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NATURALIZING MATHEMATICS AND NATURALIZING ETHICS

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ABSTRACT

I offer several reasons for rejecting naturalism as a philosophical viewpoint or program envisaged for two paradigm cases: the case of mathematics and the case of ethics. Semantical, epistemological and metaphysical similarities between the two are investigated and assessed. I then offer a sketch of a different way of understanding the nature of mathematical difficulties and that of ethical puzzles.

KEY WORDS

Philosophy of mathematics ; ethics ; evolutionary ethics ; ontology ; metaphysics ; naturalism ; natural facts ; causal inertia ; values ; abstract objects ; mathematical knowledge ; truth ; pleonastic theory of truth.

1. The point of this paper is to present and criticize in very broad terms a contemporary trend in ontological thinking consisting in an attempt at naturalizing two traditional areas of philosophical investigation: mathematics and ethics. The trend applies today to a wide array of areas of study ; it is indeed growing in strengh and scope, but I shall only be concerned here with these two. The problems and puzzles raised by the prospect of naturalization aren't limited to ontological matters, i.e. to claims about what there is. There are also epistemological and methodological worries, but since the conference is devoted to the stakes of contemporary ontological thinking, I shall focus, either directly or indirectly, on the metaphysical. The leading question then is: what must we countenance in terms of objects, or properties, or relations, or in terms of some ontological category or other, with respect to both mathematics and ethics, should we choose to naturalize such areas of inquiry? Moreover: does the project yield a plausible account of mathematical and ethical truth, and of mathematical and ethical knowledge?

Whenever we take ontological or metaphysical disputes into consideration with the prospect of naturalization in mind, it is worth distinguishing between two kinds of doctrines[1].

According to one kind of doctrine, everything which exists is natural. Just as Thales claimed that everything is water, and just as Anaximenes and Diogenes claimed that everything is air (*Aristotle 1941 ed. : Bk. I, Ch. 3, 983^{b}20—984^{a}11*), the advocate of naturalism claims that everything is nature or that everything is natural. If, rather than claiming

[1] I shall use the adjectives "ontological" and "metaphysical" interchangeably.

that reality is one in this sense, i.e. with one single αρχη, primary cause or simple body generating everything there is — as Thales thought was the case with water or humidity and Anaximenes and Diogenes with air —, the naturalizer deems it advisable to carve out reality in some way or other, he shall claim that everything there is, whatever its category, belongs to nature or is part if nature. The leading metaphysical or ontological claim is still that there is only one kind of reality, viz. natural reality, but the naturalizer now insists that seemingly different items are, at bottom, made of the same stuff. No matter what ontological categories we should resort to in order to carry out the carving — events, properties, individuals, processes, relations, facts, etc. — we shall end up claiming that every event is natural, every property is natural, and so on… In other words, in all cases under consideration, there is nothing *un*natural or *non*-natural, nothing outside or over and above nature, nothing of a different order or kind. The view has been defended with respect to particular kinds of items, e.g. ethical facts, and the argument is then that since all facts are natural facts and since there are ethical facts, all ethical facts are natural. (See e.g. *Sturgeon 1988*: 239. I shall go back to this.)

There is another kind of doctrine, which is just as general and pertains to epistemology, according to which everything which exists *may*, at least in principle, fall at some level under the scope of some appropriate natural science, either physics, or chemistry, or biology, or genetics, etc. The naturalizer is then claiming that there isn't anything, at least in principle, which wouldn't be reducible to the kind of facts which are studied, described and predicted by the natural sciences, either at the most general level (physics), or at a more specific level (say biology or

genetics). In a somewhat stronger version, the naturalizer will move on to another modality and claim that everything there is *must*, at least in principle, be investigated by some natural science. This "must" is sometimes conceived as expressing a rational obligation or maxim so that reality, or what there is, must be understood *exclusively* in this scientific way. This is at least a matter of methodological ideal in the sense that we should always do our best to subsume whatever we shall have recognized as existing, as constituting reality, as part of the furniture of the world, under natural laws.

In most discussions of the ins and outs of naturalism, the very broad metaphysical thesis and the very broad epistemological thesis are presented together so as to form an argument, with the first thesis in the role of premise and the second thesis in the role of conclusion: since everything that exists is natural, or is part of nature, everything, either effectively or in principle, comes under the jurisdiction of some natural science (see, e.g., *van Kerkhove 2006*: 15*)*. In these very same discussions, one is rather keen on contraposing, so that if no natural science has so far been able to subsume objects belonging to some ontological category or other (event, property, etc.), under its laws, then such objects simply don't exist[2]. An immediate consequence of the contraposition is that our previous ontological claims are indeed unwarranted. We must at best regard them as mere *façons de parler*. They are nothing more than metaphysical illusions. Such objects aren't and shouldn't be part of our general ontology.

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[2] In this instance, I am using the word "object" in an informal and most general sense, not in the more restricted sense of an ontological category distinct from that of properties, events, etc.

Mental events provide a typical example: we may have naïvely thought there were mental events or processes, when all we may help ourselves to are electro-chemical processes in the brain, i.e. natural events to be studied by the natural sciences (see, e.g., *Armstrong 1968* and *Kim 1966*). According to a variant of functionalism, even if there were no strict psycho-physical laws (as opposed to *ceteris paribus* laws) which would legitimate the reduction of the psychological to the physical, either type-type or tolken-token, it must be in principle possible to "read off, from a person's physical organization and state-tokens, a whole mental life" (*Loar 1982* : 24-25.) Another example is that of semantic facts, the fact that certain sentences of a public language are true, or mean what they mean. A physicalist will claim that such semantic facts or properties are to be countenanced only insofar as they are not *irreducibly* semantic. If sentences which ascribe semantic properties such as truth and meaning are true, then the truths they state must be explained, and indeed explained *away* in physicalist or neutral terms (see, e.g., *Schiffer 1982*). The leading idea in this particular case is to look for a reduction of the semantical to the psychological and of the psychological to the physical, so that we shall end up with strictly physical properties, i.e. properties which may be understood and analyzed by the most fundamental natural science, viz physics.

In all such cases and despite crucial differences, it is claimed that certain facts or states of affairs are natural, and this means or entails that they are reducible to facts or states of affairs coming under the jurisdiction of some natural science. We find ourselves in a situation where, contrary to what Strawson argues for in the case of perception — visual perception in particular — there is no such thing as a *plurality of*

real properties, corresponding to the various ways in which we look at reality, or to the diverging conceptions we may form of it, and which would all be equally valid (*Strawson [1979] 1988*: 110-112). Let us for instance consider the case of colour from the eliminativist standpoint: the eliminativist may go as far as claiming that colour sensations as such do not exist. Under this kind of strong construal, there is nothing distinct from neural codings, nothing but brain states. The denial of qualia then assumes an extreme form for it outwardly rejects any residual subjective states which would be distinct from such codings, and this means or implies that our visual experiences do not even constitute an additional contingent subjective extra which wouldn't fall under some natural law. The idea here is that there are no sensory qualities and no mental events *at all* (see *Tye 1992*). In this respect, naturalism strongly converges on physicalism, perhaps even on some form or other of scientism, at least as far at the categorical denial of the kind of position Strawson is defending for visual perception is concerned. It might not be strictly speaking equivalent to it, but it certainly goes in this general direction.

2. Let us now leave ontological considerations as such on the side for a while and let us look directly at epistemology. There is a doctrine, which is methodological in nature, that advocates of naturalism have inherited from Quine: the doctrine of naturalized epistemology.

Quine's original claim is that epistemology, or the theory of knowledge, must lose its old status of first philosophy. The business of epistemology is not to theorize on the foundations of science, or to reconstruct science in some way or other. It is legitimate insofar as it is a chapter of psychology, i.e. a chapter of natural science. It is indeed

nothing if not a natural science so that the traditional roles are reversed:

> The old epistemology aspired to contain, in a sense, natural science; it would construct it somehow from sense data. Epistemology in its new setting, conversely, is contained in natural science, as a chapter of psychology.
>
> *Quine 1969* : 83

Maddy in the philosophy of mathematics (*Maddy 1990* ; *Maddy 2007*) and Sturgeon in ethics (*Sturgeon 1988*: 248) have adopted that stance. A number of philosophers agree that the epistemology of the empirical sciences is itself an empirical science (see *Boyd 1988*: 191-192).

Quine's original target is the rational reconstruction of science from sense data *à la* Carnap (*Carnap 1928*), but Cartesian foundationalism could easily be another one since the Cartesian project is to take a philosophical truth, established by a purely philosophical argument, as the rational basis for the whole structure of knowledge. Husserl's phenomenological viewpoint must also be rejected by the advocate of naturalized epistemology. Within the limits of what Husserl calls the "natural theoretical attitude", the horizon of all possible investigations is "the world". Nature, in this sense, is identical to spatio-temporal reality (*Husserl [1913] 1982*: Book 1, §1 ; Book 2, §§1-3) :

> Sciences of the world, thus sciences in the natural attitude, the sciences of *material* nature, but also those of animate beings with their *psychophysical* nature, consequently also physiology, psychology, and so forth, are all so-called *natural sciences* in the narrower and broader sense.
>
> *Husserl [1913] 1982*: Book 1, §1, p. 6 <8>

There is therefore no place here for a science of pure essences (see *op. cit.* : Book 1 : §3) and Husserl concludes :

> [The scientific *investigator of Nature*] observes and experiments; that is, he ascertains *factual existence* according to experience; *for him experiencing is a grounding act* which can never be substituted by a mere imagining. And this is precisely why science of *matters of fact* and *experiential* science are equivalent concepts. […] After the foregoing, it is clear that the *sense* of eidetic science [i.e. the science of pure essences as opposed to the science of contingent facts] *necessarily precludes any incorporation of cognitional results yielded by empirical sciences*.
>
> (*Husserl op. cit.*: §7, p. 16 <17> ; §8, p. 17 <18>)

As a general rule, any extra-scientific or trans-scientific point of view which would impose philosophical desiderata on the natural sciences must also be rejected. Such a point of view has been criticised, e.g. by Putnam:

> [I]t is silly to agree that a reason for believing that *p* warrants accepting *p* in all scientific circumstances, and then to add 'but even so it is not *good enough*'. Such a judgment could only be made if one accepted a trans-scientific method as superior to the scientific method; but this philosopher, at least, has no interest in doing *that*.
>
> *Putnam 1979*: 356

This is exactly what the advocate of naturalism also refuses to do. If we look at the case of naturalism in mathematics as put forward by Maddy, naturalism consists in

> […] the simple Quinean idea that we should not expect to view science from some extrascientific perspective, that we should instead judge science by the standards of science itself.
>
> *Maddy 1990*: 620

For Maddy (*Maddy 2007*), philosophy of science is either a one-level or a two-level affair. Whenever we adopt a one-level perspective, we distinguish questions which come up from within scientific practice from those we ask as philosophers. Typically, questions of ontological commitment and justification of beliefs emerge once answers have been provided to questions born and raised within the precincts of scientific practice. Two kinds of questions typically surface: "What are the ontological commitments of a particular science?" and "Are we justified in believing, or believing literally, what a given science, at first blush, claims is the case?"

Carnap has famously criticized this way of proceeding, in particular with respect to the first kind of question, by means of a distinction between answers to internal questions and answers to external questions. We ask *internal* questions whenever we ask *within a particular linguistic framework* whether entites of a given kind exist. We ask *external* questions whenever we ask, outside any linguistic framework, whether a system of entities or objects, taken as a whole, exists, or is real (*Carnap [1950 ; 1956] 1983*: 242). If we ask the internal question whether or not numbers exist, the answer may only be positive (*Carnap op. cit.:* 245), but when we ask that same question independently of any framework, we ask a pseudo-question devoid of cognitive content. Carnap notoriously thought we may not make any progress with respect to such questions, for there is just no relevant evidence or data which

could enable us to settle the matter (*Carnap loc. cit.*: 254-255).

In the case of ethics, the advocate of naturalized epistemology will look at moral explanation, and in particular at the explanatory relevance of moral facts, in the following way :

> I am addressing questions about the justification of belief in the spirit of what Quine has called "epistemology naturalized". I take this to mean that we have in general no a priori way of knowing which strategies for forming and refining our beliefs are likely to take us closer to the truth. The only way we have of proceeding is to assume the approximate truth of what seems to us the best overall theory we already have of what we are like and what the world is like, and to decide in the light of *that* what strategies of research and reasoning are likely to be reliable in producing a more nearly true overall theory. One result of applying these procedures, in turn, is likely to be the refinement or perhaps even the abandonment of parts of the tentative theory with which we began.
>
> *Sturgeon 1988*: 248

Suppose we adopt a one-level position. Does this indicate with sufficient accuracy which method, or perhaps which range of relevant methods we should adopt at this one level when looking for justifications for our beliefs? In the perspective of naturalized epistemology where, in Maddy's phrase, philosophy is second, we are trying to justify our beliefs — in whatever domain — in naturalistic terms. Can we offer a rationale for this choice without already presupposing that every piece of knowledge, every justified belief, possesses as it were *de facto*, an empirical base? Can there be a garantee that all internal considerations will side with empiricism, that everything

we should believe in the long run of our investigations is never to be found and ascertained by means of considerations or arguments by which we would consider the natural sciences from some extra-scientific or trans-scientific point of view? Haven't we aready given some epistemological value or primacy to the causal model of perceptual knowledge? In other words, to use Putnam's terminology, is the (ideal) consideration of the totality of scientific "circumstances" enough to reject the possibility of an acceptance of *p* which would *not* fit in the empiricist or naturalized framework?

3. It is important at this point to distinguish between two projects. One is to account for the *content* of knowledge or of justified belief in naturalistic terms, i.e. without ever postulating any non-natural or non-causal ingredient of content. Another one is to account for the processes by which we acquire such knowledge or belief so as to never appeal to non natural or non causal *processes* in the explanation or justification of the acquisition of content. The naturalizer may want to defend two distinct claims: that what we know or justifiably believe, i.e. the very content of knowledge, is natural, and that the cognitive capacities we must resort to in order to grasp such content is also natural. These two projects are marred with notorious difficulties both in the case of mathematics and in the case of ethics. We may look at each situation with the help of charts, one for mathematical knowledge, one for ethical knowledge.

I shall first indicate the position which the naturalizer *must avoid*. I shall then try to determine under which conditions the other boxes of the charts might be appropriately filled out.

CHART 1

MATHEMATICS	Natural Acquisition Processes	Non-Natural Acquisition Processes
Natural Content	Full-Blooded Naturalist Position	
Non-Natural Content		Full-Blooded Anti-Naturalist Position

CHART 2

ETHICS	Natural Acquisition Processes	Non-Natural Acquisition Processes
Natural Content	Full-Blooded Naturalist Position	
Non-Natural Content		Full-Blooded Anti-Naturalist Position

I shall not talk about anti-naturalist positions. Let me just mention a few famous ones pertaining to our two cases so that we get an idea of how we could properly fill out the bottom right squares.

With respect to mathematics, Plato argued in the *Meno* that the slave has in its soul true thoughts about things which he ignores but nevertheless comes to believe justifiably by reminiscence. Such, e.g., is the thought that one must begin with the diagonal of a square in order to duplicate its surface. The thought has always been there in the slave's soul. It is brought back to life and full consciousness through the process of questioning, testing and examining (*Meno*: 85c-86a). The soul has always known this, it has learned it in some non-human temporal

dimension, therefore through processes which may not be properly called "natural" (although perhaps the processes through which the content comes back to consciousness could be natural).

Poincaré, in a completely different frame of mind, argued that mathematical induction (as opposed to empirical induction), or proof by recursion, was an irreducible and *sui generis* mode of reasoning (*Poincaré [1894] 1903*). Interestingly enough, Poincaré appeals to mathematical induction in order to avoid the following dilemma: if mathematical propositions could be obtained by an application of the deductive rules of formal logic, mathematics would be a rigorous science but it would also reduce to a mere tautology. So its rigour must come from somewhere else, *namely from some unique and specific mode of reasoning which yields contentful results*, and this is provided by induction and recursive methods. One may also think of Brouwer's creative subject, which isn't a natural or psychological subject, but rather an highly idealized one. The mental proofs of Brouwerian intuitionism have no natural content and are not grasped by natural processes. No science of nature could contain a psychology of the creative subject in the way Quine believes natural science contains psychology (with epistemology as one of its chapters.)

As for ethics, one may well think of Plato again, for whom the Good, or the Good in itself, as a non mental, non natural and external Form, may not be grasped by anything akin to a natural process or a causal contact. In another frame of mind, Kant, for whom a rational being gives himself or herself a necessary moral law, certainly may not admit that he or she could come to grasp either the law or its necessary character through any cognitive means or process which could be studied

empirically. In a still different frame of mind, Richard Price for whom the good and the bad, the just and the unjust, are attributes or real qualities of actions, conceives the understanding or grasp of these attributes as a form of perception, albeit a perception of the intellectual faculties. What we have here are clear examples of modes of cognition which typically resist naturalistic construals or reductions and are utterly incompatible with the naturalistic project.

4. I hope it is clear by now that two key notions are at stake in this very broad presentation: the metaphysical notion of abstract object and the semantic notion of truth. To begin with, we have this notion of causally inert objects and properties, of things we cannot, not even indirectly, examine through perception — say sight —, not even through perception with the additional help of some technical apparatus. Abstraction is understood here in terms of causal inertia: anything we may not be causally connected to is deemed abstract. The challenge of naturalism is to give an explanation of how we can acquire and develop a knowledge of seemingly or putatively abstract objects.

Secondly, both in the case of mathematics and in that of ethics, our statements may, at least at first blush, be true. They are typical truth-bearers. They appear to possess what Wiggins has called the marks of truth, or the marks of assertability (*Wiggins 1980*). Wiggins lists five. I shall need only the first three for present purposes :

> MARK 1. The assertibility (hence truth) of a sentence is the primary dimension of its assessment.
>
> MARK 2. A sentence is assertible (hence true) if and only if its content is such that, with respect to it, there should be a

tendency, under favourable conditions of investigation, for disagreement to diminish and for opinion to converge in agreement.

MARK 3. 3a. Any sentence which lacks the property of assertibility (hence of truth) lacks it independently of a speaker's means of recognizing it. 3b. Any sentence which possesses the property of assertibility (hence of truth) possesses it independently of a speaker's mean of recognizing it.

Let us now consider the following sentences as fairly typical examples:

(1) There are prime numbers greater than 17.

(2) Eating animals is wrong.

Suppose the naturalizer wishes to explain how we could get to know that (1) without appealing to "exotic" capacities. He will have to appeal to some kind or other of natural cognitive abilities bearing natural relations to the content of mathematical knowledge. Ideally, the explanation will have to appeal to non-causally inert entities and properties at three different levels: (*i*) that of the cognitive resources of the agent, (*ii*) that of the relations between the cognitive acts grounded in such resources and the cognitive content, and (*iii*) that of the content as such.

Traditionally, legitimate imputations of knowledge will be captured by the following schema :

[K] X knows that *p* [is true] iff there exists some causal relation between X and the referents of the names, predicates and quantifiers occurring in *p*.

A possibility which has been explored for the mathematical case consists in construing the justification for a mathematical belief so that it depends on the causal reliability of the processes through which it has been formed (*Goldman 1986*). According to this conception, a mathematical theorem is indeed made true by abstract entities with which we cannot have any causal contact. The objects, concepts and properties of mathematics may nevertheless be represented by symbols with which we do have a causal contact by means of our ordinary perceptual and cognitive abilities. An agent may learn how to prove a theorem if and only if he or she possesses (*i*) perceptual abilities unabling him or her to identify numerical or algebraic formulæ and geometrical forms, (*ii*) storage capacities, in order to memorize the proof's steps (there might be many), and (*iii*) the ability to perform deductive inferences, i.e. to draw conclusion from premisses.

Goldman thus distinguishes primary epistemology from secondary epistemology: the former studies the infra-individual psychological processes of belief formation, the latter studies proof procedures and algorithms. In such a naturalist perspective, a mathematical belief is justified just in case *both* the primary cognitive processes involved in the learning and mastery of proof procedures and algorithms *and* the procedures and algorithms are reliable. The role assigned to the use of primary psychological processes is crucial: mathematical beliefs are *fully justified* just in case these processes are reliable. The primary cognitive processes are hard-wired in the human cognitive architecture: choosing the wrong algorithm and falling short of mastering algorithms are grounded in failures of the primary processes. Justification is thus a two-level affair: it is a function of the reliability of the algorithm (i.e. of the

very fact that is yields the expected results) and of its cognitive penetration par whoever will be using it. A belief is justified if and only if these two conditions are fulfilled. Notice that the content itself *isn't* natural: objects and properties are abstract (although the acquisition processes are not). In order to obtain a fully causal theory of the kind advocated by, e.g., Benacerraf (*Benacerraf [1973] 1983)*, we must add a causal theory of reference for mathematical terms to the causal model of perceptual knowledge.

The perceptual model has also been advocated in the case of moral knowledge, so that to know that (2) (or perhaps the negation of (2)), amounts to the perception of natural properties.

Boyd, e.g., proposes the following:

> [I]f we adopt a naturalistic conception of moral knowledge we can diagnose in […] people a deficit in the capacity to make moral judgements somewhat akin to perceptual deficit. What I have in mind is the application of a causal theory of moral knowledge to the examination of a feature of moral reasoning which has been well understood in the empiricist tradition since Hume, that is, the role of sympathy in moral understanding.
>
> *Boyd 1988*

This brings about an asymmetry between the case of mathematics and that of ethics, which we may represent by partly filling out of our previous charts in the following way:

CHART 1

MATHEMATICS	Natural Acquisition Processes	Non-Natural Acquisition Processes
Natural Content	Full-Blooded Naturalist Position	
Non-Natural Content	*Perception of symbols for abstract objects such as formulæ, diagrams and geometrical forms ; storage capacities ; deductive abilities.* (*Goldman 1986)*	Full-Blooded Anti-Naturalist Position

CHART 2

ETHICS	Natural Acquisition Processes	Non-Natural Acquisition Processes
Natural Content	*Perception of moral goodness construed as a perception of a cluster of various goods causally linked and unified by a process of homeostatis or mutual reinforcement which may be observed and empirically tested. (Boyd 1988)*	
Non-Natural Content		Full-Blooded Anti-Naturalist Position

5. There are two kinds of strategies addressing the question of truth worth considering in this context: the replacement strategy and the deflationist strategy. The first contends that we may do without truth and

replace it with conservativeness (*Field 1980*). The second purports to show that truth is redundant or pleonastic so that the appeal to true thoughts, true sentences and true assertions is innocuous (*Schiffer1990*). The first one proposes the following formulation of the principle of conservativeness: Let *A* be any assertion expressed in a nominalistic language (i.e. a language containing no reference to and no quantification over abstract entities), let *N* be a set of assertions belonging to a nominalistic language and let *M* be some mathematical theory; then *A* may not be a consequence of *N* + *S* unless it is a consequence of *N* alone. *N* + *S* is thus a conservative extension of *N*.

Field's recourse to the notion of conservative extension as an alternative to truth has been much criticized, but I want to focus here on a feature which has received little attention, namely the relation between conservativeness and causal inertia. It seems to me that a good way to get the gist of the nominalist strategy is to look at the contrast Field draws between the elimination of theoretical entities such as electrons and that of numbers:

> The attempt to eliminate theoretical entities of physics (e.g. electrons) from explanations of observable phenomena is not likely to be possible without bizarre devices like Craigian transcriptions; it is also not likely to be illuminating even if it is possible, because electrons are causally relevant to the physical phenomena they are invoked to explain. But even on the platonistic assumption that there are numbers, no one thinks that those numbers are causally relevant to the physical phenomena: numbers are supposed to be entities existing somewhere outside space-time, causally isolated from everything we can observe. If, as at first blush appears to be the case, we need to invoke some real

> numbers like 6.67 x 10^{-11} (the gravitational constant in $m^3/kg^{-1}/s^{-2}$) in our explanation of why the moon follows the path that it does, it isn't because we think that that real number plays a role as a *cause* of the moon's moving that way; it plays a very different role in the explanation than electrons play in the explanation of the working of electric devices. The role it plays is as an entity *extrinsic to the process to be explained*, an entity related to the process to be explained only by a function (a rather arbitrarily chosen function at that). Surely then it would be illuminating if we could show that a purely intrinsic explanation of the process was possible, an explanation that did not invoke functions to extrinsic and causally irrelevant entities.
>
> *Field 1980*: 43

The leading idea is that what allows us to explain, say, electrical phenomena *also causes* electrical phenomena, so that we should in general follow the methodological principle that, *underlying every good extrinsic explanation there is an intrinsic explanation*. One may attempt to draw a parallel with the case of ethics along the following lines.

Let us suppose that we try to explain why eating animals is wrong (example (2) in section 4). Either what explains that some injustice is thereby committed also plays a causal role in the occurrence of that injustice, or it doesn't. In the first case, we end up with an intrinisc explanation, in the second case with an extrinsic one. It seems that the naturalizer who picks up ethics as his field of study must be looking for explanations of an intrinsic kind so that, say, the injustice or wrongness done to animals is the causal result of natural facts, and so that the ethical disagreement over the question of knowing whether or not we may eat meat must be settled by getting a good understanding of these

facts. In any event, it is hard to see how the advocate of naturalism could argue in favour of an explanation of why some injustice is being committed when one eats meat which would invoke some divine command, or an obligation with respect to creatures possessing an immortal soul. (We expressed this in full generality in section 1 by saying that the naturalizer claims there is nothing over and above nature, nothing of a different order.[3]) Just as the nominalist argues that we may dispense with the abstract objects implied in extrinsic explanations, i.e. the arbitrary functions, rest frames and so on, one refers to in a mathematical language, the ethical naturalist must argue that we may dispense with divine commands, a priori justified laws and indeed anything one refers to or quantifies over in most ethical discourses.

The second strategy countenances the notion of truth but claims to do so at no ontological or epistemological cost. Just as there is a pleonastic use of the word "true", there is a pleonastic use of the words "fact", "property" and "proposition" according to which the doctrine that there are moral facts (see *Sturgeon 1988* in sections 1 and 3), or moral properties, or moral propositions, may be accepted by anyone who is ready to make moral judgements (so, except perhaps by the advocate of amorality or by the moral skeptic). It is acceptable because one may resort to these notions in order to express one's moral beliefs without committing oneself to the existence of moral facts, moral properties and moral propositions. Suppose someone believes eating animals is wrong.

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[3] One may nevertheless want to look at Rawls's attack on naturalism in *Rawls 2009*. In that perspective, a naturalist is someone who underestimates the gap between nature and mind, or nature and soul. In Rawls's view, Augustine and Aquinas end up being naturalists just because they take God to be part of nature. The comments by Robert Merrihew Adams on Rawls's suggestion are particularly relevant here.

Anyone expressing that belief by claiming that it is a fact that eating animals is wrong, or that the consumption of meat has the property of being wrong, simply reaffirms his or her belief in some pleonastic way (*Schiffer 1990*: 602).

The argument purporting to show that ethical propositions containing occurrences of ethical terms are true in a innocuous or pleonastic way is the following. Typical fact-stating sentences like "Eating animals is a source of protein" and moral sentences like (2) have the same semantic status. Believing is a relation between subjects or agents and the referents of the subordinate propositions introduced by "that", which specify the content of belief. According to the so-called pleonastic theory of propositions, the singular term "that eating animals is wrong" cannot fail to have a reference. Why isn't it liable to reference failure? Because we cannot distinguish between "that" clauses so that some have a referent, say "that eating animals is a source of protein" when others don't, typically "that eating animals is wrong". Moreover, according to Schiffer, ethical predicates do not have instantiation conditions. The argument, at this point, relies on some kind of Armstrongian conception of properties according to which properties are mere shadows of predicates (*Armstrong 1989*: 78), or perhaps on the conception that to be a property is just to have the *grammar* of a property (Boghossian quoted by Schiffer in *Schiffer op. cit.*: 604).

To summarize where we got so far: any meaningful predicate *F* has its nominalization, i.e. "the property of being *F*", which may not fail to have a reference. But although a predicate has a referent, the property thereby designated may not be instanciated, not because there are no genuine or intrinsic moral properties, but because of disagreements between users of

the moral language. Therefore, since there are disagreements with respect to the conditions of correct use or application of the predicate "wrong" occurring in (2), there are no instantiation conditions for it and no truth-conditions for ethical claims like (2). In other words, we countenance the existence of *non instantiated moral properties* in order to conclude that, since we have moral convictions we hold to be true, we are quite systematically mistaken in our moral presumptions. Just as Mackie thought, we quite systematically fall into error[4].

6. It will be interesting at this point to look at a particular kind of ethical naturalism known as evolutionary ethics and to inquire into its relation to the notions of truth, justification, objectivity and the like. As Ruse rightly remarks (*Ruse 1993*: 35-37), the label "evolutionary ethics" is applied to many different theories, some of which pertain to some form or other of social darwinism while others conceive evolution as an ascending process towards the specifically human (see *Spencer [1857] 1868* and *Wilson 1978*). The general idea is that since the organic world is prey to an internal struggle whose end result is natural selection, and since we are, as human beings, a product of the organic world, we should quite easily understand that (*i*) we struggle in order to survive and natural selection is merely the expression or the result of that struggle, and that (*ii*) *the struggle is a perfecly legitimate state of affairs*. The justification rests on the consideration that this constitutes a way — as a matter of fact the *only* way — to further the survival of the human

[4] For Mackie, of course, ethical statements express beliefs which *may* have a truth-value, either the true or the false, although *none*, as a matter of fact, are true (*Mackie 1977*: ch. 1).

species. To the objection inherited from Moore (*Moore 1903*) that one commits a fallacy when arguing from premises acknowledging facts (natural selection) to an evaluative conclusion (natural selection is a good thing) or to a normative one (we should promote natural selection), the advocate of evolutionary ethics argues in favour of both conclusions *by appealing to the very fact that we are ourselves a product of natural selection*, so that we are indeed in a case where the exception to Moore's objection is itself legitimate (*Ruse 1993*: 41). Pushing on with this kind of reasoning, we could perhaps claim that such legitimacy is *itself* a product of natural selection.

Ruse amends the traditional defense of evolutionary ethics by introducing the notion of random mutation. Natural selection is not, as it were, trying to reach a particular end it will get at only in the very long run; it aims at short term ends such as immediate survival and reproduction. Moreover, mutations involved in evolution aren't a product of the particular needs of the individuals who are subject to evolutionary change. This is what "random" means. The sense of good and evil and the sense of moral obligations are end products of natural selection and of its action by way of random mutations (*Ruse op. cit.*: 44). Let us look at the paradigmatic case of altruism. An organism exhibits an altruistic behaviour if and only if it behaves to the advantage of another organism without expecting benefits in return, or by exposing itself to disadvantages and even to danger. In this context, "altruistic" is ambiguous: it has a metaphorical meaning (because the organism exhibiting the behaviour lacks intentionality and doesn't believe its actions are altruistic), and a technical one. "Altruistic" must therefore be followed by the adverb "biologically", "biologically altruistic" being

then synonymous to "enclined to social cooperation"[5]. Biological altruism is hard-wired, i.e. biologically innate. It is not conscious, it is not the object of propositional attitudes such as beliefs, desires and intentions, and it isn't the end product of social upbringing or group pressure. Since humans have limited resources with respect to reproduction (we reproduce less than social insects such as ants), the extension of what is hard-wired is necessarily limited (*Ruse op. cit.*: 50). Secondly, evolution has built us as imperfect calculating machines. Why? Because the time it takes to compute the best conclusion or the best outcome for our actions is much too high. So we are neither hard-wired all the way, nor ideally rational. We're somewhere halfway between pure hard-wiring and rational, conscious omniscience. This leads the advocate of evolutionary ethics, as an advocate of one particular kind of naturalized ethics, to put forward an argument about truth, justification and objectivity, i.e. an argument concerning the notions at stake in the philosophical discussions we've been considering. We may reconstruct this argument as an argument from unwarranted objectification in the following way (*Ruse 1993*: 62):

> **PREMISS 1.** Morality works (i.e. people follow moral norms) if and only if people really believe it has an objective foundation.
>
> **PREMISS 2.** Morality works if and only if people objectivate it in Mackie's sense (equivalent to **PREMISS 1**).
>
> **PREMISS 3.** We believe our ethical norms are objectively true because our biological makeup forces us to believe it.

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[5] See *Dawkins 1976* for a discussion of many relevant examples in relation to the reproduction of genes.

CONCLUSION 1. We may not *conclude* our ethical norms are objectively true.

CONCLUSION 2. Objective morality is superfluous.

CONCLUSION 3. Such superfluity is a good thing.

The argument would have us believe that, from the cunjunctive fact that we are part of the process of evolution *and* that we inevitably ask questions about its meaning or *raison d'être* (as creatures enclined to metaphysical speculations), it follows that we quite naturally think of ourselves as being at the very end of that process, that evolution and natural selection are directed towards us (although, if scientists are to be believed, in a random way). There is as it were a kind of necessary illusion of *an objectivity which is favourable to us*. Although we agree that normative ethics is the result of natural selection, we nevertheless still insist that it must benefit from an objective foundation. We find the idea that it is a natural fact resulting from natural random processes hard to accept.

There are two possibilities. Either we read "objectively true" in PREMISS 3 and CONCLUSION 1 along the lines of the pleonastic theory, or we read it as meaning "true independently of the means we have at our disposal to acknowledge that it is" (see MARK 3b in section 4. and *Wiggins 1980*). In the first case, the (meta-ethical) conclusion according to which moral objectivity is superfluous (CONCLUSION 2) is in some sense already contained in the premisses and we have no genuine argument. The denial of moral objectivity would be a mere effect of the pleonastic character of "true", or of its use, even though we have taken care to qualify "true" with the adverb "objectively". In the second case,

we reach *in fine* a substantial conclusion (CONCLUSION 3) to the effect that although the notion of moral objectivity is superfluous, we are conditioned to believe that the objectivity of moral truths could very well be unaccessible to us, maybe because of the kind of perceptual deficit Boyd is concerned with (see section 4. and *Boyd 1988*). But this places us in a delicate situation, epistemologically speaking. We end up with a contradiction, or something quite close to that, i.e. in a situation where we have a reductio of the claim that ethical statements could be true whether or not we have the means at our disposal to discover that they are, i.e. a reductio of realism in Dummett's sense as applied to ethical discourse, just because *we also know* that the objectivity is superfluous.

7. There might be a better way of conceiving the nature of difficulties in disciplines such as ethics and mathematics, a more convincing way of understanding why it is so difficult to find a general proof of Goldbach's conjecture or to make up one's mind about the practice of eating meat in argumentative fashion. If we adopt an *internalist* perspective, according to which the knowing mind relates only to what it establishes, we may very well be baffled by the difficulty of mathematics. Since the mind only retrieves or stumbles upon its own creations, why should it have to struggle at all, let alone struggle with yet unsolved problems? In the *externalist* perspective, the mind discovers something which is entirely distinct from itself and when it does, it does so piecemeal. Struggle is then quite expected: we toil with problems because we discover an external reality little by little, as we would discover some yet uncharted continent. (We are back to the most metaphorical expression of

platonism.) But externalism has a price: mathematical knowledge is then a matter of access to suprasensible entities and one must accordingly explain how such knowledge is possible. (We must remember that in Goldmanian epistemology, we do not have a full-blooded naturalist position, but only a partially naturalist one since the contents which are grasped are indeed non-natural (see CHART 1 in section 4). Likewise in ethics: if we give ourselves moral truths or moral imperatives, why should there be so many disagreements, and if grasping them is an empirical matter, which empirical methods are suited to the task? In particular, how do ethical facts and properties, qua natural facts and properties, fit in a general picture where facts and properties traditionally recognized as such by the natural sciences also play a role? Some philosophers claim that although ethical properties are metaphysically natural, it doesn't follow that we should try to express or rephrase our moral assertions in naturalistic terms (see *Sturgeon 1988*: 240). In any event, the problem is still to give a plausible account of how the facts and properties interact (albeit without resorting to reductive definitions of moral terms and assertions).

Oumraou has recently looked at the case of mathematical knowledge and argued in favour of a new kind of internalist position according to which (*i*) the internalist hypothesis *doesn't* imply a better or greater accessibility to mathematical objects and (*ii*) objective mathematical contents contain the cause of their difficulties, so that the explanation of why mathematics is so difficult is to be found in the very nature or content of mathematical propositions and not in the limitations of cognitive abilities directed towards an external reality (*Oumraou 2009*). It might be helpful to consider ethical puzzles and disagreements in the

same way. In the case of ethics, some philosophers have denied that moral dilemmas may have a solution. From the emotivist point of view, the attempt at justifying emotional reactions requires the appeal to second-level emotional reactions which take the original emotions as their object, so that more and more emotions are called into play. For the advocate of the pleonastic theory, disagreements come from the fact that moral agents may mean the same thing when using an ethical term *and* still use diverging criteria for its correct application. Although "just" refers to a determined and fixed moral property, the term may not have instantiation conditions. Neither position yields a satisfying explanation of the nature of ethical difficulties. The advocate of the pleonastic conception, in particular, ultimately relies on a "thin" metaphysical conception of moral properties as mere shadows of moral predicates which implies that opponents in ethical debates are mistaken about the very content of the disputes. To begin with, it is much too strong to require that anyone objecting to a moral judgement, or ranking criteria, does so by reference to the fixed extension of moral predicates. Moreover, if propositions of ethics may not be true, except in a pleonastic sense, it is hard to see how they could be justified with the help of the relevant epistemic notions which constrain truth in the anti-realist perspective.

Obviously, there are numerous cases in which it is particularly difficult to come up with a good argument in ethics. The interesting cases are those in which incompatible beliefs (*i*) do not rely on fallacious arguments, (*ii*) are not held on the basis of one or more refutable beliefs, moral or otherwise, and (*iii*) are such that no extra argument could justify a choice. The internalist perspective requires us

to look for contents and justifications which are not always or necessarily transparent, but which may neverthless yield an explanation of why there are difficulties in the first place. It might turn out to be more promising to explain such difficulties through the analysis of content, than to impute them to our cognitive limitations.

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