enlighten them

from various new angles. However, although it would indeed be desirable
to have a concise and comprehensible introduction to the Brandomian
doctrines, what Brandom presents in the book is no less important. Never-
theless I do not think the book would serve well as a first point of contact
with Brandom's thinking – it is, I think, more helpful for those who are
conversant with his approach than for those who would like to learn what
it is all about.

The introduction of the book presents a minimal explanation of the
rationale behind Brandom's inferentialism; and then it suggests into which
ideological boxes it should be classed. According to the author, his stance
"is opposed to many (if not most) of the large theoretical, explanatory, and
strategic commitments that have shaped and motivated Anglo-American
philosophy in the twentieth century (p. 31): it rejects *empiricism* and *nat-
uralism* (in favor of *rationalism*), *representationalism* (which is what is
replaced by *inferentialism*), *semantic atomism* (in favor of *holism*), for-
malistic construal of logic (in favor of an *expressivistic* construal), and
also the instrumentalistic construal of practical rationality.

I find at least one item in this list of classificatory suggestions po-
tentially misleading, namely Brandom's avowal of rationalism and his
rejection of naturalism. It is clear that Brandom is not an empiricist, but
I do not think that this automatically renders him a rationalist; indeed I
think that within the context of contemporary philosophy the traditional
empiricism/rationalism classification is now simply obsolete. (I doubt that
Brandom wants to be associated with the doctrines of "innate ideas" or
"intuition of self-evident propositions" which are usually taken as con-
stitutive of rationalism.[1]) Also he is certainly not a naturalist in the sense of
claiming that all knowledge is bound to be the product of natural science,
but I think that this is not the sense of "naturalism" currently prevailing
(note that, e.g., Davidson is usually classified – with his own approval – as
a naturalist). Consider Brandom's account of normative discourse in *MIE*:
he rejects the reducibility of the normative idiom to a non-normative one
(and hence rejects Quinean physicalism and behaviorism), but at the same
time he hastens to provide a story about how such form of discourse can
evolve from non-normative forms. If any kind of naturalism were so alien
to him, why would he find such a story important? Hence I think that there
is a sense of "naturalism" (and one not too far-fetched) in which Brandom
is a naturalist.

The first chapter of the book, *Semantic Inferentialism and Logical Ex-
pressivism*, discusses the question of how the inferential understanding of
semantics yields an unusual, namely an 'expressivist', understanding of
logic. The idea is that accepting the inferential standpoint, from which we

see expressions as semantically determined by inferential patterns governing them (and hence see the meanings of expressions as their 'inferential roles'), we can classify the vocabulary of natural language into two different compartments. While some words (like "dog", "kill" or "slowly") take part within our reasoning about the world and are governed by inferences which can be called *material* (as contrasted to *formal*), other ones take part within our reasoning about reasoning, within our making explicit of the material inferential patterns. Thus to claim "if Pluto is a dog, then Pluto is a mammal" is to claim the propriety of the inference from "Pluto is a dog" to "Pluto is a mammal" – and the fundamental role of expressions like "if...then" consists in turning that which is done (or maybe better a rule which implicitly governs what is done) into what can be claimed. This is the 'making explicit' emblematic of Brandom's understanding of human reason.

What I find slightly problematic about Brandom's discussion of logic is the fact that he does not sufficiently distinguish between "logic" in the sense of "the logical part of our vocabulary" and "logic" in the sense of the theory accounting for it. As far as I can see, what he means when he talks about the "expressive role of logic" (p. 57) is that the role of *the logical part of our vocabulary* is expressive, that its role is to enable us to express in the form of claims what is otherwise implicitly governing our language use – but I am afraid that it can be read as claiming that the task of logic in the sense of *the theory done by logicians* is to express something which is not expressed (or perhaps not even express*ible*) by our normal language. I suspect that this might invoke the impression that logic is, according to Brandom, in pursuit of something covert behind our overt language.

The next chapter, *Actions, Norms and Practical Rationality* revokes one of the most difficult themes of *MIE*: Brandom's account of practical reasoning and its normative aspect. Here what Brandom puts forward is the thesis that the role of the normative vocabulary (words like "should", "ought to", "be correct" etc.) with respect to practical reasoning is analogous to that of the logical vocabulary with respect to theoretical reasoning – namely that of making explicit. Thus, just like the claim "if Pluto is a dog, then Pluto is a mammal" explicates the propriety of the inference from "Pluto is a dog" to "Pluto is a mammal", the claim "As dogs are not allowed into the shop, I should leave Pluto outside" explicates the propriety of the inference from the acknowledgement of the prohibition to the act of leaving Pluto outside of the shop. Thus, Brandom claims, "normative vocabulary (...) makes explicit the endorsement (attributed or acknowledged) of material proprieties of practical reasoning" (p. 89).

Working with Wilfried Sellars' classification of the rules of language into the language entry, intralinguistic, and language exit rules, Brandom further suggests that voluntary actions resulting from practical reasoning are to the exit side of language what perception is to the entry side. While the former amount to the "capacity to respond reliably to one's acknowledgement of a commitment (of a norm binding on one) by differentially producing performances corresponding to the content of the commitment acknowledged", the latter is a matter of "a capacity to respond differentially to the presence of, say, red things, by acknowledging a commitment with a corresponding content" (p. 94). Thus, the commitments (and entitlements) which Brandom diagnoses as central to language can both cause and be caused by extralinguistic happenings.

In the next chapter, *Insights and Blindspots of Reliabilism*, Brandom discusses the theories of knowledge based on the assumption that in the case of perceptually acquired knowledge, we should replace the understanding of knowledge as justified true belief by its understanding as a true belief acquired by a reliable mechanism. Brandom argues that this is misguided insofar as it aims at replacing the normative concept of justification by the behaviorist concept of reliability. Brandom, though, does not deny that reliability is a concept crucial within the context of explaining perceptually acquired beliefs; however, not as a surrogate for justification, but rather as a classifier of inferences. "What one is doing in taking someone to be reliable", he claims (120), "is endorsing a distinctive kind of *inference*: an inference, namely, from the attribution to another of a propositionally contentful commitment acquired under certain circumstances to the *endorsement* or *undertaking* oneself of a commitment with the same content". This is to say that if I know that somebody is a reliable reporter of some kind of events, then I am justified in using his reports as premises in my own arguments. Hence "reliabilism", as Brandom concludes (*ibid.*), "points to the fundamental *social* or *interpersonal* articulation of the practices of reason giving and reason assessing within which questions of who has knowledge arise".

The following chapter undertakes an ambitious project of answering the question *What are singular terms and why are there any?* (in a way different from *because there are individuals*). Brandom's argument leading to his answer can, in effect, be summarized as follows: As we need to make an unlimited number of claims, we need claims to be composed of recomposable parts. Certain parts of statements can be interchanged, they are *substituted for*'s, while the unchangeable rests of the statements are *substitutional frames*. As we need claims that entail other claims without being entailed by them ('one-way' inferences), it cannot be the case that

both the *substituted for*'s and the *substitutional frames* are 'inferentially symmetric' (in the sense that a frame F with a substituted-for x, $F[x]$, would entail $F[y]$ just in case it would be entailed by it, and at the same time would entail $F'[x]$ just in case it would be entailed by it). And as our language is bound to contain the essential logical machinery, especially the conditional, and hence to any substitutional frame F there is bound to exist a frame F' complementary in the sense that whenever $F[a]$ entails $F[b]$, $F'[b]$ is bound to entail $F'[a]$ ($F'[x]$ can be constructed as $F[x] \rightarrow S$, for a statement S), the *substituted for*'s cannot but be 'inferentially symmetric'. Hence the only possible combination is that of inferentially asymmetric substitutional frames and inferentially symmetric *substituted for*'s. Brandom thus concludes that "*syntactically*, singular terms play the substitutional-structural role of being substituted for, while predicates play the substitutional-structural role of sentence frames", and "*semantically*, singular terms are distinguished by their *symmetric* substitution-inferential significance" (150). He then concludes that his answer to the question *why are there singular terms?* (which is now seen as one side of the coin whose other side is the question *why are there objects?*) can be aphoristically summarized as "because it is so important to have something that means what *conditional* means!" (155).

It seems to me that this chapter is more controversial than the previous ones. The very concept of "substituted-for's" appears to be problematic. Why should we see singular terms, but not other kinds of expressions as "substituted-for's"? What is the crucial difference between these terms and say, intransitive verbs (or, for that matter, sentential connectives)? Why should we see *Brandom thinks* as a substitutional variant of *Sellars thinks*, but not of *Brandom writes*; and why could we not see *Brandom thinks and writes* as a variant of *Brandom thinks or writes*? In other words, the delimitation of the concept of substituted-for's (and thereby of the complementary concept of substitutional frame) appears to be a bit too arbitrary.

The penultimate chapter of the book, *A Social Route from Reasoning to Representing*, discusses the emergence of the representational dimension of language from the basic, inferential one. According to Brandom, this is engendered by the 'internalization' of the switch between perspectives of various participants of linguistic practices: a speaker needs to present how things are not only from his own perspective, but also from the perspectives of other speakers; and this yields the (*de dicto*) propositional attitude reports. These reports then develop into claims pointing out what the other speaker's beliefs are about (*de re* belief reports) – which, Brandom claims, are really specifying the objects of the reportee's believes from the re-

porter's perspective. Hence the *about* of the representational discourse has, in Brandom's view, its constitutive *locus* within the claims of the forms *X believes about O that....* There are, in Brandom's view, two commitments in play here: one attributed to the believer and one undertaken by the reporter by making the report; and the *de re* belief in a sense 'exports' something from the former into the latter. Thus, "representational locutions make explicit the sorting of commitments into those attributed and those undertaken", and hence "the *representational* dimension of propositional contents reflects the *social* structure of their *inferential* articulation in the game of giving and asking for reasons" (183).

The last chapter of the book then undertakes the most difficult task: it tries to answer the question of how this relativistic clash of perspectives can give rise to an objectivity independent of anybody's peculiar perspective. Brandom claims that objectivity emerges out of the interplay of components of the 'fine structure' of inferential articulation – namely commitment and entitlement. In particular, Brandom claims that we must distinguish between inferences which are commitment-preserving and those which are entitlement-preserving, and he further urges that the interplay of these gives rise to inferences which are incompatibility-preserving (where two claims are incompatible in his sense if commitment to one of them precludes entitlement to the other one). This last kind of inference, Brandom insists, is then constitutive of claims with a truly *objective* content. His point is that there are claims which are in this sense not incompatible with claims to the effect of nonexistence of human beings etc. – hence claims which are answerable not to anyone's perspective, but to how things 'really', 'in themselves' are.

I find this most important chapter of the book also the most controversial and the least persuasive. First, the way in which Brandom introduces his 'fine structure' of inference is, as far as I can see, too cryptic. Thus, for example, if he claims – without any further ado – that every commitment-preserving inference is entitlement-preserving but not vice versa, or that the concept of commitment-preserving inference generalizes the notion of deductive inference, while that of the entitlement-preserving one that of inductive inference, I find it hard to follow. There is clearly a 'structural' difference between commitment and entitlement (whereas one can be committed to incompatible claims, one cannot be entitled to them) – but how does this generate a difference between commitment-preserving and entitlement-preserving; and why should the difference be seen as analogous to that between deductive and inductive inference? As a result, I find it hard to assess whether Brandom's way of accounting for the birth of objectivity out of the interplay of individual perspectives really works.

Brandom is one of those philosophers not content with working within an established paradigm – solving 'philosophical puzzles' – who hanker for a complete change. Moreover, he is one of the rare few who have managed to present a sweeping new picture of the relationship between man, his language and his world – his *MIE* is undoubtedly a philosophical milestone. (Doubtlessly many will find his picture controversial – but should we expect a path-breaking picture of this kind not to be?) The present book demonstrates that Brandom does not want to restrict himself to sketching magnificent pictures, but also tries to fill in their tedious details. It also indicates that there is still work to be done in this respect; but it is work which is likely to pay.

NOTES

[1] See, e.g., the title "Rationalism" in *Routledge Encyclopedia of Philosophy* CD-ROM, 1998.

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Roberto Torretti, *Philosophy of Physics*, Cambridge University Press, Cambridge, 2000, xvi + 512 pages, USD 23.95 (paperback), ISBN 0-521-56571-5, USD 64.95 (cloth), ISBN 0-521-56259-7.

In the preface to *Philosophy of Physics*, Torretti states that 'philosophy *in* physics carries more weight in the book than the reflections *about* physics conducted by philosophers'. By 'philosophy *in* physics' he means the 'vein of philosophical thinking about the phenomena of nature' that 'runs through the four-century-old tradition of physics and holds it together' (p. xiii). Torretti's preference for 'philosophy *in* physics' over 'philosophy *about* physics' may explain the historical and almost encyclopaedic style of his book. Torretti assembles a large variety of pieces of physics history with the intention to extract from these various *veins* of philosophical thinking about nature. In most cases, these originate from the reflections of the scientists themselves. Examples are Newton's Rules of Philosophy which Torretti views as 'the founding act of the modern philosophy of physics' (p. 69) or the ascent to more general concepts as a tool of con-