L. LAUDAN'S THEORY
OF SCIENTIFIC AIMS

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I will comment on Laudan's theory of scientific aims, but first I will briefly summarize Laudan's meta-methodological position, in order to get a clear view of the role assigned to scientific aims in such standpoint.

Larry Laudan has proposed in *Science and Values*—and in more recent texts—a meta-methodology of science, which attempts to avoid relativism by providing a rational justification for the methodological and axiological aspects of scientific change [1]. Laudan argues that if relativism is to be avoided, then cognitive aims, theories and methods should be capable of rational adjudication [2].

Laudan believes previous philosophers such as Popper, Carnap, Hempel and Reichenbach "opened themselves up to the relativist challenge" either because these philosophers considered the methods of science a matter of convention, or because they thought the aims of science are selected by 'volitional decisions', or because they thought the only thing one could rationally ask of a set of cognitive aims is for this set to be internally consistent [3].

Laudan tries to provide a rational account of the development of science through a reticulated model in which justification is multidirectional [4] and in which scientific theories, methods and aims can change during the history of science [5]. Temporarily accepted methods justify the

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theories of the day, and are justified by temporarily accepted aims. These methods, in their turn, can also be changed by factual theories, while empirical theories and methodological rules also constrain the set of rationally possible cognitive aims. Hence, there is a mutual and typically non-simultaneous adjustment and justification among factual theories, methods and ends. Moreover, none of these three levels constitutes an ultimate, or even a favored or more solid, ground.

Rationality is for Laudan about searching for good reasons to believe that one is following the most effective means for the attainment of certain ends that one has chosen. This view of rationality implies that the methodological rules of science are elliptical means-ends injunctions, 'hypothetical imperatives', of the form: *if you value or desire 'A', then you should do 'X'*. And since experience informs us which are the best means for our chosen ends, then methodological rules are fallible, amendable and improbable via past or present experience.

Now, if Laudan's new view is to avoid relativism, then he must tell us how to rationally select the *desiderata* in the conditionals' antecedents, the cognitive aims 'A'. If on the contrary the As, the aims of science were not themselves rationally selected, if any cognitive aim were as legitimate as any other, then these arbitrary aims could endorse any conceivable methodological rule. And these arbitrary rules could in turn legitimate any substantial theory, thus opening the gates to a radical cognitive relativism.

A 'scientific' creationist, for example, could propose as the central aim of science that of finding explanatory theories consistent with a literal reading of the Old Testament. And if this cognitive aim were to be scientifically legitimate, scientists would have as central endeavors the search for, and elimination of, inconsistencies between scientific theories and Biblical texts. Scientists would then have as an important scientific goal the search for an accurate translation and reading of the Old Testament. Creationism's central aims and methods, however, would disqualify contemporary geology, paleontology and evolution theory while endorsing the Genesis account.

Laudan himself admits that his reticulated view needs to be supplemented by a theory of legitimate aims—an "axiology" as he himself calls it.

> (...) radical relativism about science seems to be an inevitable corollary of accepting (a) that different scientists have different goals, (b) that there is no rational deliberation possible about the suitability of different goals, and (c) that goals, methods, and factual claims invariably come in covariant clusters.
>
> But here a crucial flaw appears, for what is being assumed is that a rational choice between alternative sets of internally consistent sets of cognitive goals is always impossible. This assumption, I believe, is false, not always, but in a sufficiently large range of cases(...) It is false because ...there is a wide array of

critical tools which we can utilize for the rational assessment of a group of cognitive aims or goals. (Laudan, 1984, p. 50.)

Laudan has given in *Science and Values* some hints on how to develop such an axiology. I will explore Laudan's suggestions on how to decide rationally between competing scientific aims, and I will comment on whether Laudan's suggestions can avoid relativism.

I. LAUDAN'S THEORY OF AIMS

Laudan hinted in *Science and Values*—and in other more recent works[6]— that our scientific aims can sometimes be rationally appraised [7] by asking that they satisfy the following constraints:

I.1. Laudan *requires that scientific goals be jointly consistent.*

> It is true that I stress that inconsistent or incoherent aims ought to be rejected, but so should similarly afflicted rules and theories. (Laudan, 1990b, p. 51.)

Therefore, deductive logic works as an absolute constraint in Laudan's meta-methodological proposal.

I.2. Laudan *requires scientific goals to be non-utopian, a requirement alleged to follow from a means-ends perspective of rationality.*

> To adopt a goal with the feature that we can conceive of no actions that would be *apt to promote it*, or a goal whose realization we could not recognize even if we had achieved it, is surely a mark of *unreasonableness and irrationality.* (Laudan, 1984, p. 51)(Emphasis added.)

Laudan believes that if one is means/ends rational then one cannot have 'utopian' aims, because utopian aims would be of no help in selecting means. He believes rational aims should help us in selecting the best means to attain these rational aims, something that cannot be done by impossible, obscure, or unrecognizable goals. Laudan is hence allegedly only making a conditional recommendation against utopian aims (*if you want to be rational, then avoid utopian aims* [8]). A goal can in turn be 'utopian' in three ways:

I.2.1. A goal might be *semantically utopian*:

> Many scientists espouse values or goals that, under critical challenge, they cannot characterize in a succinct and cogent way. They may be *imprecise, ambiguous, or both.* Such familiarly cited cognitive goals as simplicity and elegance often have this weakness, because most advocates of these goals can offer no coherent definition or characterization of them. (Laudan, 1984, p. 52.)(Emphasis added.)

The concept of science itself may provide for Laudan another example of a semantic utopian concept.

I.2.2. A goal might be *epistemically utopian*:

> It sometimes happens that an agent can give a perfectly clear definition of his goal state and that the goal is not demonstrably utopian, but that nonetheless its advocates cannot specify (and seem to be working with no implicit form of) a *criterion* for determining *when the value is present or satisfied* and when it is not. (Laudan, 1984, p. 53.)(Emphasis added.)

Notice that there is an ambiguity in this last quote, since it is not clear what to understand by a 'criterion'. Is a criterion something everyone in a scientific community is to agree on? Must the criterion be infallible? Can the desired criterion be intuitive? If a criterion for the attainment of a goal were lacking, would it be enough instead to have a criterion for deciding when one approximates the goal? A criterion could well be fallible and intuitive.

I.2.3. In addition, a goal is *demonstrably utopian* when,

> it *cannot possibly be achieved*, given our understanding of logic or the laws of nature... (Laudan, 1984, p. 52. Emphasis added.)

It would be utopian, for example, to aim in an infinite or immense cosmos, for certainty about empirical universal statements. And one way to find out whether some goals are non-demonstrably utopian (that is, achievable) is to search the historical record to see if our goals have been, and therefore can be, achieved. This irrespective of whether they were consciously sought or were merely unintended consequences of some actions. On the other hand, if the historical record shows that a sought after goal has not ever been achieved, then this goal could be unachievable or merely very difficult to attain.

I.3. *Finally, Laudan proposes as another constraint on scientific goals that these goals should be consistent with the canonical achievements of a successful scientific discipline.*

Laudan's constraints of non-utopianism and mutual consistency for scientific aims let in too much, that is, even if these constraints were to be sought and satisfied, one could still end with "scientific" aims that are surely ridiculous, such as:

Look for theories in agreement with a literal reading of the Old Testament! Or, gather data at random! Or, seek false theories!

Laudan therefore further narrows the spectrum of possible cognitive aims by requiring that any proposal for new scientific aims must also be able to capture, to re-describe, most of the canonical achievements of any successful scientific discipline.

> ... any proposals about the aims of science must allow for the retention *as scientific* of *much* of the *exemplary work* currently and *properly* regarded as such. (Laudan 1996, p. 158. Emphasis added.)

Also, the proper achievements of any scientific discipline are judged by some implicit "pre-philosophical" pragmatic canons of scientific success.

> Scientists' judgments as to the *success of a scientific* practice depend not on abstract epistemological and methodological matters but on palpably *pragmatic* ones (...) Thus, a medical practice is successful or not depending to the degree to which it gives its initiates the ability to *predict* and to *alter* the course of common diseases. An astronomical practice is successful to the extent that it enables one to *anticipate future positions* of planetary and celestial bodies. A theory of optics is successful if it can (say) *predict* the path of a light ray moving through various media and optical interfaces.
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> ... If my suggestion that there must be a *prephilosophical notion* of empirical success—which is not itself beholden to controvert epistemic or methodological doctrines—seems controversial, we might ask how it could be otherwise[9]. (Laudan, 1996, pp. 148-9. Emphasis added.)

Laudan's "prephilosophical" pragmatic canons are cognitive goals such as empirical prediction and control, and these canons judge what is scientifically *proper*, they judge what is scientifically successful. If Laudan, however, is to avoid relativism he should justify as valuable these standards of success, and to avoid relativism Laudan should also justify the high weight he gives to his pragmatic canons [10].

Furthermore, the following questions arise: how "much of the exemplary work" is enough to retain? What of the 'exemplary work' must be retained, and what may be omitted? Moreover, is what Laudan and many of us think of as 'exemplary work' (say, the work of Newton, Maxwell, Einstein) really exemplary [11]? And if so, why and according to which criteria? And how do these criteria get justified?

II. ARE LAUDAN'S RECOMMENDED CONSTRAINTS FOR COGNITIVE AIMS ADEQUATE?

I will illustrate many of the following criticisms with examples from non-cognitive ends [12], because we are often better acquainted with these other goals, and hence they provide a useful and clarifying analogy. There are thus analogies between cognitive aims such as the search for verisimilar scientific theories, or to aim at simple or elegant scientific theories, and non-cognitive aims such as the 'pursuit of happiness [13]', the search of wisdom, or the craving for love. The analogy resides in that all of these goals, both cognitive and non-cognitive ones would be for Laudan semantically and/or epistemically utopian, that is, these goals are imprecise (these goals are to a big extent intuitive) and we lack a litmus test or criterion of satisfaction for all of them.

On the other hand, there are also analogies between a non-cognitive aim such as perfect social justice and a cognitive aim such as complete

truth, or full objectivity, concerning some scientific discipline. The analogy resides in this case in that both of these aims cannot be achieved ('given our understanding of logic or the laws of nature') and so these goals would be, for Laudan, demonstrably utopian.

If it were to be argued that examples involving non-cognitive aims are misconceived because Laudan's theory is intended only for cognitive aims, then one would expect these critics to argue why analogies can't be drawn between these two types of aims.

Laudan does not offer any argument of why his requirements for cognitive aims cannot be asked of non-cognitive aims. Laudan doesn't explain why what is asked of rational cognitive goals cannot be asked of the non-cognitive rational ends. In other words, why would it be rational for a Laudanite to have utopian non-cognitive aims? The ball is in these putative critics court.

It is hoped that examples involving non-cognitive aims will have Laudan admit what he denies as rational in the case of cognitive aims.

I will first comment *ambulando* on Laudan's recommendations against 'semantic' and 'epistemic' utopianism (II.1.1–1.3); then I will dwell upon Laudan's injunctions against 'demonstrable utopianism' (II.2-3), and I will conclude by criticizing Laudan's injunction in favor of his pragmatic canons (II.4-5.)

CRITICISMS OF LAUDAN'S THESES
ABOUT SEMANTIC AND EPISTEMIC UTOPIANISM

II.1.1. *Laudan overvalues precision when excluding as rational (because of their being semantically utopian) imprecise and/or ambiguous goals.*

It is a common place that one should not attempt to be more precise than the subject matter demands; one is as precise as the problem before us requires. Thus, it is not reasonable to look for conceptual precision for its own sake. For example, when dealing with everyday life problems we do not go after pedantic precision in concepts such as money, agent, institution, state, person, and duty. Furthermore, the search for precision can conflict with the search for epistemic virtues such as clarity and simplicity, because the search of precision will require extra terms and concepts. We should be only as precise as the problem in hand requires. Otherwise, we may end burdened with obscure and complex conceptual schemes, a situation that can be an obstacle to further theoretical developments [14]. If the solution of a problem were to require, however, of more precision, then the search for precision would be legitimate. This was the case with the Tarskian formalization of the concept of truth, a formalization that was needed, at least partly, because the intuitive notion of truth led to logical problems such as the 'Liar paradox [15].'

On the other hand, there is no such thing as absolute precision (as Popper has pointed out [16]) because all definitions in order to avoid circularity or an infinite regress ultimately depend on primitive terms. Being finite creatures, our understanding and characterization of our concepts will always leave some imprecision [17]. Full precision or exactness is an impossible task (a demonstrably utopian goal) and if so, the concept of precision itself cannot be absolutely precise. Therefore, precision itself is 'semantically utopian'. And according to Laudan's own recommendations a rational agent shouldn't seek a goal such as precision. We may then have to resign ourselves to only grasp an intuitive extent of important philosophical or meta-scientific concepts and goals, concepts such as verisimilitude [18], Kuhn's scientific paradigm, degree of fertility [19], theoretical simplicity and elegance, the concept of science, and the goals and concepts of justice, beauty, the good.

II.1.2. Truth *is for Laudan an epistemically utopian aim only because Laudan's criterion of satisfaction is too exacting.*

Laudan thinks that truth, understood as correspondence, is an example of epistemic utopianism [20]. Therefore, this author believes truth is an irrational scientific goal, this despite the fact that the search for truth has been the explicit aim of many scientists [21], and despite the fact that we do have strictly fallible, but nevertheless strong criteria, for determining at least when truth is absent.

For the absence of truth we have criteria such as inconsistency and empirical refutation, and for the presence of truth, we have plausible and fallible criteria such as empirical success. We have at least fallible criteria for the presence or absence of rational belief, where rational belief is belief that has been justified as true. We cannot, though, maintain that "if you form a rational belief then it will be true", the most we can assert is that,

> according to all the relevant evidence, there are good reasons to think that a rational belief is true. (This is precisely what 'rational belief' means.)

Thus, in everyday life, if we have good reasons to believe a statement to be true, then we consider this statement as putatively true except if there were some good reasons to the contrary. For example, if I see somebody approaching at a distance that looks like some friend of mine, then I assume it is true that my friend is approaching—unless I had some good specific reason to doubt it such as my previous knowledge that she has gone abroad.

Laudan argues [22] that in the case of science this last situation is precisely the case. He argues that there are reasons to doubt that empirical success and truth are linked in the case of scientific theories. Laudan denies that one can explain the empirical success of scientific theories in terms of the truth-likeness of the ontological claims of scientific theories. He argues

that the history of science shows that many empirically successful scientific theories of the past although they were successful at different times and for long periods are now thought to be wrong about their ontological claims. Therefore, by a simple meta-induction we conclude that our present successful scientific theories (hence our *prima facie* truth-like scientific theories) will be shown eventually to be ontologically false. Laudan's argument, however, has been criticized [23]. The criticism is, very briefly, as follows:

Laudan's concept of empirical success is too weak and therefore on Laudan's terms scientific success is too easy to achieve. If we define, however, empirical success properly [24], then empirical success provides a fallible criterion of ontological truth, where genuine empirical success, however, provides a truth criterion only for the ontological claims mainly responsible for the success in question. In other words, the argument is that the genuine empirical success of past scientific theories did not depend on what we now believe to be their false ontological claims, but it depended on what was truth-like in their ontology. And it is claimed that this truth-like portion in the ontology of past successful scientific theories has been retained in subsequent scientific theories.

II.1.3. *Laudan's prescription against 'semantically' and 'epistemically' utopian aims is unjustified because it often happens that one doesn't know, at least consciously, what one is aiming at, and still one can approach obscure goals by the 'via negativa'.*

One can aim at a goal as a sleepwalker, thus, many have tried to reach fuzzy goals even if they had to strive for them half in the dark. For instance, when one longs for somebody, it often happens that one does not really know what it is that one desires. It is easy to confuse a longing for love, beauty, immortality, transcendence, self-knowledge, or companionship with sexual desire [25]. Thus, a personal relationship could start because of the search for fulfillment of a supposed erotic desire, just to discover that this desire is only an aspect of what we are really looking for. One discovers that the original longing was for something more than sex. What precisely that *more* is, it is something we cannot clearly express, it is a *je ne sais quoi*.

Arthur Rimbaud describes such a search in his dreamlike poem "Le Bateau ivre" where he portrays the journey of a seer in a tipsy boat, this navigator seer is on a search for some unnamed goal that he only glimpses. Luis Buñuel has also portrayed such a situation in his *Cet obscur objet du désir*.

Such ends, due to their obscurity, are likely to be both semantically and epistemically utopian. That is, goals like these cannot be characterized in a 'succinct and cogent way', and/or we do not have a 'criterion' for determining when we have reached them. Hence, Laudan would disqual-

ify aiming at them as irrational. Still, one hopes to approach an intuitive goal, by struggling to eliminate what it is not. We may try to approach the glimpsed aim by following a *via negativa à la* Popper, a *via* that is as fallible as any other strategy. One hopes, for example, to promote intuitive goals such as wisdom or verisimilitude [26] by striving—in the first case—against cases of foolishness, or by struggling—in the second case—to reduce error. And one follows the *via negativa only because* one values, only because one desires, the obscure positive goals.

<div align="center">CRITICISMS OF LAUDAN'S RECOMMENDATION
AGAINST DEMONSTRABLY UTOPIAN AIMS</div>

II.2. *Laudan's prescription in favor of non-demonstrably utopian aims is ambiguous.*

An ambiguity becomes apparent when the paragraph quoted at the beginning of section I.2 is compared to that quoted in section I.2.3. While in the first of these quotes a utopian goal was characterized as one that could not be promoted by any actions, in the second quote a utopian aim was characterized as one that is impossible to achieve. But a goal such as social justice or the whole truth about some discipline would not be utopian, according to the first characterization, since we rationally believe that we can come nearer to them, that we can "promote" them. But on Laudan's second characterization both these goals would be demonstrably utopian—given our understanding of human frailty and finitude they are *stricto sensu* unachievable.

This ambiguity about the nature of utopian goals may be the result of confusion in what Laudan understands by means/ends rationality. Laudan says in one place that a methodological rule is rational if it *promotes* some valued cognitive end(s), just to add in the next page that a rule is rational if following it is more likely than its alternatives to *produce* the valued end(s) (cf., Laudan 1987, pp. 24-5.) There seems then to be a confusion between promoting and producing some valued result. It seems that Laudan has conflated two different types of goals as 'demonstrably utopian':

i) Valuable goals known to be both impossible to attain and to approach.

ii) Valuable goals known to be impossible to attain, but yet known to be approachable or promotable [27], I will call these last type of ends ideal goals.

I will concede to Laudan that it may be irrational to accept valuable goals that are both impossible to attain and to approach (a rather uncommon kind of goal) [28], but I will argue—*contra* Laudan—that ideal goals can be adopted rationally.

To call ideal goals irrational is like asserting that if it is impossible to fully attain some valuable goal, then we should forsake this goal. This

would be akin to a tantrum: "either I know I can fully get what I desire, or I don't care about it." On the other hand, Laudan's advice against demonstrably utopian goals may be cogent in a situation in which one has only one possibility: complete failure, without the possibility of partial deficiencies, without intermediate options. In such a hypothetical situation, if the valuable goal sought is known to be unreachable, and if this goal is also known to be unapproachable, it might then be rational to resign ourselves and look for another goal. In the case of ideals, however, we don't have such a radical situation, although ideals are strictly unachievable, they can still be approximated. There are often intermediate states between not achieving the utopian goals at all, and fully achieving these goals.

Ideals can be rational objectives if we understand means/ends rationality as the attitude of someone that searches for the warranted optimum means for the attainment of or approximation to his valued aims. Means/ends rationality then only requires that our means be at least conducive to our aims, it does not require that the rational means actually deliver the aims. Means/ends rationality excludes impossible, but promotable aims as rational only if it is understood narrowly, as Laudan sometimes seems to do. This exclusion happens only if means/ends rationality is understood as requiring that if rational we should look for strategies that *take us to our goals*.

Laudan's lack of discrimination between the previous two types of demonstrably utopian goals turns his injunction against demonstrably utopian aims into an 'imprecise' and 'vague' recommendation. Laudan's injunction against demonstrably utopian goals is then itself 'semantically utopian', and Laudan's theory is self-referentially inconsistent.

II.3. Idealists *aiming for valuable and strictly impossible goals (though promotable ones) have been praised by legions, and these idealists have been admired precisely because of their idealism. Laudan's disqualification of ideal aims is counter-intuitive, since it contradicts these widespread historical value intuitions.* Laudan says:

> we *customarily* regard as bizarre, if not pathological, those who earnestly set out to do what we have very strong reasons for believing to be *impossible*. (Laudan, 1984, p. 51. Emphasis added.)

Perhaps we customarily judge thus, when considering common goals, but one is not governed by customary judgements, when assessing extraordinary cases. Thus, the epithets of bizarre, pathological, or unreasonable, are frequently withheld if the impossible but promotable aim sought is considered to be extremely valuable. In such a case the subject (or generations of subjects) who struggles, or who is thought to struggle, after ideal

aims will not be called mad or bizarre. He (they) will instead be considered an idealist, a hero, a martyr, a courageous man, a saint.

The revered individual has often been the tragic idealist who aims at impossible, but promotable goals, even if this idealist has to take arms against a sea of troubles, and even if during his lifetime he cannot prevail. The standard reading of Socrates' conduct after his trial provides a well-known example of idealist conduct. Socrates chose to stay in Athens even after the death penalty had been pronounced against him. Socrates didn't flee (which he could have done) because he allegedly thought that the correct thing to do, was to be self-coherent, to be true to himself, to be true to his sense of justice, and to obey his city's laws [29]. Now, full personal also intellectual integrity is an impossible aim because of human frailty, and because its full attainment would require of full self-knowledge, its full attainment would require of no self-deception, of any inner hypocrisy. Still Socrates had it as an aim, and he was ready to sacrifice his life for this aim. Would we call Socrates irrational by aiming at this end [30]?

Laudan may likewise say that all those Christians that have aspired to be like Christ, and have aimed at a *perfect* Christian life are irrational, *qua* religious persona; an example would be Saint Francis. Laudan may disqualify Francis as irrational [31] because to strive towards perfection is irrational. It is irrational because we cannot expect human perfection. Still Jesus asks his followers to seek perfection:

> Therefore you shall be perfect, just as your Father in heaven is perfect. Mathew 5: 48

The various Christian Churches, for example, advice their faithful to struggle for the ideal of Christian marriage and also these Churches recommend the paradoxical looking norm: "love thy enemies", even though these Churches must be fully aware that perfection is humanly impossible to attain.

Laudan may argue that while he excludes impossible goals as rational, he is not excluding as rational some achievable goal close or similar to the unattainable one. He may argue that many admired idealists supposedly striving after an impossible aim were really striving for less ambitious achievable goals. He may argue that these idealists were really striving for goals close to or analogous to the impossible one.

However, this let out doesn't work: we try to reach ideals, because any specifiable attainable aim would be palpably deficient as a substitute of the ideal goal. For instance, if we substitute the ideal of a perfect Christian life for an attainable goal such as a less than perfect Christian life, the substitute goal loses much of its appeal or value. Thus, we aim at the ideal even if we know we are condemned—as Sisyphus—to always fall short of the ideal aim.

Besides, how much personal integrity, or virtue, or justice, or truth, or Christian perfection, would be rationally sufficient or appropriate? Since there is no cogent way of specifying in advance how close, or how far from, or how similar to the ideal is good enough, we aim for the ideal itself.

A Laudanite might argue that all the previous examples of 'idealists' are wrong, because all the individuals mentioned were not genuine idealists. He could argue that all of these individuals were not really striving after demonstrably utopian aims, but were rather trying to satisfy their vanity, or were looking for power, or for some other non-utopian goal. But even if this were the case, these individuals have been admired because they have been believed to be idealists. In other words, the argument here only needs to assume that idealist behavior have been widely held to be admirable [32]. This common esteem for idealist behavior appears to contradict Laudan's epithet of "irrational" or "pathological" for idealist conduct, and this even if we were to grant that idealist conduct has never been genuinely exemplified by anyone.

Laudan's proscription of ideals as irrational contradicts what we know about common human valuations and behavior. It contradicts what we know about the conduct of admired idealists, as well as what we know about the behavior of the admirers of idealists. Laudan's advice contradicts our understanding of persistent regularities, in this case, those regularities relating to the behavior and valuations of at least a significant portion of humanity: idealists and all those that admire idealism. These psychological regularities could well be the result of one or more subjacent psychological laws of nature. If so, Laudan's recommendation against demonstrably utopian aims is itself under suspicion of being 'demonstrably' utopian. Laudan's recommendation is suspect of being precisely what it condemns, then Laudan's anti-utopianism is suspect of being self-referentially contradictory. Laudan's meta-methodology is also under suspicion of having too exacting standards.

If not, consider the following set of three theses:

i) With Laudan, sustain that idealist behavior is irrational.

ii) Notice that in our culture 'irrational' is a term with derogatory implications of foolishness or madness, and

iii) Consider the empirical fact that through history there have been idealists [33] aiming at valuable impossible goals, and consider the empirical fact that many of these idealists have been widely admired *qua* idealists.

This set appears to be incoherent, since from (i) and (ii) one concludes that idealists are foolish, or crazy, and this conclusion clearly clashes with (iii). One could try to escape this incoherence through one of the following options:

a) Conclude that the term 'irrational' whatever our *de facto* social use says is not a term of disapproval or abuse. However, to conclude this one would have to ignore an empirical fact.

b) Assert that idealists aiming for valuable ideals—whatever their numerous admirers have said—are not admirable *qua* idealists, and are even despicable. It is counterintuitive, however, to say, for example, that Socrates search for intellectual and personal integrity was "bizarre" or "pathological" (cf., first quote in this section).

c) Conclude that the search for very valuable, strictly unattainable, but promotable goals is rational. Since a world without such utopian goals would be for many an impoverished world, and if such utopian goals were irrational, then full rationality wouldn't be desirable for these many.

Still this argument is somewhat weak. We only know that the set of theses (i)-(iii) is incoherent, but logic does not tell us which of these theses to give up and which to adopt. Below, I will give some further arguments for adopting option (c). Although, none of the arguments below taken in isolation will be conclusive, their synthesis may carry considerable weight.

II.3.1. *Laudan's recommendation against ideal aims is in fact a prescription for intellectual and moral complacency, for mediocrity.*

Laudan's recommendation against ideal aims discourages us from aspiring after excellence, cognitive or otherwise. Laudan's recommendation is contrary to a traditional virtue: courage, a virtue necessary to lead a good life. Laudan's advice substitutes courage with conformism and stoic resignation. For Laudan a conformist or resigned slave would be rational. But a frustrated idealist—such as Spartacus—who would not conform, say, because of his aspiration after an impossible but promotable aim such as perfect social justice would not be rational.

Laudan seems to have confused success, expediency, with the struggle to do the right or correct thing. For Laudan, success understood as the procurement of attainable goals is the ultimate goal. Success is Laudan's idol. But success cannot be the ultimate standard, it cannot be the ultimate value, because we can always ask: is the success sought (i.e., the accomplishment of the attainable goal) right? Is the success sought just? Is the success sought worthwhile? Is the achievement sought desirable or valuable? For example, if the aim sought is reliable predictions or control of nature, we often think of it as undesirable, if to achieve it, human or animal suffering is required. This is shown by the restrictions on human medical experimentation and by the ongoing debate on animal experimentation.

In addition, pyrrhic victories, and unjust victories (in the case of these last, as shown by the ongoing debate on 'just war') are often thought undesirable. And we may even value a defeat, an example is provided by

the battle of Kosovo that Serbs—and their Hungarian and Albanian allies—lost in 1389. And yet this defeat has been hallowed by Serbs for centuries "in several great heroic ballads [34]" possibly because it is believed that in that lost battle some ideal value was sought or defended (say, liberty, or honor). Analogously we sometimes also value failed past theories (failures as judged by Laudan's pragmatic canons of scientific success) because these theories suggested new perspectives or problems, possible examples of such theories are those of Aristarchus and of ancient Atomism.

II.3.2. *The fact that ideals are humanly impossible to attain, and that one can only approach ideals, provides paradoxically a powerful psychological reason for striving after valuable ideals; striving after valuable ideals can create an enduring emotion of self-respect.*

Open-ended valuable goals can be more fulfilling because they permit us to move forward, because the journey is often more rewarding than reaching the destination.

The idealist aims for ideals because he wants to keep on improving his accomplishments, because he believes in the perfectibility of life on Earth. Ideals help him in avoiding self-complacency. Ideals provide aspirational goals, regulative ideas, which guide the idealist's imagination, which guide his hopes and energies, even if the idealist cannot ever fully expect to achieve his ideals. In the case of the search after non-utopian goals, one often suffers a letdown when one achieves these goals, and after one experiences the resulting transitory pleasure: what else is there [35]? It is continued hoping and continued striving that propels a person through life, this psychological fact, supplies one reason for aiming at ideals. Thus,

It is better to travel hopefully than to arrive. (Old English saying.)
And
The search says more than the discovery. (Saint Augustine**.**)

Furthermore, a life's struggle after ideals can cause—at least in certain temperaments—lasting emotions of self-respect or self-esteem and these emotions are necessary for a good life [36]. Therefore, it may be rational—at least for some personalities—to strive for ideals and their *concurrent* emotions. Consider, for instance, the case of an idealist such as Sir Thomas More, who sacrificed the Chancellorship and his life to be true to himself [37]. Thus, before being executed, he said to the onlookers that he was dying,

... the king's good servant *and God's first.* (Emphasis added.)

Sir Thomas' aim unfortunately clashed with the Royal absolutism then in vogue, but he prioritized personal integrity whatever the cost. Now, if one takes into account More's situation (i.e., the background beliefs and valuations of Saint Thomas and those of an important sector of his

European contemporaries) one then discovers that he and many of his contemporaries considered his conduct as praiseworthy [38]. Hence, More's conduct very likely provided him with self, and social esteem [39]. In other words, I am asserting that there is a link between the search for ideals and positive emotions, such as self-esteem.

Emotions of self and social esteem could arise only if both Saint Thomas and some of his contemporaries believed that More was really aiming at some valuable ideals, and not just, for example, at fame or prestige. What his contemporaries probably admired in Sir Thomas was his heroic effort to be true to his own values and principles, that is, they probably admired his *enkrateia.*

The search of valuable ideals can likewise provide whole communities with generalized emotions of self-respect [40]. This fact has been known and exploited, for example, by army leaders. These leaders take care to motivate future combatants by convincing them that the war they are to engage in is a just war, a war that aims at ideals, such as democracy, justice, freedom, honor, glory, and so forth. An army that believes that it is fighting for valuable ideals is a motivated army, and such a collective conviction increases the likelihood of this army's heroic behavior. In the case of scientific communities, one may speculate that those scientific communities that aim (or believe to aim) at utopian goals such as truth gain in self-respect, and therefore such communities also gain in motivation.

In Laudan's tripartite reticulated model of substantial theories, methodological rules and goals, emotions have been left out, possibly because we ignore so much about the nature of emotions and about their possible rationality. But as the previous example suggests, a complete theory of rational human action, in particular a complete theory of rational scientific behavior, may need to consider some positive emotions.

RELATIVISTIC IMPLICATIONS OF
LAUDAN'S THEORY OF SCIENTIFIC GOALS

II.4. Laudan *does not justify as valuable his pragmatic canons of scientific success, and therefore relativism as characterized by Laudan threatens.*

Laudan told us that scientific aims ought to be consistent with his pre-philosophical pragmatic canons of scientific success (cf., section I.3. above.) These canons allegedly distinguish the success of science—the scientific Tradition [41]—from the success of other disciplines, also with a tradition, such as for example philosophy or theology.

Laudan's pragmatic canons provide then a *de facto* demarcation criterion between successful science and other cognitive endeavors, and this demarcation criterion has the character of an intuition, since Laudan told us that his pragmatic canons are "pre-philosophical" notions. This notwithstanding Laudan's rejection of intuitionism,

... we will have no need for our *'pre-analytic intuitions'* about concrete cases, of for value profiles of the 'scientific elite', *or for any other form of intuitionism* about concrete cases. (...) The naturalist metamethodologist, as I have described him, needs... *no prior assumptions about which disciplines are 'scientific' and which are not.* (Laudan, 1996, pp. 137-8. Emphasis added.)

Laudan seems to be saying: *If you are to be rational, and if you want to do successful science, then you should not ignore my pre-philosophical pragmatic canons of empirical success.* The question thus now arises of how to justify Laudan's conditional norm [42]. If one rejects, as Laudan has done, justification in terms of intuition, convention or stipulation [43], then we may look for an empirical justification of the conditional. Laudan believes that in fact, as a matter of historical description, the successful sciences have satisfied his pragmatic canons, and that therefore the conditional in question follows from the historical evidence. Nevertheless, why aren't theology, philosophy, musicology, scientology, creation science, or even magic, and demonology, taken as examples of *bona fide* scientific disciplines, as examples of successful sciences? Why aren't the canons of these other activities prescribed to whoever wants to do successful science?

It appears that empirical prediction and control have been taken as canons of scientific success, because allegedly they happen to be the implicit standards of disciplines considered as fruitful science. Laudan has selected some disciplines as such examples, because they fulfil his preconceptions or intuitions (which are also ours, but not those of 'creation scientists'). And of course, the disciplines so chosen exemplify his pre-philosophical canons of successful science. It couldn't be otherwise. We are then left with pre-analytic canons, which are merely declared as idiosyncratic of thriving science. We are then left with some canons that are dogmatically asserted as those of scientific success.

The situation is analogous to that of someone who would say: *if you want to be just, do as Saint Francis!* And if we ask why do as Saint Francis? Then we would be answered, *because the just, in fact, behave as that Saint.* Since the just, however, don't select themselves, the following questions now arise: which standards were used to select the just? And why weren't Hitler, Prince Dracula, or Francisco Pizarro selected as archetypes of the just?

The answer may be that some individuals were selected as just, because their conduct is consistent with widely held 'pre-philosophical' preconceptions or intuitions of justice (these 'pre-philosophical' preconceptions of justice are not shared by all, for example, not by Hitler). Then, of course, the chosen individuals exemplify in fact our pre-philosophical canons of justice. The problem is now to justify as correct the preconceptions or intuitions that helped to select the allegedly just individuals. If this petition

of justification is not satisfied, then we could rightly conclude that it has merely been dogmatically asserted that Saint Francis conduct was just [44].

But then relativism threatens because if Laudan's pragmatic standards have to be taken for granted, if they have the logical character of dogma, then the logical possibility arises of a Babel of different dogmatic canons. The creation scientist, for example, could reject Laudan's canons and invoke other standards; standards, which the creationist could rightly argue, are as dogmatic, as irrational as Laudan's.

Laudan may argue that to ask for justification all the way down to the 'bedrock' is unreasonable, that it is unreasonable because bedrock justifications cannot be provided. Laudan may argue that to aim at such ultimate justification is a 'demonstrably utopian' cognitive aim [45], and therefore irrational. Still, Laudan himself has told us that what gives comfort to relativism is the lack of justification of methodological rules or standards (cf., footnote 2, above.) Furthermore, Laudan's pragmatic canons are *de facto* scientific aims or standards, though of a very general character, since they apply to all scientific disciplines. For example, to abide by the canon that we should prefer theories that make successful predictions is the same as to set prediction as a goal that must be fulfilled by all scientific theories. This becomes especially clear when one notices that these canons "serve as certifier or de-certifier for new proposals about the aims of science [46]"; so these canons are the supreme scientific aims, the aims that judge any other scientific aims. And if we are to accept Laudan's directive on how to beat relativism, we must then try to justify these canons. Moreover, since this justification is, and apparently always it will be unavailable, then one must conclude that relativism—as characterized by Laudan—is likely to be unbeatable [47]. To beat this relativist threat Laudan would require a criterion of rationality by which to judge his pre-philosophical canons. And Laudan should then proceed to justify—or if not, at least try to explain—this prior criterion of rationality. But both justification and explication are missing. In sum, Laudan advises against demonstrably utopian aims, but, at the same time, he appears to have an impossible or demonstrably utopian aim: to elude a relativism result of lack of justification.

Notice also that Laudan's pragmatic canons are *de facto* ahistorical and universal basic scientific aims, this because these canons judge the success of any past or present mature scientific discipline [48]. These canons judge the success of disciplines as dissimilar as medicine, optics and astronomy (cf., second quote in section I.3.) The fixed and universal character of these canons contradicts, however, Laudan's thesis that the aims of science can change.

The view of science now emerging in some quarters (including my own) *is Heraclitean through and through,* insisting that science—diachronically viewed—changes its content, its methods, and its aims from time to time. (Laudan, 1996, p. 143. Emphasis added.)

II.5. *Even if we grant to Laudan—without justification—that his pragmatic canons of scientific success are valuable scientific aims, he also needs to assume— again without justification—that his canons are dominant amongst valuable scientific goals.*

Laudan requires that scientific goals—amongst these one would expect to find his pragmatic canons of scientific success—should be jointly consistent. Mutual goal consistency, however, is not a trivial matter, because our aims are not always completely independent, and acting to fulfil some aims may make it difficult or impossible to achieve others. This difficulty arises because a rational life does not consist of a series of successive actions, each one directed at satisfying one or another of our goals. Our different valuable aims then have to be somehow negotiated or sacrificed to be made complementary, to be accommodated into a coherent whole.

Hence goal debates often merely have to do with diverse ways of weighting ends or values, and not with the selection of the set of valuable aims itself. For example, a British Labourite allegedly gives more weight to social justice than a Tory, though both might share the same list of liberal values. As another example, assume that two XVIth century astronomers share the same cognitive values, and that both partake the same value hierarchy, except that the first astronomer gives more weight to conceptual simplicity, while the second one gives a higher rank to inter-theoretical coherence. Being so, our first astronomer may end preferring the Copernican system, because of its conceptual simplicity, while the second scientist may side with the geocentric system, because of its coherence with Aristotelian physics and cosmology [49].

Another tension between cognitive aims [50] is exemplified by the incompatibility between clarity, precision and brevity (see section II.1.1. above) There are, moreover, incompatibilities between many of these cognitive aims with other type of goals, such as social usefulness, psychological well being, and moral ends. This last case has been exploited by fiction writers with the character of the 'mad scientist' or technologist such as doctor Frankenstein.

Examples of every day life contradictory aims, or of aims that are at least partially incompatible, are:

The tensions between social egalitarism and individual freedom [51].

The incompatibilities between preservation of life and quality of life, as illustrated by the axiological debates around abortion and euthanasia.

The inconsistencies between economic growth, standard of life, and a healthy ecosystem.

The inconsistencies between full employment and no-inflation in a market economy.

The tensions between individual freedoms and community values, for example, the case of individual private property vs. communal property.

The tensions between freedom of speech, the preservation of life and physical and moral integrity, as exemplified by the axiological debates about child and sado-masochistic pornography.

Incompatibilities between goals can lead, when unsolved, to a Buridan's ass's situation. Hence, it is necessary to know how to prioritize weight or reinterpret aims to combine them in a new consistent synthesis [52]. However, there are many possible value hierarchies allowed by reason, and this situation holds even after full deliberation of these value hierarchies' foreseeable consequences. This because to evaluate the consequences of hierarchies, to arrive at judgements in pro or in con, requires some values in turn. Thus one could arrive at the rational evaluation of a value hierarchy by considering whether a hierarchy's foreseeable consequences are conducive to the attainment of some ulterior goal(s), or rather meta-values. But if one tries to justify as valuable some of these meta-values, and if one excludes—as Laudan would like to do—justification by convention or intuition, then one will end with Sextus trilemma: either infinite regress, or an argumentative circle, or dogmatism. Yet if the regress is to be avoided, and if one is looking for a non-circular justification, then we are only left with dogmatism. Therefore, axiological inconsistencies in the end will have to be dealt with by ranking values by appealing to prejudices about what is important or relevant. The harmonization of aims is then a question decided by biographical or historical accident, not by reason; in other words, which value ranking you come down on is a matter of conviction, not logic. This means that even if different rational communities were to share the same values, they still could have different value hierarchies. Moreover, none of these value hierarchies could be shown to be rationally better than any other, except, from their own meta-perspective [53].

But if a pluralism of value hierarchies is to be innocuous, if it is not going to become a relativism where anything goes, then it must give priority to some aims to confine the universe of value hierarchies to those acceptable. For example, in the case of contemporary liberal democracies, the pluralism of life styles allowed by these societies is far from being full relativism; contemporary democratic liberalism is restricted by the priority given to values such as human rights, democracy and tolerance.

Similarly, if a pluralism of scientific value hierarchies is to be innocuous, it would have to be restricted by postulating that some scientific goals should have priority in all acceptable scientific value rankings. For Laudan the dominant goals are likely to be his pragmatic canons. Laudan needs scientists *qua* scientists to value his canons, but he also needs scientists to give his canons priority over other cognitive desiderata. Because if these canons were to be valued but given a low weight, if one were to emphasize, say, audacious speculation plus theoretical beauty, then one may end doing something closer to contemporary French philosophy than to empirical science.

Laudan has not justified his prioritization of his canons, therefore Laudan's prioritization of his canons has to be taken for granted and it has a dogmatic character, a dogmatic character that leads into relativism as understood by Laudan. He says,

> ... when values are shared but not weighted equally, and when values are not fully shared, we seem to be confronted by an irresolvable disagreement—irresolvable, that is, if we stick to the limited resources of the classical hierarchical model. (Laudan, 1984, p. 41.)

But from what we have seen, these goal disagreements are irresolvable even with the resources of Laudan's reticulated model.

CONCLUSION

Laudan's injunctions against utopian scientific aims would be unobjectionable if these injunctions were taken as weak *desiderata* for rational cognitive aims but not as strict requirements for rational scientific ends, means-ends rationality doesn't proscribe utopian aims.

On the other hand, to elude relativism Laudan could either re-define what to understand by relativism, or sometimes welcome circular justifications, or just accept that his meta-methodology cannot elude relativism as he understands such.

Furthermore, Laudan needs a theory of scientific aims because he considers methodological rules as conditionals, with scientific aims as the antecedents of these conditionals. But if Laudan were to have another model of scientific methodological rules the need for a theory of scientific aims could be obviated. This would be welcomed given the complexity and difficulty of adjudicating scientific aims.

NOTES

1 Laudan considers relativism as not desirable and hence he considers rationality as valuable. This is important to remember because his meta-methodology intends to be a naturalistic one. The question is whether the normative recommendations made by Laudan's theory are provided only by a descriptive or empirical study of the history of science. Or whether the normative judgements made by Laudan's theory are instead the result of tacit intuitive evaluations.

2 "I believe that there is an answer to the relativist's challenge to show how methodological or epistemic principles can be justified; indeed, much of *Science and Values* was an attempt to sketch out one such response (...) What *does* give comfort to relativism is a failure to address the question: How are methodological rules or standards justified?" (Laudan, 1989, p. 370.)

3 Cf., Laudan, 1989, pp. 370-1

4. Laudan believes that previous meta-methodologies of science had in contrast a hierarchical view of justification, where justification flew unidirectionally from goals to factual theories. In this alleged older hierarchical view, scientific goals sat at the top of the hierarchy and they were used to justify scientific methods, while scientific methods justified factual theories. (Cf., Laudan 1984, chapter II.)

5 Cf., Laudan, 1996, p. 143

6 Such as Chapter 8 of Laudan's 1996.

7 Laudan thus distances himself from a philosopher such as Hume who famously thought that reason could say very little (if anything at all) about the selection of our aims: "Reason is and ought only to be, the slave of passions, and can never pretend to any other office than to serve and obey them." (*A Treatise of Human Nature*, p. 415.) And, "It is *not contrary* to reason to prefer the destruction of the whole world to the scratching of my finger." (*Ibidem* p. 416; emphasis added.)

8 Laudan, however, is possibly really making an implicit categorical recommendation against utopian aims. This because in the previous quote there is an implicit categorical recommendation to be means/ends rational (since Laudan values rationality, cf., footnote 1, and therefore there is also an implicit categorical recommendation to avoid utopian goals.

9 Cf., Laudan 1996, pp. 148-9

10 Cf., note 2 above.

11 If Laudan answers by proposing a selection of past scientific achievements as exemplary work, the norms of exemplariness would be there already in his selection. In other words, 'exemplary' is a normative term, and if one were to try to infer the standards of exemplariness from a selection of past scientific work, one would only obtain the standards that one put in. Since to select the exemplary we must first assume some standards of exemplariness. In short, the exemplary cases don't select themselves.

12 Many of the following arguments were inspired by various helpful conversations I held on these topics with John Worrall.

13 This aim is in the American Declaration of Independence.

14 Popper for example argues (*Realism and the Aim of Science*, pp. 270-1) that if Newton and other mathematicians had listened to Berkeley's criticisms of their intuitive concepts of the derivative and the integral, and if these mathematicians had not neglected conceptual precision at this early stage of

the development of the calculus, the growth of the differential calculus could have been obstructed: "It was the neglect of precision (...) which made the wonderful development of the calculus possible." (Ibidem, p. 271.) Popper's reading of the history of the calculus is however controversial, here I am just echoing Popper's view.

Faraday's electric field concept provides another example, the electric field started as a vague and imprecise concept, which won in precision as its relations with other electromagnetic concepts became clearer through Maxwell equations. It is then not reasonable to condemn as irrational imprecise or vague concepts, because that would disqualify the embryonic theories where these concepts appear.

15 By the way, verisimilitude is a concept where formalisation is not a requisite since its intuitive use hasn't led into logical paradoxes.

16 Popper (ibidem, p. 263.)

17 This conclusion will also follow even if it were to be argued that the meaning of a concept or goal is not obtained only via definition, but that a concept's meaning is at least in part got via this concept's various relations with other concepts in a theoretical net, and that the more inter-conceptual relations there are in a theory the more precise this theory's concepts will be. Now, since there are limits to the number of inter-conceptual relations in a theory, concepts will never be fully precise.

18 For an argument in favour of an intuitive notion of verisimilitude see Psillos, pp. 276-9.

19 A qualitative concept used by A. F. Chalmers and necessary for his objective theory of scientific change. Cf., A. F. Chalmers: "Towards an objectivist account of theory change," *BJPS*, 30, 1979, pp. 227-33.

20 Cf., Laudan 1996, p. 78

21 Numerous scientists have highly valued and searched, at least *prima facie*, explicative truth. Garré of Basel, a disciple of R. Koch, for example, risked his health and life by inoculating himself with staphylococci, he did this to find out whether the hypothesis of a bacterial cause for anthrax was true.

22 Cf., Laduan 1984, p. 121.

23 Cf., Psillos, chapters 5 & 6.

24 The notion of genuine empirical success includes the requirement of novel predictions which are in principle testable, where a prediction P of a phenomenon E is novel with respect of a theory T if E is known before T is proposed, T is not ad hoc and T predicts E. Cf., Psillos, pp. 106-7.

25 Cf. Diotima's discourse in Plato's *Symposium.*

26 Verisimilitude is a classic example of a cognitive goal that is both semantic and epistemically utopian, but still some of us want to say that it is plausible that Einstein's theory of gravity is a better approximation to truth (more verisimilar) than Newton's theory.

27 According to Laduan, goals that are attainable but extremely difficult to obtain can be rational. It may be, however, problematic in practice to distinguish between extremely difficult goals and impossible ones. For example, it would have been problematic for Spartacus and his followers to decide on light of the evidence available to them whether their aim (say, the abolition of slavery) was an impossible aim or just a very difficult goal.

Or consider the case of Soviet dissidents who struggled for political freedom in the 50's, were these dissidents irrational, as Soviet psychiatrist would say? According to Laudan whether these dissidents were irrational or not will

depend on whether their goal was an impossible—though promotable—aim, or instead merely a very difficult end. And it was difficult to decide one way or the other in the 50's, since at the time there was not a single case of a 'communist' country that had turned into a liberal democracy.

28 But even in this case doubts arise when we recall that Calvinists—as declared in the Synod of Dort—aspire after salvation, although salvation might be impossible for some of them both to attain it and to promote it. This because they could be one of the unfortunates unknowingly predestined for damnation and this regardless of their faith, love of God, moral merit, or lack thereof. On the other hand, while Calvinists didn't have a criterion for election they thought it was reasonable to suppose that most of the chosen would show by their character and ways that they were amongst the elect, so Calvinists had a fallible and plausible criterion of election.

Calvinists live then in a permanent state of doubt and apprehension just hoping to be one of the elected. A similar situation may arise, when one wants to be fully rational about our epistemic methods, and therefore one wants to justify induction and deduction (say without circularity, regress or dogmatism.) Such a justification is likely to be unavailable and unapproachable, but still one aims at it. And although lacking the desired justification, one keeps on using induction and deduction, though, without being committed to them. One proceeds just hoping for the best and fully aware of one's precarious epistemic situation.

29 Cf. Plato's *Crito*.

30 Oscar Wilde, at the Cadogan Hotel in 1895, after his failed action against Lord Queensberry, rejected—as Socrates had done before—the achievable option of flight to await instead inevitable arrest. Wilde may appear in this act, to be self-destructive and irrational, however, in another reading of this event, Wilde's act shows him to have been determined not to yield to the pressures of a hypocritical society. Wilde stayed in England, and did forced labour, because at the Cadogan Hotel, Wilde decided to search an ideal, the ideal of self and social consistency, the ideal of self and social authenticity. Wilde stayed because he wanted to fight hypocrisy, and he was ready to suffer forced labour for the sake of this goal. A goal—that given what we know of human nature—is an impossible goal, and it is a goal that can only be approached.

31 Francis' goal may also be irrational for Laudan, because it is also possibly both semantically vague, and epistemically utopian.

32 It could still be argued that the numerous people that have admired idealist conduct, have been the victims of self-deception, that they have really admired something else, but what could this something else be? Besides, the hypothesis of self-deception would require of a colosal amount of self-deception, or false consciousness, which appears as an implausible thesis.

33 Or at least people widely believed to have been idealists.

34 "Serbs and their allies suffered a defeat that has become hallowed in several great heroic ballads. (...) They have become lenses through which subsequent creators of national mythology have come to see their past, endow it with deep metaphysical import, and imagine the attributes of the nation in essentially spiritual terms. Kosovo was turned (especially during the 19th century) into the Jerusalem of the Serbs." History of Serbia, *Encyclopaedia, Britannica,* CD 99 Multimedia.

35 This psychological fact may be exemplified by a phenomenon such as that of the idealised and valued Medieval 'courtly love'. This love was a longing that lasted as long as it was not physically satisfied, and therefore the lovers avoided physically consummating their love.

36 For Rawls (cf., Section 67) self respect is one of the primary goods, that is, one of the goods necessary for the framing and successful execution of a rational plan of life.

37 And this is a strictly impossible aim, as I argued when discussing the case of Socrates. Therefore, this is an irrational aim from Laudan's perspective.

38 Thus, "The news of More's death shocked Europe. Erasmus mourned the man he had so often praised, 'whose soul was more pure than any snow, whose genius was such that England never had and never again will have its like." The official image of More as a traitor did not gain credence even in Protestant lands. ("Sir Thomas More" in *Encyclopaedia Britannica*, CD 99.)

39 Rawls says that, finding *our person and deeds appreciated and confirmed by others who are likewise esteemed and their association enjoyed*, helps us to gain self-esteem.

40 The ideals of one community clearly don't have to be the ideals of any other community. Hence one could imagine a community of psychopaths or Nazis—who having a coherent alternative morality to ours—would get emotions of self respect by aiming at what we would consider odious goals.

41 Cf., Laudan, 1996, p.146.

42 There is in this conditional an implicit categorical prescription in favour of the pragmatic canons, since Laudan would not call someone who would ignore his pragmatic canons, while wanting to do successful science, fully rational. Moreover, rational is for Laudan a term of praise (cf., notes 1 and 6.)

43 Laudan has criticised Popper for his conventionalism about scientific aims and methods, and Laudan has criticised Lakatos for his intuitionism. Cf., Laudan (1996), pp., 15- 16.

44 A similar argument has been developed by J. Worrall, 1996, p. 8

45 It is a 'demonstrably utopian' aim, because if we understand proper justification (as Laudan does) as an argument in favour of a statement, method, or goal. Then logic tells us that since every argument has premises the search of justification must lead to an infinite regress, circularity or dogmatism.

46 Laudan, 1990b, p. 53.

47 Or as John Worrall has argued: "relativism as Laudan defines it, is inevitable" (Worrall, 1989, p. 381).

48 In the case of physics, say, from Newton onwards.

49 Cf., chap. XIII of Kuhn's *The Essential Tension*.

50 Cf., chap. XIII of Kuhn's *The Essential Tension*, where Kuhn discusses some other examples of incompatibilities between cognitive aims.

51 This example of incompatible aims was argued at length by I. Berlin, cf., p. 12.

52 The weighing of ends is also needed to fine tune the means chosen to approach or attain some aims, since the means are often underdetermined by the desired end states. If the only aim of a community were, for example, egalitarianism the way it was approached (say, through revolutionary terror or through gradualist reform) would be irrelevant. And to help narrow the underdetermination of chosen means other weighted aims are needed, aims such as human rights and democratic freedoms. If not, one could end with

results as dissimilar as Maoist China and the Japan of the 60's, two very different societies that were allegedly quite egalitarian.

53 The resulting pluralism of value hierarchies implies that there are many possible rational plans of life, or many possible rational scientific conducts. The awareness of this axiological fact may be an antidote against the danger of fanaticism, a danger to which the search for ideals can lead. The fanatic is the narrow minded idealist who considers his ideals—and his high ranking of his ideals—as the only legitimate ones. The fanatic doesn't recognise that reason permits many other possible ideals and many other value hierarchies.

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ABSTRACT

Laudan's proposed constraints on cognitive aims are criticized:

i) Laudan's proscription of 'semantically utopian' and 'epistemically utopian' aims is too restrictive.

ii) Laudan does not distinguish impossible valuable goals from impossible but approachable valuable goals (i.e., ideal goals).

iii) Laudan's recommendation against impossible aims is counter-intuitive because it characterizes as irrational idealist conduct (such as that of saints, heroes, and martyrs.)

iv) Laudan's pre-philosophical' canons of scientific success cannot be justified empirically as valuable without some intuitions about what is a genuine example of successful science. This even though Laudan has told us that his meta-methodology does not require of intuitions.

RESUMEN

Se critican las restricciones que la meta-metodología de Laudan ha sugerido para las metas de la ciencia:

i) La prohibición de Laudan en contra de metas 'epistémicamente' y 'semánticamente' 'utópicas' es muy restrictiva porque ignora que frecuentemente buscamos metas que son oscuras o confusas para nuestra mente consciente. Y que cuando esto ocurre podemos aun buscarlas por la *via negativa,* es decir, intentando eliminar lo que no son.

ii) Laudan sobrevalúa la precisión al excluir como racionales las metas imprecisas o ambiguas.

iii) La verdad es una meta epistémicamente utópica para Laudan, sólo porque Laudan exige un criterio de éxito demasiado exigente.

iv) La recomendación de Laudan en contra de metas 'demostrablemente utópicas' es imprecisa, pues Laudan no distingue entre metas estrictamente imposibles y metas que, aunque imposibles, son aproximables. Los ideales (es decir, metas consideradas como valiosas e imposibles de lograr, pero aproximables) pueden ser objetivos racionales si entendemos el esquema medios/fines de la racionalidad como, *'si has de ser racional y si deseas las metas Ai, entonces sigue las estrategias que tengas buenas razones para suponer son las óptimas para lograr* o para acercarte *a tus metas Ai'.*

v) Por otro lado, no podemos ignorar los ideales, porque no sabemos cómo debilitar racionalmente los ideales sin que los ideales pierdan su atractivo.

vi) Asimismo, la recomendación en contra de los ideales es contraintuitiva, pues caracteriza como irracional el comportamiento idealista (el de los santos, héroes, mártires y románticos) y también como irracionales a los numerosos admiradores del comportamiento idealista.

vii) La recomendación de Laudan en contra de los ideales es una prescripción en favor de la mediocridad y sobrevalora el éxito.

viii) Luchar por lograr metas imposibles pero valiosas puede generar emociones de autorrespeto y autoestima, y estas emociones son necesarias para una buena vida. Además a la luz de estas emociones positivas puede ser racional el aspirar por ideales.

ix) Laudan caracteriza las tradiciones de las ciencias exitosas por medio de cánones 'pre-analíticos' de éxito. Estos cánones no pueden ser justificados empíricamente como valiosos sin invocar intuiciones de lo que constituye ejemplos de ciencia exitosa, y esto a pesar de que Laudan nos ha dicho que su meta-metodología no requiere de intuiciones.

x) Laudan no justifica la priorización, el alto valor, que concede a sus cánones pragmáticos de éxito científico, de modo que su priorización tiene un carácter dogmático.