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STENMARK, PLANTINGA, AND SCIENTIFIC NEUTRALITY

Del Ratzsch

In the preceding article Mikael Stenmark rejects both (a) Alvin Plantinga's specific arguments aimed at legitimating 'Augustinian' science (or more generally 'worldview-partisan' science) and (b) the legitimacy of such 'sciences.' After contending further that the Augustinian-science strategy is in any case not the most appropriate response by believers to the matters motivating Plantinga's attempt, Stenmark then offers an alternative strategic proposal of his own. In the following response, I briefly raise some issues concerning Stenmark's exegesis of Plantinga, then take issue with Stenmark's philosophy of science and with the case he advances in support of his alternative proposal.

(a) Introduction

I would like to begin by expressing my appreciation for work that Mikael Stenmark has done in recent years - in particular, we are indebted to him for exposing and opposing the sorts of scientism underlying the work of many opponents (and even some adherents) of religious belief.¹ But that said, although I think that there are some significant points of both usefulness and interest in his present article, my friend Mikael and I don't see eye to eye (more tooth to tooth²) concerning some things in that article. It is those points of difference upon which I shall focus in what follows. Some issues I raise may fall outside Stenmark's limited aims in this article, but it seems to me that they are issues that must ultimately be addressed.

Stenmark's present aim is to show that Alvin Plantinga's case for the propriety of 'Augustinian' science (or, more generally, for any *worldview-partisan* science) fails. Beyond that, Stenmark holds that Plantinga's conclusions themselves should be rejected. Stenmark's position is that worldview, religious, or ideological matters should play no role in the evaluation of scientific theories, whatever role they might legitimately play in other procedures within science (hypothesis proposal, theory construction, choice of research direction, etc.).

I shall begin by briefly laying out relevant positions and some disagreements Stenmark and I have concerning just what Plantinga's actual views and arguments are (and consequently whether his case has been refuted). I shall then briefly argue that Stenmark's operative conception of science is (as I see it) inadequate, that his proposed position embodies significant problems including, oddly enough, a distant whiff of scientism, and that



the very brief considerations he suggests in support of his position do not in fact constitute significant support. Brief concluding remarks will follow.

(b) *Stenmark and Plantinga*

Plantinga's position. Plantinga claims that (A) science is not (in the relevant sense) the religiously neutral institution commonly believed - indeed, as he sees it, some science exhibits an inbuilt, active hostility to religious belief.³ Plantinga cites two separate lines of support for this position:

(i) considerations from Augustine showing that the "common conception cannot really be correct" - i.e., that at least some parts of science are inescapably worldview-colored⁴;

and

(ii) a number of examples that "suggest, wholly independently of broader Augustinian considerations, that science is not religiously neutral."⁵

Plantinga holds further that (B) the believing community should pursue an "Augustinian science" - a non-neutral, worldview-partisan science taking account of and advantage of *all* we know - including religious-based truths we know. He suggests two lines of support for that contention as well. Such a science

(i) would constitute a visible counter to sciences embodying naturalistic suppositions, thereby protecting the believing community from unwittingly embracing belief-undermining influences, and would fulfill certain tasks appropriate to the believing community, etc.⁶;

and

(ii) would represent our best chance at getting at the genuine *truth* about the created cosmos.⁷

That is not to say that believers should not also cooperate with others in neutrality-constrained ("Duhemian") science - but the further need for Augustinian science still remains.⁸

Stenmark's response - outline. The main lines of Stenmark's overall response are that (a) cases of *de facto* bias do not establish the scientific permissibility of such bias, that (b) such bias should in fact be deemed impermissible - i.e., that worldview-neutrality should (ideally) characterize science - and that (c) the believing community does not *need* an Augustinian counter to naturalist-biased science since such 'science' can be rejected as improper on grounds that it violates the worldview-neutrality requirement. (That violation sometimes - perhaps often - involves scientific presuppositions.)

Preliminary remarks. Stenmark and I differ on some points concerning Plantinga's views and arguments. Although some of those differences are relatively minor⁹, some are less so. For instance, Stenmark seems to read Plantinga's examples of biased theorizing as constituting the heart of Plantinga's case both for science being (sometimes) biased and for worldview-partisan science being legitimate.¹⁰ If examples of genuine science are worldview-partisan, then obviously genuine science can be partisan.¹¹ That does not, of course, imply that such bias is either inevitable or permissible - Stenmark is right about that. But I think that Plantinga means to claim that in some areas, neutrality likely cannot be realized, and he takes Augustinian considerations to support that. Plantinga might be wrong about it, but he does at least *claim* that the examples are independent of the Augustinian case, and it seems to me that Stenmark does not really come satisfactorily to grips with Plantinga's claims concerning a uniquely Augustinian case (A-(i) above). In fact, Stenmark does not mention several of the publications which Plantinga specifically indicates contain his attempts to develop the Augustinian case.¹² (In Stenmark's defense, I think that Plantinga is a bit thin on details here, and I think that it is easy to read some passages in Plantinga as employing the examples in the way Stenmark construes them. Stenmark could quite plausibly, I think, contend that Plantinga simply *begins* by accepting the initial Augustinian position without actually either making or even exhibiting that case, the full *argumentative* weight thus in fact falling upon the examples.)¹³

In any case, I am also not convinced that Stenmark comes satisfactorily to grips with Plantinga's contention that a science which acknowledges all that we know (including religiously) gives us our best chance at the truth (B-(ii) above - more on this later). But if key parts of Plantinga's cases are not fully addressed, then Stenmark's implied conclusion that Plantinga has provided no convincing reason to think that *proper* science can be worldview-partisan, and his explicit conclusion that "*None* of Plantinga's reasons why Christians ought to develop an Augustinian science ... are therefore convincing" [my emphasis] are a bit too quick.¹⁴

(c) *Stenmark and the structure of science*

Stenmark's contention that Augustinian science is not needed as a counter to naturalistic science (since naturalistic science can already, on his view, be dismissed as violating the requisite neutrality ideal) is a successful response only if worldview-partisan science really *is* improper. It is not obvious to me that it is, and Stenmark provides no real case for it. Let me suggest why the sort of case Stenmark's counterproposal rests upon will not be trivial to make.¹⁵

The collapse of Positivism both partially resulted from and amply demonstrates that genuine full-blooded science cannot live on empirical data alone. Other conceptual, methodological and evaluative resources are demanded, and those resources are unavoidably taken from the surrounding conceptual and cognitive context, from the wider matrix within which science is embedded.¹⁶ Stenmark does acknowledge such non-empirical "intrascientific criteria" as "consistency, simplicity and explanatory

power." But consistency buys one very little, and both simplicity and explanatory power have surprisingly deep metaphysical roots - roots not just a *priori* worldview neutral.¹⁷ A full theoretical science requires a rich metaphysical framework, and when proscribing resources in science one risks seriously truncating science's theoretical power.¹⁸ Theoretical science may not, in short, be *worldview-free*. But if any functioning science inescapably requires infusion of *some* worldview-freighted content, much will depend (as Plantinga argues) on exactly *what* from *which* worldview gets infused. But additional conceptual structuring resources there must be - one simply cannot plausibly deny that.

Granted that science of necessity presupposes some substantive such principles or other, there are two primary alternatives here. First, it may be that the resources required by a fully developed science go beyond merely the contents common to competing worldviews, but that different worldviews can provide different non-empirical packages, each capable of providing a complement of additional resources sufficient for some robust theoretical system. Since those complements differ, each involves worldview-partisanship, presumably producing a worldview-partisan science pluralism. This, of course, is an eventuality Stenmark wishes to avoid. Second, some single, adequate complement of additional resources may be common to all relevant competing worldviews, so that although proper science is not worldview-free, it is *worldview-neutral* (i.e., conforms to the principle that "science ought not to grant a privileged status to any particular worldview, ideology or religion in the sense of presupposing its truth"). In implicitly rejecting the first alternative, Stenmark is left implicitly accepting the second. In denying that "any particular worldview, religion or ideology" should play any essential role in theory evaluation in science, Stenmark is implicitly presuming that whatever metaphysics is needed for doing science (at the relevant level) lies wholly outside the uniquely defining content of alternative specific worldviews, religions or ideologies - that science-essential non-empirical matters do not overlap the realm of human worldview, religious, or ideological disputes.¹⁹

Stenmark provides no support for this implicit assumption that human worldview disputes fortunately stop short of the realm of scientifically-evaluatively-essential metaphysics.²⁰ In fact, I suspect that that supposition is not merely unsupported, but false as well. For instance, neither Cartesian contact force theories nor the competing Newtonian action-at-a-distance theories were constructible just from empirical considerations (even including the specified "intra-scientific criteria"). Both - as do all theoretical structures - required additional principles, and both in fact rested in part upon (competing) theological conceptions. But both were, it seems to me, legitimately scientific, and both sides were, it also seems to me, still doing legitimate science even though rejecting their opponents' theories on partially theologically-rooted grounds.²¹

A few other related worries. (i) Stenmark's position requires not only that scientifically-essential metaphysics be pretty cleanly separable from (disputed?) worldviews/religions/ideologies, but that various processes within science itself - e.g., theory development and theory evaluation - be cleanly separable as well. Such separability is problematic. (ii)

Stenmark's hint that science goes wrong and loses its ideal neutrality when "scientists' ideas ... are not merely based on accessible empirical evidence"²² presupposes other problematic separations, potentially controversial presupposition of the autonomy of empirical data, and in fact carries some worrisome Positivist echoes. (iii) And Stenmark's apparent perception of how non-empirical factors function in science may not be sufficiently nuanced. The roles that various worldview conceptual stances play in science are often not just straightforward cases of scientists "accept[ing] scientific hypotheses because they fit their ideological beliefs or values ... or religious convictions." They often function far deeper - in e.g., 'plausibility structures', in subtle tilts of conceptualization and interpretation, in thin tints of perception, etc. Although I will not pursue those questions here they are indeed that - very open questions.

(d) *Some problems in Stenmark's proposal*

Although he does not use the terminology here, Stenmark elsewhere endorses methodological naturalism as normative for science.²³ Methodological naturalism is a non-empirical principle, and since it mandates rejection of some types of theories as scientifically illegitimate, it obviously functions in part as a criterion of theory evaluation. (In fact, it has been wielded with uncritical enthusiasm by opponents of Intelligent Design views.) Yet some people quite clearly embrace it for ideological reasons, and others as clearly reject it for theological reasons.²⁴ It thus at least *looks* as though methodological naturalism (which, I suspect, underlies Stenmark's position here) is itself a non-empirical, possibly worldview-driven evaluative criterion of the sort which Stenmark is concerned to banish from 'proper' science.

Stenmark might object that that is not the level in the scientific conceptual hierarchy that he had in mind, or that the disagreement in question is not a worldview, religious, or ideological disagreement in the sense he has in mind. Perhaps - although he has provided no explicit indication of what he takes worldviews, religion, or ideologies to include and exclude.

Stenmark holds that although science should be worldview-neutral, science can still be *worldview-relevant* (in the sense that "science has the potential to undermine (or support for that matter) *any* religious belief that *has empirical content*" [Stenmark's emphasis]). It is evident that worldviews, as Stenmark takes them, can contain empirical propositions or implications, and that such empirical content can be legitimately refuted by science (Stenmark's examples include geocentrism, young earth, and fixity of species). Here we have an asymmetry: when a scientific theoretical result conflicts with the empirical content of a religious (or worldview or ideological) position, science can (at least in some - unspecified - circumstances) properly be taken as refuting that empirical component of the religious belief. But since religious (worldview, ideological) matters cannot, on Stenmark's view, legitimately be employed as evaluative criteria for theories in science, refutation can never go the other way, with worldview empirical implications undercutting scientific theory. The scientist's *modus ponens* can *never* - properly - be the believer's *modus tollens*.

Why should that be? Stenmark's expressed uncertainty about "whether [Christians] really know their Christian beliefs to be true," conjoined with his references to what "science has *discovered*", what "science can *show* to be false" what "science has *refuted*" [my emphases] lead one to suspect that Stenmark's philosophical views concerning the epistemic status of religious belief partially undergird his acceptance of the position that science can undermine empirical parts of worldviews but that scientific theories should be immune to empirical considerations going the other way - which has obvious potential to factor into issues of theory acceptance or rejection. That *seems* contrary to his own advocated principle, and the asymmetric stipulated priority of science over religious empirical claims but never vice versa, smacks just a bit of scientism.

Suppose, however, that religious believers might (say, on the basis solely of revelation) actually *know* (or rationally believe) some empirical, scientifically relevant empirical matter e. Given that as a worldview-partisan bit of information, e could not (on Stenmark's proposal) be employed in theory evaluation within science, even worse awkwardness would ensue. It is, of course, easily possible that the body of scientifically-permissible empirical evidence E strongly favors some theory T, but that E conjoined with proposition e strongly disconfirms T. (That is a consequence of Stenmark's claim that science can be worldview-relevant.²⁵) Since, on Stenmark's proposal, one is forbidden to assume e true in one's assessment of scientific theories, one is presumably committed to accepting T within science - since the permissible evidence E strongly supports it - despite the fact that one knows (or rationally believes) a proposition which conjoined with E utterly undercuts T. For example, suppose that the theory best supported by the empirical considerations Stenmark's proposal classifies as scientifically admissible points powerfully to the eternity of the cosmos. On Stenmark's view, one could never be justified in rejecting that theory on the basis of a wholly religious conviction - no matter its rational justification - that the cosmos was created in time.²⁶ Again, Stenmark *could* claim that one can never know or rationally believe worldview (religious, ideological) content, and thus that cases like the above *cannot* arise. But he attempts no case for that (at least here), and it is far from obvious that one must accept a proposed relationship of science and religion resting in part upon the supposition that we never know or rationally believe disputed worldview (religious, ideological) propositions.

(e) *Why accept Stenmark's proposal?*

I do not find Stenmark's attempts to motivate his proposal convincing. On the contrary, if barring all worldview-partisan content produced a truncated science, then if an admittedly - even unabashedly - theistic metaphysics could produce a full-bodied predictive, fruitful, explanatory science, what would be the motivation either for refusing to pursue it or for refusing to call it 'science'? Should the mere fact that it would be worldview-partisan - that e.g., polemical atheists wouldn't like it - make the slightest difference to a Christian on the track of scientific truth?

In fact, science may *already* in its very bones *be* worldview-partisan. Kant,

for instance, argued that one could not do science outside the context of an assumption of nature's designedness - an obviously worldview-partisan assumption. And the contemporary physicist Paul Davies has remarked:

Science began as an outgrowth of theology, and all scientists, whether atheists or theists ... accept an essentially theological worldview.²⁷

Justification for crucial presuppositions - uniformity, relevance of human cognitive resources, basic reliability of human sensory systems, intelligibility of nature - outside of a theistic context are not trivial to come by.²⁸ The fact that atheists, naturalists, and others have co-opted deep theistic conceptual structures need not obscure the fact that they *are* theistic - that this may be a case where at least an Augustinian *shape* to science has won.

In any case, the only other substantive consideration Stenmark provides for neutrality over, say, worldview-partisan (Augustinian, etc.) pluralism in science is a brief reference to historical cases of Christian-partisan science which were "as we all know" not only mistaken but scientifically counter-productive.²⁹ Although I will not pursue it here, I think that the history in question is substantially more complicated than Stenmark suggests.³⁰ And that history is double-edged. Even ignoring the possibly "essentially theological" shape of science itself there were specific cases where worldview-partisanship materially advanced science.³¹ Moreover, if a track record of failure of worldview-partisan science should cast doubt on that project, then since the history of science is in a sense a history of the serial failure of *scientific* proposals (the basis for the notorious 'pessimistic induction') then the project of scientific theorizing itself might be in some trouble. In fact, if the root problem is that Christians think they *know* various things by religious means when they perhaps really do not, then science - with its history of alleged knowledge by *scientific* means of phlogiston, caloric, aether, polywater, the safety of hormone replacement therapy, and so forth - may have some questions to answer here as well.³²

(f) *Some concluding remarks*

I wish to reiterate that I think that there is much of interest and value in Stenmark's article. However, in the interest of furthering discussion, and since my job is a critical response, I will finish on two additional notes of possible difference.

First, I'm not convinced the Stenmark's proposal is really significantly different from other familiar views. It is a commonplace that in various non-evaluative procedures in science anything, including religious motivation, goes. For instance, one can *propose* hypotheses for any (or no) reason whatever. And it is equally widely claimed that religiously-based convictions are illegitimate in evaluative phases of science - that e.g., theories shouldn't be judge according to conformity to one's preferred reading of Genesis. But those familiar types of positions, it seems to me, constitute the core intuitions of Stenmark's proposal.

Second, it seems to me that an Augustinian science might indeed give

us the best shot at a genuine understanding of the cosmos - especially if it is both *created* and a *cosmos*. But even aside from that, the sort of worldview pluralism in science which Stenmark opposes has potential attractions. Theoretical advancement in science is sometimes fueled by theory competition. Perhaps our understanding might profit from genuinely 'worldview-partisan science' competition.³³ As cosmologist Andrei Linde recently put a related point:

A healthy scientific conservatism usually forces us to disregard all metaphysical subjects that seem unrelated to our search. However, in order to make sure that this conservatism is really healthy, from time to time one should take a risk to abandon some of the standard assumptions. This may allow us either to reaffirm our previous position, or to find some possible limitation of our earlier point of view.³⁴

Even if one were not committed to an Augustinian science giving us the best shot at truth (a commitment which I think a Christian can rationally have), letting a thousand worldview-partisan-science flowers bloom might still give us, as a metaphysically diversified scientific community, our best communal chance at tracking the truth to the "philosophical niches where [it] might lurk."³⁵ And surely the task of producing the Augustinian contribution to that diversified discussion would fall to Christian scientists.³⁶

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NOTES

1. See, for instance, his *Scientism: Science, Ethics and Religion* (Aldershot, Burlington :Ashgate, 2001).

2. This comes from an old *Pogo* strip.

3. As Stenmark indicates, Plantinga believes that some parts of some sciences may be neutral. Plantinga holds that the closer to issues concerns an understanding of human beings, the more likely non-neutrality becomes. Plantinga also suggests (but does not pursue, nor does Stenmark) the idea that there may be a connection between non-neutrality and degree of theoreticity. Alvin Plantinga, p. 178, "Methodological Naturalism?" in Jitse van der Meer (ed), *Facets of Faith and Science* Vol 1, p. 177-221.

4. "Methodological Naturalism?" p. 177-8. This is also the topic of e.g., Lecture 1 (p. 121-138) of "The Twin Pillars of Christian Scholarship" (hereinafter "Twin Pillars"), in *Seeking Understanding: The Stob Lectures 1986-1998* (Grand Rapids: Eerdmans, 2001). In note 4, p. 215, "Methodological Naturalism?" Plantinga cites "When Faith and Reason Clash: Evolution and the Bible", *Christian Scholars' Review* XXI:1, September 1991, p. 8 - 32 (hereinafter "Clash"), "Evolution, Neutrality, and Antecedent Probability: A reply to McMullin and Van Till", *Christian Scholars' Review* XXI:1, September 1991, p. 80 - 109, (hereinafter "Evolution, Neutrality"), "Augustinian Christian Philosophy" *Monist*, vol 75 No 3, 1992, p. 291-320, and "On Christian Scholarship" in *The Challenge and Promise of a Catholic University*, ed. Theodore Hesburgh (ND: ND, 1994) as also representing his work on this point. There is very strong overlap - in some instances partial identity - among several of

these. Plantinga sometimes also cites Abraham Kuyper in this connection. For a detailed explication of some of Kuyper's relevant views, see my "Abraham Kuyper's Philosophy of Science" in Jitse van der Meer (ed) *Facets of Faith and Science* vol 2.

5. "Methodological Naturalism?" 179.

6. "Clash" 29-30, "Methodological Naturalism?" 187, 213. See also "Twin Pillars" p. 138.

7. E.g., "Here I must emphasize [that] I am concerned with science and scientific hypotheses taken as attempts to provide us with *truth*: true explanations, true descriptions, true accounts of various phenomena." [his emphasis]; "Methodological Naturalism?" p. 191. See also "Methodological Naturalism?" p. 192, 211; "Clash" p. 28, 29, 30, 14; and "Twin Pillars" p. 145. And in "Twin Pillars", p. 132, Plantinga says that the naturalist "in rejecting or ignoring God ... cuts himself off from the possibility of properly understanding us and the world".

8. "Science: Augustinian or Duhemian?" (hereinafter "Science: A or D?") p. 382-3, *Faith and Philosophy*, Vol 13 No. 3 July 1996, p. 368 - 394. See also "Methodological Naturalism?" p. 210-11, 214.

9. For instance, in professional articles Plantinga says repeatedly that naturalistically-biased science (e.g., the Simon example) is legitimate [albeit wrongheaded] science (see, e.g., "Evolution, Neutrality" p. 83, 98-9; "Science: A or D?" 371, "Methodological Naturalism?" 183-4). Still, Stenmark canvases a number of positions Plantinga might hold that involve denying that it is proper science. Stenmark's exploration here is triggered by one comment Plantinga makes in a letter to the semi-popular *New York Review of Books* - a statement I tend to treat differently than does Stenmark. With respect to one such alternative, Stenmark does indicate that he "do[es] not think that this is the position Plantinga tries to persuade us to take..."

10. Stenmark says things like the following: "I shall examine critically his claims that science is not religiously neutral because we can find a naturalist bias in the work of contemporary scientists ... " "It is thus not enough to display cases where we can see that faith or ideology commitments have shaped scientific practice, to refute the idea of a worldview-neutral science." And in light of Stenmark's purpose being to engage and respond to Plantinga, I think it is telling that he says: "My point, however, is that even if we reject ... that actual science is worldview-neutral, we are not forced thereby to accept that science should be worldview-partisan ... or even partially worldview-partisan.."

11. Stenmark, of course, takes them *not* to be examples of proper albeit worldview-partisan science - on his view, worldview-partisan science is thereby improper. But that principle is part of the issue.

12. "Twin Pillars," "Augustinian Christian Philosophy" and "On Christian Scholarship" - see note 5 above.

13. Again, Plantinga's specific case here often seems to involve granting Augustine's (or Abraham Kuyper's) contention that there is a deep worldview struggle - that (in Plantinga's words) "the opposition between the *Civitas Dei* and the Earthly City is basic, fundamental, and serious," then drawing "the corollary drawn by Augustine...: scholarship and science, taken broadly, is deeply involved in this ... battle." ("Twin Pillars" p. 139). That corollary is drawn presumably in light of the claims that worldviews are "total ways of looking at man and the world" (p. 131) and that different worldviews "permeate the various scholarly disciplines" (p. 137).

14. I would also like to have seen Stenmark respond more directly to Plantinga's discussion of worldview differences in assessing probabilities, like-

lihoods, plausibilities, and the like (e.g., "Clash" 19ff, "Science: A or D?" 383 ff), as well as Plantinga's contention that in some cases worldview-partisan science can expand the theoretical alternatives open to science (e.g., "Science: A or D?" 377, "Methodological Naturalism?" p. 185, 191). Plantinga's points here are, I think, significant. Concerning the former, Stenmark would presumably respond that in such cases one should give some neutral assessment of the relevant (prior?) probabilities, and should not allow any worldview-partisan probabilistic assessment into science. The problem, as I see it, is that there is no reason to think that there always will be (or even can be) any such objective assessment - that the permitted 'neutral' resources do not constitute enough substance to permit a probabilistic assessment (other than a largely arbitrary, subjectivist one) at all. However, I do not have a rigorous case for that suspicion - a fact of which Stenmark might no doubt make good use.

15. Stenmark might respond that he is only attempting to show that Plantinga has not made his case, given that Stenmark's position is a possibility. Fair enough - although I don't think that Plantinga is claiming to have strictly ruled out all possible alternative positions. But some of Stenmark's remarks certainly sound as though that is what he takes the issue to be: e.g., "... we are not *forced* thereby to accept that science should be worldview-partisan ... We can *still* argue that science ought to be free from ideological or religious considerations" [my emphases] and in any case, Stenmark's consistently unqualified normative language - e.g., "What I am saying is merely that *they should not claim that their Christian convictions ought to be considered a proper part of scientific theory validation*. They ought not to maintain that Augustinian science in this sense is proper science." [his emphasis], "In conclusion, the regulative ideal of science we *should* accept ..." [my emphasis] - suggests that he is taking a position much stronger than merely that this is a possibility.

16. I have discussed this general issue in a bit more detail in *Nature, Design and Science*, (Albany: SUNY, 2001) ch. 7.

17. Biologist John Tyler Bonner, in *The Evolution of Complexity by Means of Natural Selection* (Princeton: Princeton, 1988) says: "As has so often been pointed out in the past, a good explanation is one that gives some inner satisfaction..." [x], and notes that such satisfaction is provided by different types of things for different people. Philosopher Peter Kosso also notes that "the accomplishment of explanation, after all, is a psychological accomplishment." *Appearance and Reality* (Oxford: Oxford, 1998) p. 27-8 (see also 179). Physicist Edward Teller: "[understanding] is something personal and peculiar" *Pursuit of Simplicity* (Malibu: Pepperdine, 1981), p. 92. Obviously, assessment of explanatory power operates in a territory with a serious potential for world-wide impact.

18. Stenmark might argue that he is proscribing not metaphysical resources, but rather only religious, worldview, or ideological resources. But then much will depend upon what distinguishes worldviews, metaphysics and religion - and Stenmark does not tell us in detail what he might take such differences to be. (In his *Rationality in Science, Religion, and Everyday Life* (Notre Dame: Notre Dame, 1995) Stenmark's characterizations of "view of life" and "religion" differ only in that the latter involves "assumptions that ... express a consciousness of and a trust in the sacred." p. 243, 246.) Beyond that, such distinctions are far from trivial. Some of the issues involved in trying to distinguish e.g., metaphysics from religion are explored in my colleague Stephen Wykstra's "Religious Beliefs, Metaphysical Beliefs, and Historiography of Science", p. 29-46, *Science in Theistic Contexts: Cognitive Dimensions*, in *Osiris*, Second Series, Vol 16, 2001, ed. John Hedley Brooke, Margaret J. Osler, and Jitse M. van der Meer, If propositions are religious because they are believed

on the basis of religious commitments, or because of the tenacity with which they are held, then Stenmark's proposal may be further problematic. A number of the key operative presuppositions of science were proposed for exactly the former reason (e.g., the empiricity of science justified via divine voluntarism) and others (e.g., uniformity of nature) are typically held in the latter way.

19. He is assuming something like what I have elsewhere called the "separability thesis" - "see my "Design: What scientific difference could it make?" [*Perspectives*, v. 56, no. 1 (March 2004) pp. 14-25]. It might be suggested that there is a third option - that different worldview-partisan inputs might ultimately result in a single, common science. Stenmark, I take it, would reject that possibility - that worldview-partisanship need not result in worldview-pluralism of sciences. Accepting that possibility would remove part of the motivation for his view, and since the partisanship in question involves theory assessment, at least in the shorter runs commonality is exactly what would *not* result.

20. And even if that were true now in the current state of science, there might be no guarantee that that would remain the case as science advances, broadens, and confronts further challenges.

21. Plantinga, following Duhem, refers to some examples of this sort ("Methodological Naturalism?" p. 205ff).

22. And, presumably, simplicity and the like, although Stenmark does not specifically append that qualification in the passage quoted.

23. E.g., *Scientism*, p. 96-7, 131. For instance p. 96:

Methodological naturalism lays down which sort of study qualifies as scientific. Naturalists, Christians, Buddhists and Marxist alike must in pursuing science be satisfied with this kind of explanation.

In his *Rationality* (op. cit.), Stenmark develops a view of rationality having a strong social/communal assessment component, which may be connected to his preference for views shared across worldviews.

24. As one example of the former, Harvard biologist Richard Lewontin:

We take the side of science ... because we have a prior commitment, a commitment to materialism. It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our a priori adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counter-intuitive, no matter how mystifying to the uninitiated. Moreover, that materialism is absolute, for we cannot allow a Divine Foot in the door.

"Billions and Billions of Demons", *New York Review of Books*, January 9, 1997, 44(1). Here it is evident that Lewontin's restrictions on science grow out of his prior worldview stance.

25. I'm assuming also some basic matters concerning probability.

26. In e.g., "Methodological Naturalism?", 210-11, Plantinga seems willing to concede that results of Duhemian science could be incorporated intact into various worldview-partisan sciences. For reasons connected with the above, I suspect that he is wrong, but will not pursue the point.

27. *Are We Alone?* (NY: Basic, 1995), p. 138.

28. See, e.g., the last chapter of Plantinga's *Warrant and Proper Function* (NY: Oxford, 1993). Michael Rea claims to show in *World Without Design*

(Oxford: Clarendon, 2002) that naturalists cannot even be justified in accepting realism about material objects.

29. I suspect that Stenmark believes for other reasons that worldview pluralism would be detrimental to science, but he does not indicate what those reasons might be. In any case, if those reasons are pragmatic or practical, they would not entail the sort of normative prohibitions Stenmark advocates.

30. Not only are there the familiar recent historical studies, but it has even been argued recently that the idea that Medieval Christian thinkers were flat-earthers is a 19th century invention by opponents of Christianity. See *Inventing the Flat Earth*, Jeffrey Burton Russell (NY: Praeger, 1991).

31. Brooke's *Science and Religion: Some historical perspectives* (Cambridge: Cambridge, 1991) is useful here.

32. And that is not to mention anti-realist cases for thinking that science neither produces theoretical knowledge nor converges on such knowledge over time. That (if accepted) would undercut the response that science through its own processes at least eventually replaces its false theories with true.

33. Stenmark does endorse the idea that science might benefit from alternative interests, sensitivities, etc. I am suggesting the possibility that there might be benefits to competition based on even wider differences - differences including differences in evaluative resources.

34. "Inflation, Quantum Cosmology and the Anthropic Principle" forthcoming in *Science and Ultimate Reality: From quantum to cosmos* (essays in honor of John Wheeler's 90th birthday) ed J.D. Barrow, P.C.W. Davies and C.L. Harper, (Cambridge: Cambridge 2003), p. 24.

35. This image comes from Michael Riordan:

In this evolutionary metaphor, speculative theorizing plays a crucial role, too, by helping to ensure that science investigates the many philosophical niches where truth might lurk.

"Science Fashions and Science Fact", p. 50-51, *Physics Today*, Aug 2003, p. 51. It might be claimed that if consensus was supposed to emerge from such diversity, there would *ultimately* have to be global worldview-neutral communal evaluative criteria. That's one possibility, but I see no reason why the productions of some specific worldview-partisan science could not trigger some 'paradigm shift,' inducing advocates of different worldview-partisan science to abandon their original evaluative criteria. If Kuhn is right, such shifts do not result from application of some set of already-accepted, shared, agreed-upon criteria.

36. My thanks to Bill Hasker for the opportunity to respond to Mikael, and to Kelly Clark for discussion.