Inferentialism, logic and epistemology

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Abstract. It is often taken for granted that logic helps us - in such or another way - weave the web of our beliefs in such a way that they mesh to give us an accurate map of the world. Of the numerous ways to work with our beliefs, we hold that the logic we generally adopt embodies, at least approximately, the best route to ensure our resultant knowledge is faithful to the facts. In this paper we will argue that this picture is amiss. I will show that if we reflect on the meanings of logical constants and acknowledge their inferential dimension, we can see that logical rules are not *strategic* rules that advise us what to do (and what not to do) with our beliefs, but primarily rather *constitutive* rules, which equip us with certain *kinds* of beliefs (in the case of *modus ponens*, these are especially *hypothetical* beliefs). It follows that the above picture of having been fortunate in having fallen upon the right rules of logic is misleading – we cannot systematically disobey the rules without forfeiting our basic logical concepts, such as negation, implication etc., and with them the immensely useful modes of thought that these open up for us. Hence the unique epistemological powers that evolution has granted us cannot be understood as just using correct logical rules rather than their fallacious variants. What evolution has equipped us with are new modes of thought, such as the hypothetical mode, which is unlocked by implication.

Keywords. Logic; epistemology; inferentialism; modus ponens; reasoning; error

Modus ponens vs. *modus shmonens*

Our maps of the world, our theories, are ever more precise and ever more detailed. What has enabled us to become so successful in describing and explaining the world? It would seem that one of the ingredients that help us in this is *logic*. Logic somehow fosters and boosts our knowledge of the world, though there is probably no general agreement on how it does this.

Take the example of Russell (1914). According to him, logic is what helps us assemble complex pieces of knowledge out of simpler ones, so that any piece of knowledge we might have is a logical complex of some primitive pieces known empirically:

> If we knew all atomic facts, and also knew that there were none except those we knew, we should, theoretically, be able to infer all truths of whatever form. Thus logic would then supply us with the whole of the apparatus required. (P. 63)

Thus, according to Russell, any non-trivial piece of knowledge we have is co-produced by logic – for it is logic that must have forged it from the empirical deliverances of our senses. And though I think few philosophers today would agree with Russell's picture, the view that logic is essentially co-responsible for our knowledge of the world is taken to go almost without saying.

How is logic able to do this - how is it able to help us achieve our detailed and accurate knowledge of the world? Though there would be a lot of disagreement regarding details, the general idea is that we have developed such methods of thought, such modes of combining our beliefs, that they lead us to true knowledge. This is certainly a major achievement: out of the myriads of ways in which we might try to handle our beliefs, we have hit on the very ones that yield us knowledge. This cannot be by chance; we must thank the evolution of our species for this.

Let us consider the picture of human acquisition of knowledge painted by Rips (1994). Investigating the ways we arrive at knowledge, he states that "to us earthlings, an intuitively straightforward inference principle is the one logicians call modus ponens" and he invites us to consider an alternative to this rule, which he calls *modus shmonens*, which leads us "from *IF so-and-so THEN such-and-such* and *So-and-so*" to "*NOT such-and-such*". Thus, one using this rule would use the premises *If it rains, the streets are wet* and *It rains* to *The streets are NOT wet*. Rips provides the following commentary:

> The existence of creatures who systematically deny modus ponens and accept *modus shmonens* would be extremely surprising- much more surprising than the existence of creatures who differ from us in basic perceptual or memory abilities. In a situation like this one, we would probably be more apt to blame the translation into English from whatever language the creatures speak than to accept the idea that they sincerely believe in *modus shmonens* (...). Indeed, our reluctance to attribute exotic inferences even to exotic creatures is an interesting property of our thought processes. *Modus ponens* and other inference principles like it are so well integrated with the rest of our thinking - so central to our notion of intelligence and rationality – that contrary principles seem out of the question. As Lear (1982, p. 389) puts it, "We cannot begin to make sense of the possibility of someone whose beliefs are uninfluenced by modus ponens: we cannot get any hold on what his thoughts or actions would be like." Deep-rooted modes of thought such as these are important objects of psychological investigation, since they may well turn out to play a crucial organizing role for people 's beliefs and conjectures- or so I will try to argue. (P. vii-viii)

Is it so unimaginable that we use *modus shmonens*? Consider the following argument:

Either it does not rain or it is not sunny

It rains

It is not sunny

Let us signify the connection *either not ... or not ...* as $\rightarrow$; then the form of this (correct) argument would be

$A \rightarrow B$

A

$\neg B$

It looks like *modus shmonens* – why is it not *modus shmonens*? The obvious answer is that the $\rightarrow$, in this particular case, is not *implication*. But why not? Well, of course we know English, and therefore we know that *if ... then ...* is an implication, while *either not ... or not ...* is not! Well and good, but what makes an expression of English (or, for that matter, of any other language) liable to being called *implication*?

We know very well what an implication in classical logic is. It is a connective behaving in accordance with the well-known truth table: $A \rightarrow B$ is true if A is false or B is true. What is an implication in logic, more generally? An answer could be that it is a connective that is, in relevant respects, similar to the classical $\rightarrow$. (Or, perhaps, that is, in relevant respects, similar to the *if ... then ...* of English?)

In any case, when we want to make sense of classificators like *modus ponens* (hereafter MP) or *modus shmonens* (MS), we must be able to delimit the concept of implication – for to say, as Rips does, that MP is "well integrated with the rest of our thinking", while MS is not, makes sense only if they are both related to *implication*. (Otherwise, we saw, MS would be nothing alien to us!)

When Frege (1879) defined his version of implication, his definition was based on the observation that if $A \rightarrow B$, then it cannot be the case that A is true and B is false. And in fact he elevated this to the *only* case when $A \rightarrow B$ is false, in all other cases it is to be proclaimed true, which made his implication into the traditional material species. Now the condition that if A is true and B is false, then $A \rightarrow B$ is false is equivalent to the condition that if A is true and $A \rightarrow B$ is true, then B is true, which is the condition that finds its expression in the MP rule.

Hence a hypothesis: An operator $A \otimes B$ is an implication only if it complies with MP:

$A \otimes B$

A

B

This hypothesis is not one that can be exactly tested, because it concerns a vague usage, namely the usage of the term *implication*, but nevertheless we may consider its viability. First, is complying with MP a necessary condition for being implication? There could certainly be objections. We could probably find some operator in some logic that is called *implication* while not complying with MP[1]. (But we must keep in mind that we should acknowledge that there may be cases when something has come to be called *implication* not quite warrantedly.) Also there are arguments that *if ... then ...* in English does not comply with MP without exception[2]. But despite all this, I think that complying with MP is reasonably close to being a necessary condition for being an implication[3].

What follows from accepting that being an implication involves complying with MP? Of course, it follows that there cannot be an implication not complying with MP. And consider the scenario sketched by Rips: the extra-terrestrials who use MS instead of MP. What exactly does it mean? One construal would be that it is their *implication* that is governed by MS instead of MP. But we have just seen that this is simply impossible: not because such creatures would be too weird or too hard to imagine – but simply because any concept of implication not complying with MP makes as little sense as the concept of married bachelor. But then the other possibility is that they have an operator, not necessarily an implication, which is governed by MS instead of MP. And this is quite trivial, for we ourselves certainly do have such operators.

What is the upshot of these considerations? It might seem that we are aiming at the absurd conclusion that there can be no errors in logic, that using MS is as good as using MP (for it always carves the operator it involves in such a way that it is correct for it)[4]. But we certainly know that we *can* make errors in logic – and indeed the above considerations should not be read as denying that this is possible. The question, however, is *what kind of error can we make when using* MS *instead of* MP?

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[1] For example, in some paraconsistent logics, what we can infer from A and $A \rightarrow B$ is not necessarily B, but rather either it or a contradiction.

[2] See, e.g., McGee (1985).

[3] Is it a sufficient condition? Imagine an operator producing only sentences that are necessarily false. This operator does comply with MP (albeit trivially). Would we call it an implication? Hardly. Hence it would seem that we need something more than complying with MP to have an operator that could be reasonably called implication – hence complying with MP does not seem to be a sufficient condition for being an implication. (What must be added to it to arrive at the sufficient condition? One candidate might be some version of the deduction theorem: $X,A \vdash B$ only if $X \vdash A \rightarrow B$).

[4] Cf. the well-known *dictum* of Quine (1969): "change of logic, change of subject".

Kinds of errors

In our lives, we pursue many goals, and there are, objectively, ways that lead us to fulfill such goals, while there are other ways which fail to lead us there. If we want to ride a bike, there are ways that get us going and there are ways that lead to our falling down. If we need to cook a good meal, then again there are ways to do it and there are ways to produce something inedible. If we characterize the ways which lead to a success as *correct* and those which do not as *incorrect*, then we can say that any goal 'induces' some rules concerning its fulfillment. Rules of this kind are sometimes called *directives*[5].

Consider a slightly less trivial example. We are to climb a rock face, securing ourselves by a rope fastened around our waist. In handbooks we can find correct and incorrect ways to tie a knot: the former are tried and tested, the latter are precarious and dangerous. If we use the former kind of knot, we are likely to be safe on the rock face; using the latter kind puts us in serious danger of an accident.

Now the situation seems similar with our process of acquiring knowledge – there is the goal of acquiring as many true beliefs as possible - or as many "relevant" true beliefs as possible - and there are correct and incorrect ways of doing this, there is, especially, a correct logic and an incorrect one. The former is likely to get us knowledge, the latter to lead us astray. And while MP is an instance of the former case, MS is that of the latter.

This would imply that using the latter we commit the same kind of error as we commit when we tie the alpinist knot in an unsafe way; but what I am going to argue is that this cannot be the case. To prepare the ground for the argument, let us consider the kinds of errors we can commit in general.

To make an error is to do something otherwise than it should be done or than it is done correctly. Hence, we can say, an error is a deviation from some standard of correctness. What are the standards? There are various kinds; and there are many classifications[6], some more and some less detailed, but what interests us here is merely the distinction between the following three kinds. We employ an *ad hoc* terminology and distinguish between *norms, rules* and *laws*. A *norm* is just a matter of what people normally do. Hence, a norm in this sense of

[5] See, e.g., von Wright (1963). Directives are a somewhat limit case of norms, for it would seem that a norm such as *It is correct to ride a bike in this, and not in that way* can be rephrased as, say, *If you ride a bike in this, and not in that way, you will avoid falling*, which would be a purely factual, rather than a normative, claim; and this would seem to render the normativity of the original claim somewhat dubious. However, here we will assume that such directives can be treated as cases of norms.

[6] von Wright (1963) presents one of the most meticulous classical ones. For more recent attempts see e.g., Brennan et al. (2013), O'Neill (2017), or Svoboda (2018).

a matter of (resonating) regularity. Thus, according to this construal it is a norm to sleep at night or to drive on the right hand side of the road (in continental Europe or in the USA).

But it seems that there are also standards which are not normally followed, say various speed limits for cars. Hence, second, there is a construal of *correct* according to which something is correct iff people take it to be a correct (not necessarily really doing it). We will call this kind of standard a *rule*. (Driving on the right hand side is a rule in this sense, while sleeping at night is not.) And third, there may be standards of correctness that are not instituted by people, but are in some sense absolute (perhaps prescribed by a god or yielded by nature itself). We can call them *laws*[7].

This classification of standards of correctness yields a corresponding classification of errors. In case of a norm, an error cannot be anything else than a deviation, doing something otherwise than it is normally done. Thus this kind of error is always relative to a background normality - my usage may be normal with respect to my other usages, but may be abnormal with respect to the usages of other members of my community. Let us call this kind of error *dissonance*.

Let us introduce a specific word also for the kind of error construed as the violation of a rule, i.e. a standard in the second sense of the word – let us call it *discord*. Hence a discord consists in doing something in a way deviating from what is held for correct. Again, this error is relative to a background, in this case to a background society that endorses the rule – what is correct in one society may be incorrect in another.

Now consider the error construed as the violation of a law (*viz*. a standard of correctness in our third sense of the word). Let us call it a *fallacy*. Fallacy, then, is a violation of an absolute, human-independent law. Are there such laws? If we admit that some goals (related to survival, flourishing etc.) are intrinsic to our existence, then we have an example – the directives aiming at their fulfillment. (Perhaps there are other kinds of standards that are absolute too; I think not, but to argue against this claim would be beyond the scope of this paper. Personally, I do not even believe that there are such intrinsic goals[8].) Hence there may be errors-as-fallacies, things like tying an alpinist knot in the wrong fashion.

However, what I am going to argue for is that again there is a specific kind of standard for which the very possibility of this kind of error is disputable. This kind is of crucial importance, for these are the rules that regulate our symbolic activities, our handling of *meaningful signs*. No sound has a meaning by itself, it must have it in force of being treated in a certain way by

[7] Our introduction of the terms *norm*, *rule* and *law* is purely *ad hoc*. We need to distinguish the three cases and use for it the three terms, without pretending that this would chime with how these terms are usually employed.

[8] See Peregrin (2024, §5.2).

the members of a relevant linguistic community[9] – more precisely by standards set up - mostly implicitly - by the community. These standards, hence, are rules, rather than laws; and their violations are bound to be discords.

Now consider a standard mentioning a me meaningful expression, such as

The streets are wet is inferable from *It is raining* and *If it is raining, the streets are wet.*

If we make use Sellars' notation according to which •*The streets are wet*• is the property (whichever it is) that make the sound *The streets are wet* into the English expression meaning what it does, then we can rewrite this as

The sound being •*The streets are wet*• is inferable from the sound being •*It is raining*• and the sound being •*If it is raining, the streets are wet*•

Now it is quite clear that this a rule, not a law - a sound is •*The streets are wet*•, if, and only if, the speakers of English take it to be so; and it is correctly inferable from other kinds of sounds again if the speakers take it thus.

Consider the standard that it is incorrect to use a sound that is too loud when pointing at a tiger. This is clearly a law - emitting a loud sound in the presence of a tiger is a life hazard; and this is independent of our human matters. Now compare this with the standard that it is incorrect to emit a sound that means that *this is a cat* when pointing at a tiger. At first sight, it may seem quite similar to the previous case - but according to what we have concluded this is not a law, but rather a rule.

The significant difference between the first and the second case consists in that a sound being loud is an "intrinsic" property of the sound, a property which we can detect just by hearing the sound. In contrast to this, the property of meaning *this is a cat* cannot be detected by inspecting the sound itself: this property is not intrinsic to it, it is something that the sound has in virtue of having come to be treated in a certain way by a certain linguistic community. Hence, emitting a sound that means that *this is a cat* amounts to emitting a sound that happens to be treated by a relevant community in a certain way. Thus, it takes the community to have the standard - it is essentially man-made, and hence a rule.

It follows that however strange it may seem, any error concerning meaningful symbols is co-produced by a society.

[9] Note that this is not yet subscribing to the use theory of meaning. This much must hold for *any* theory of meaning. Even a representational theory of meaning must hold that a sound represents something only insofar as it is treated to represent it by the relevant speakers.

Inferentialism

What exactly makes a sound mean that this is a cat? It is, we said, the way it is treated in a certain way by the members of a relevant linguistic community; and an inferentialist sees the "treatment" as, first and foremost, subordination to certain rules[10]. And the rules governing the usage of our words are mostly an implicit kind of rules, they consist in the fact that we usually use the words in certain ways and that we react to not using them so by means of various kinds of 'corrective behavior'[11], which are part and parcel of our *normative attitudes*.

That there must be rules that are not explicitly articulated ("unwritten rules"), on pain of infinite regress, was pointed out by Wittgenstein. (To follow an explicit rule, we must interpret it, and we must do so *correctly*, that is to be able to follow an explicit rule, we must already follow a rule[12].) Such rules, then, must be in some sense implicit to what their adherents do. And their existence cannot be a matter of merely regular behavior (norms in our first sense of the word are not automatically norms in the second sense – the fact that people tend to drive on the right hand side of a road by itself does not mean that there is such a rule); it must consist in the normative attitudes of their followers, attitudes which are manifested especially by some negative reactions to violations of the rules and/or some positive reactions to their following[13].

Of course not everybody must - and those who do need not always - use an expression in accordance with the rules, there may be *dissonances* or *discords*; one may sometimes use a word not in accordance with what she generally takes to be the correct usage, or one may even standardly use it not in accordance with what is taken to be the community's correct usage. Thus one may, sometimes, make the error of not following MP even though one still takes it to be the rule governing the usage of the relevant connective; or one may standardly not follow MP, though this rule is taken to govern the connective in the language of one's community.

However, if a word is to have a meaning for a linguistic community, there must be an overwhelming majority of speakers of the community who agree on the most central rules governing it – for there is no other way for a sound to acquire meaning. It makes little sense to assume that a god or nature supplied the sound with the meaning (without also making the

[10] For a more detailed exposition of inferentialism see Peregrin (2008; 2012; 2014).

[11] Cf. Wittgenstein (1953): "But how does the observer distinguish in this case between players' mistakes and correct play? – There are characteristic signs of it in the players' behaviour. Think of the behaviour characteristic of correcting a slip of the tongue. It would be possible to recognize that someone was doing so even without knowing his language." (§54)

[12] See esp. Wittgenstein (1953, §85). See also Peregrin (2014, Chapter 4).

[13] See Peregrin (2024, Chapter 6). Cf. also the notion of rules as "clusters of normative attitudes" as discussed by Brennan et al. (2013).

speakers endorse the corresponding rules). Of whatever kind other standards might be, those governing expressions are surely man-made – that the speakers of English have subordinated the sound *dog* to a certain kind of rules is clearly a contingent matter, and it would make little sense to assume that a god or nature would dictate that we use this very sound (rather than another) in a certain way. Hence if we violate the rules governing the usage of a word, it cannot be a fallacy (for the rules are not absolute), it can merely be a dissonance or a discord. It follows that using MS instead of MP cannot be a fallacy.

An objection to this might be that though rules governing *words* are man-made, there are rules governing *concepts*, which may be the meanings of the words and for which the argument that they must be man-made fails. True, we can imagine that the concept of implication involves government by *modus ponens*, independently of what people do or want. But this is just a matter of our definition: it is what we decided to call an implication. To be able to matter for what we do, the abstract concept of implication must be instantiated among the objects we are confronted with, such as linguistic expressions. Saying that implication is governed by *modus ponens* is by itself empty; it is only saying that this particular expression is so governed that might pay a role in our lives[14].

But must implication matter for what we *do*? Maybe it matters only for what we *think*! Hence suppose that there is a concept of implication which has nothing to do with any man-made language, perhaps an element of a natural language of thought. What makes it a concept of *implication*, or a concept which it is reasonable to call "implication"? It would seem that in order to warrant the name, it would have to function as a certain kind of amalgamator of "propositions" (non-linguistic surrogates of sentences). But not just any amalgamator would do – it would have to join them so that the result obeys an analogue of MP for propositions (plus some other rules).

And given this, it again cannot disobey MP – for if it did, there would no longer be a reason to consider it an implication. Hence the situation is not so different from the public case – at least not in the respect that interests us. We cannot completely fail to deal with implication correctly, even if the implication is not a public sign, but a private mental content (or, for that matter, whatever): if it is treated too differently from how it should be treated, it simply cannot be an implication.

The point is that concepts such as implication are *functional*: they are individuated in terms of their behavior. Therefore, even if implication were not to be a public symbol, there would have to be *something*, a "symbol" that would display the required behavior. And were this "symbol" to start behaving too deviantly, it might simply lose its relevant identity.

[14] Therefore we can say, as Wilfrid Sellars according to Brandom (2002, p. 27), maintained, that "grasping a concept is mastering the use of a word". But this is not something I will pursue here.

Hence a failure to use a symbol properly cannot be a fallacy. Is it a deviation or a discord? It cannot be a deviation or merely a deviation. The fact that what is in question is a proper or a correct usage indicates the term must be a rule, and a mere norm in our first sense of the word ("normality") is not yet a rule. A rule typically does lead to regularity, but as people need not behave in ways that are in accordance with what they hold for correct, it is not always the case. As we already noticed, many people, for example, regularly exceed speed limits with their cars, while admitting that this is not correct. Hence if I, myself, do not violate the speed limit, then I would be in dissonance with the others, without being in discord with them.

Logic as a public business

It might seem that the upshot of these considerations is that the rules of logic render themselves as akin to rules of etiquette: the only error we can make against them is akin to the error we make when we use a knife and fork in a way inconsistent with the local community's standards. However, surely the rules of logic are of superior significance – and use – than etiquette?

Of course they are; and of course it does not follow from our considerations that this is to be denied. What does follow, however, is that logical constants are brought to life, and to a certain extent kept alive, *by communities*. They are not tools like simple fishing rods that may be produced and used individually; they are more like money that must be underpinned by a certain social consensus. They cannot live without the milieu of a language, and a language cannot live without the milieu of a society.

The fact that concepts like implication, conjunction or quantifier are functional indicates that they must have emerged from the flow of certain practices, where their function might have become established. Moreover, the function of logical constants is a matter of rules; and thus the practices that bore them must have been normative, rule-governed ones. And as Wittgenstein has taught us, rules cannot exist but in a public space, cannot govern but what is publicly available. Hence logical constants, though they may be valuable tools of our thought, must have their origin in public argumentation rather than reasoning as a private business.

The thesis that private reasoning is secondary to public argumentation, needless to say, is controversial. Many philosophers and logicians seem to take it for granted that logic is primarily a matter of thought, that logical constants are expedients of reasoning in the sense of a mental process and that language merely draws them into the public space. However, what brought us to this position? True, pioneers of modern logic sometimes construe the laws of logic as "laws of thought" (Boole, 1854); however, the arguments to the contrary are far from negligible.

First, there are investigations into the historical roots of logic: Dutilh Novaes (2015) concludes that "logic is in fact a normative codification of specific dialogical practices, i.e., the practices having given rise to the deductive method and traditional logic" (p. 607)[15]. Second, there are studies of the prehistory, in particular into the phylogeny of reasoning. In this context, Mercier & Sperber (2017) in their recent book point out an obvious, though no less important fact: "Unlike verbal arithmetic, which uses words to pursue its own business according to its own rules, argumentation is not logical business borrowing verbal tools; it fits seamlessly in the fabric of ordinary verbal exchanges. In no way does it depart from usual expressive and interpretive linguistic practices." (p.172)

How much does language depend on community? One of the threads of the post-Wittgensteinian "rule following discussion", for example, concerns the question how far a Robinson Crusoe, on his island, could follow any rules, including the rules of language. On one extreme, there are people claiming that it follows from Wittgenstein's considerations that he could not at all[16]. On the other extreme, there are people who find this absurd, and take it as obvious that an isolated individual is at liberty to set up rules for herself to follow[17].

A tool that is socially forged may depend, after having been forged, on the support of the society in various degrees. Consider the following kinds of tools:

1. *Money*. The fact that a banknote is useful is essentially underpinned by the fact that the society takes it to have some value. Moreover, its functioning is limited to social exchanges. Hence if a Robinson were to have banknotes on his deserted island, they would be of no use for him.

2. *Gun*. A gun is a product of a society in the sense that it cannot be produced individually (let us disregard marginal cases), but only by a large social collaboration. It can be used individually, but this is limited: Robinson can use a gun as long as he has ammunition (that is also produced socially); once he is out of it, the gun is of no use for him.

3. *Bicycle*. A bicycle is a product of a society in the sense that it cannot be produced individually, but only by a large social collaboration (again, let us disregard marginal counterexamples); but then it can be used individually (suppose that the bike has heavy-duty

[15] See also Dutilh Novaes (2013; 2020). Similar views underlie both the older notion of dialogic logic (Lorenzen & Lorenz, 1978) and the newer crossovers of logic and game theory (van Benthem, 2014).

[16] Kripke (1982), p. 110, for example, claimed that Robinson can be said to follow rules only when "we are taking him into our community and applying our criteria for rule following to him". See also Kusch (2002, Chapter 14).

[17] See, for example, Blackburn (1984).

tires, is equipped with a pump etc.). Hence if Robinson had a bike on his island, he could use it for a very long time.

It is clear that words, and especially logical constants, have a lot in common with money[18]. They too mean something only if they are taken to mean something; and they too primarily function in social exchanges. But words have also a secondary function: they help us think. (In the case of logical constants, as I will argue later, this amounts to bolstering our novel modes of thought, such as the hypothetical mode; in the case of other words it may help us think some particular thoughts about particular things.) And *this* functioning seems less dependent on society than the functioning of money.

It is this secondary function that makes us think not only about the money example, but also about the gun and the bicycle. It would seem that from this viewpoint, words and logical constants are at least comparable with the gun: if somebody learns how to "think logically", then it would seem this is an ability that she could take away with her when she leaves the society which equipped her with it. (The question is whether this ability is "permanent", like the bike, or would fade away like the gun ...)

A more serious moral which is to be drawn from the above considerations is that the rules of logic are not strategic directives advising us what to do with our (ready-made) beliefs, but rather constitutive rules the adherence to which make it possible for us to acquire any beliefs (in propositional form) in the first place. The rules are primarily rules of language games, of games which are constitutive to our logical vocabulary, consequently of the "logical space" we operate in when we reason, and consequently of the very concept of proposition and propositional belief.

Logic as a mold

We have already claimed that public argumentation is not just an externalization of pre-existing private reasoning; that it is more adequate to see private reasoning as an internalization of public argumentation. It follows that thought or at least thought of logically complex thoughts presupposes corresponding public sentences, And hence some linguistic means of articulating logically complex sentences.

We have seen that it is not possible to have a term that is an implication (and, consequently, to have hypothetical sentences) unless one is subordinating the term to MP[19]. But insofar as

[18] See Jorgensen (2009).

[19] I think this is not literally true for we can sometimes articulate hypothetical sentences without "if ... then ....". Instead of saying "If this is put in water, it will dissolve" we can say "This is water-soluble". As I put it elsewhere (Peregrin, 2014, §2.6), sentences of our languages tend to form certain

the very possibility of having hypothetical beliefs is interdepend*ent with the ability to handle hypothetical sentences, MP, far from being an optional way to manage beliefs effectively, is itself the very way to acquire material from which to build (certain) beliefs. However, what certainly *is* possible is not to have implication at all (and hence not to be capable of having hypothetical beliefs).

What is the difference between a creature with, and a creature without, the concept of implication? It would seem that the difference is significant. To be able to have hypothetical beliefs – to be, as it were, able to have conditional thoughts – represents a vast development in one's cognitive gear. Hence to operate 'within' the rules of logic means to acquire a powerful cognitive upgrade. This means that to follow the rules of logic *is* useful – though useful in a different way than sketched at the start of this paper.

What holds about hypothetical propositions holds much more generally about propositions in general. Rules of logic, taken together, are not only responsible for there being logically complex propositions, incorporating the individual logical operators constituted by their rule, but more generally propositions at all. For what is a proposition? What kind of entity is reasonably given this name?

It would seem that a proposition is something that has a contrary that can be conjoined with other propositions that can imply other propositions and can be implied by them. Thus, I would say that just as what it takes to be a physical object is to be located in space-time and causally interact with other objects, what it takes to be a proposition is to be located in 'logical space' and to be interconnected with other propositions by logical relationships. If this is true, then there can be no propositions without logical rules – the rules *forge* the propositions just like the rules of chess forge the pawns, rooks and bishops.

Hence the picture according to which there is a straightforward analogy between tying knots in certain ways and climbing mountains safely on the one hand, and following the rules of logic and acquiring true beliefs on the other, is amiss. When we reflect on the meanings of logical constants and acknowledge their inferential dimension, we can* see that the rules of the kind of MP are not *tactical* or *strategic* rules that would advise us what to do (and what not to do) with our beliefs – and nor is it correct to see them as "deep-rooted modes of thought". They are rather *constitutive* rules, which equip us with certain *kinds* of beliefs (in the case of MP, especially *hypothetical* beliefs) and also with (propositional) beliefs in general. It follows that the picture of having been fortunate in having fallen upon MP, among so many other alternative modes of thought, is untenable – we cannot systematically disobey MP, for this

inferential structures and "we use logical vocabulary to refer to certain distinguished vertices of the structures." The vertices, however, may exist in the language before the corresponding logical word is introduced.

would mean that we would forfeit the concept of implication* – and not having implication, we cannot deny MP either, for MP concerns nothing else than just implication.

This does not mean that evolution has not equipped us with certain exclusive epistemological powers; however, these powers cannot be understood as using correct rules like MP, rather than their fallacious variants. What evolution equipped us with is the very concept of implication and the hypothetical mode of thought with which it goes hand in hand. To be sure, there may be rules for an efficient employment of implications, rules different from the constitutive ones, but these are not the rules logic is usually engaged with.

The rules that are *constitutive* of meanings, *viz*. the rules making the sounds we emit into *meaningful expressions* (in the way the rules of chess make wooden pieces into *kings*, *rooks* or *bishops*) are regularly mistaken for rules *regulating* the usage of meaningful signs. Many rules for using meaningful signs do *not* tell us *what to do*, and hence the picture of choosing the best of them as a means to achieve a desired end (like having an adequate knowledge of the world) is misplaced. The rule that a particular wooden bishop should move only diagonally applies to the piece of wood only because it is a bishop, and it is a bishop only in so far as it is taken to be subordinated to the rules of chess (in the relevant way); hence the situation is not such that first we have the piece, then we have a spectrum of rules of what to do with it, and then we have to choose the most desirable rule. The rule that this piece is to be moved only diagonally is not better or worse than the rule that it is to be moved in some other way; what substantiates its adoption is that it co-constitutes the role of bishop, which, in cooperation with the other roles, makes up the amazing game of chess.

Similarly, the sound *if ... then ...* is governed by MP only in so far as it is an implication, while it is an implication only if it is taken to be subordinated to MP. Hence rules like MP cannot be seen as something we manage to fall upon among many possible alternatives – they are not "modes of thought" that would lead us to our cognitive ends in better or worse ways. We may accept them (which, in the case of MP, amounts to acquiring implication), or fail to accept them; but their usefulness for us is not a matter of them alone, but rather of the holistic web of rules of which they are part and which supplies us with c*ertain useful 'cognitive tools'.

Conclusion

Davidson (1984) famously argued that though anything a speaker claims may be false, it cannot be the case that everything, or almost everything, she claims is false. His reason, roughly, is that to make a false (or, for that matter, true) claim presupposes that the claim is meaningful; and one can make meaningful claims only if what one claims is mostly true. There is no other way to equip one's utterances with meanings save to systematically produce utterances that generally accord with one's environment and that are in this sense true.

Now our argument has a lot in common with Davidson's, save for the fact that we are not only claiming that one cannot be a speaker/thinker without most of one's assertions/beliefs being true, but also, over and above this, claiming that one cannot be a speaker/thinker without endorsing some particular inferential rules, which open up, for one, several modes that determine the peculiar kind of thinking that we humans entertain. It is these rules that unlock what Sellars (1956) called *the space of reasons*, the space which nourishes propositions and that thus lets us think in their terms.

It follows that a rule such as MP is not one among many possible ways of weaving our beliefs together – the way we have fortunately discovered to be optimal. It is rather something that co-constitutes our gateway into our peculiar kind of thinking and reasoning – that helps give our thought its 'logical dimension' and thus makes us capable of reasoning in the first place.

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