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Evaluating Alexandrova on Nagel*: Should Scientists Eliminate Appraisal Judgements in order to Establish Value-free Science?*

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Disagreement about the proper role of values is central to the philosophy of both human and natural sciences, especially when discussing scientific objectivity. This term is contested, but a popular view identifies scientific objectivity as the ideal of a value-free science where non-epistemic values play no significant role when determining scientific knowledge. This definition appeals to a helpful distinction frequently drawn in the literature between epistemic and non-epistemic values.

Epistemic values refer to values that constitute grounds for choosing one scientific theory over another (Malecka 2021). They include the values of simplicity, explanatory power, coherence, predictive accuracy, and generality. They are contrasted with moral, prudential, political, and aesthetic non-epistemic values. Thus, according to the value-free ideal, the justification for scientific conclusions should only appeal to epistemic values, lest scientific objectivity be undermined.

This is the context in which Anna Alexandrova situates her chapter titled '*Can the Science of Well-Being Be Objective?*', written as part of her 2017 book '*A Philosophy for the Science of Well-Being*'. It should be noted that Alexandrova's book has stimulated important debate amongst philosophers of science, and not just those concerned with studies of well-being. Her work is now rightly accepted as a worthwhile read for newcomers to the field. In chapter 4 of the book, she argues in favour of the view that a science of well-being can be objective despite the presence of non-epistemic values.[131] Central to her account is the concept of a 'mixed claim', which she defines as a scientific claim about a correlation or causal relationship that mixes both an empirical and normative judgement. For example, an economic researcher's conclusion that *Higher income increases welfare* is a mixed claim. This is because it involves an empirical judgement (that higher income increases welfare) and a normative one (of what is meant by the term 'welfare'). This normative judgement is contentious because 'welfare' is a thick concept with its meaning loaded with both descriptive and evaluative content. The term could be understood as the satisfaction of one's preferences, one's feelings of happiness, or the attainment of various external goods necessary for the good life even if the person in question does not desire them. Any particular definition presupposes a non-epistemic value of what it means to fare well, whether it be moral, prudential, or political. Thus, the economist's choice of what she means by the term 'welfare' necessarily appeals to her non-epistemic values, and so violates the value-freedom of her conclusion. There are numerous thick concepts employed across science: within well-being research Alexandrova identifies 'efficiency', 'rape', 'spousal abuse', 'unemployment', 'inflation', 'aggression', and 'health' just to name a few. Consequently, the use of these terms will give rise to mixed claims that prevent science from being value-free.

Beyond violating public beliefs in value-free science, Alexandrova draws attention to two further concerns about mixed claims: scientific inattention when scientists ignore the non-epistemic values that underlie their research; and imposition when this normativity affects the lives of those with reasons to reject these non-epistemic values. Despite this, Alexandrova argues that mixed claims should not be

1 Fortunately for the purpose of this paper, Alexandrova's discussion in this chapter is not overly embedded in the other arguments from her book. Therefore, I shall consider this chapter independently.

eliminated from science by challenging an argument presented by Ernest Nagel in his 1961 book '*The Structure of Science*'. The core of this paper will assess Alexandrova's rejection of Nagel's argument against appraisal judgements in science.

In a section titled '*On the Value-Oriented Bias of Social Inquiry*', Nagel discusses whether the social sciences can, in principle, be value-free. There are different ways that science might be value-laden, and Nagel draws an important distinction between 'appraisal judgements' and 'estimation judgements'.[142] In the case of mixed claims, appraisals endorse an ideal definition of a thick concept and judge whether phenomena meet this definition. So the economist takes an active stance on what 'welfare' means, and then judges whether increased income affects welfare under this conception. Thus, she would conclude *Higher income increases welfare*. In contrast, estimations merely judge the extent to which empirical phenomena exhibit the features characteristic of a particular thick concept's definition. Our economist would instead conclude that *If welfare is defined as X, then higher income increases welfare*, where X stands for her particular conception of welfare. Estimation judgements, therefore, only assess whether a particular criteria of a thick concept has been met. Importantly, Nagel argues that it is possible for natural and human scientists to make estimation judgements without offering their appraisals, and this principle could be used to establish value-free science. For sake of clarity, this principle can be formulated into what I shall call 'Nagel's Proposal'.

Nagel's Proposal: Scientists should convert appraisal judgements into estimation judgements.

Peters (2020) rightly notes that Nagel's chapter does not explicitly claim that converting appraisals into estimations is something that scientists *should* do. Instead, Nagel actually states that it is something scientists *could* do to achieve value-freedom. However, given that Nagel later defines the desirable trait of scientific objectivity as "value-free and unbiased" (Nagel 1961: 502) science, I contend that it is fair to formulate his proposal normatively, which is how Alexandrova understands it. Since mixed claims are reasonably appraisal judgements on Nagel's account, his proposal recommends the elimination of mixed claims from science. This would be achieved by converting regular causal or correlation claims into conditional statements. *Higher income increases welfare* then becomes *If welfare is defined as X, then higher income increases welfare*. In her new estimation judgement, our economist does not commit herself to the truth of the antecedent that X is the only or best definition of welfare. She merely asserts a conclusion of what other phenomena relate to welfare, if welfare were to be defined as X.

Contrary to Nagel, Alexandrova argues that scientists should refrain from eliminating appraisal judgements because this cannot achieve value-free science. Thus, we can characterise the distinction between the authors as follows:

	Should scientists convert appraisals into estimations?	**Would the use of estimation judgements make science value-free?**
Nagel	Convert	Value-free
Alexandrova	Do not convert	Value-laden
This paper	Convert	Value-laden

I argue that Alexandrova's account does not properly distinguish the separate Nagelian claims: first, that scientists should convert appraisals into estimation judgements; and second, that doing so would make

2 Nagel refers to estimation judgements as 'characterising value judgements'. However, I shall stick with Alexandrova's own terminology within this paper.

science value-free. This is to the detriment of her chapter. To show why, in the following sections I defend what I consider to be a stronger account that recognises the benefits of Nagel's Proposal while also asserting that science remains value-laden. By doing so, I hope to clearly distinguish the two philosophical debates.

2.

Argument (1): Scientists Should Eliminate Appraisal Judgements

My argument here is simple. Converting appraisal judgements into estimation judgements results in epistemic benefits for science. If so, then scientists should eliminate appraisals in favour of estimation judgements. This provides the sufficient grounds to accept Nagel's Proposal.

Allow me to defend this argument. For the first premise, there are two clear reasons why converting appraisals into estimations would epistemically benefit science. First, re-expressing mixed claims in a conditional format reduces the risk of misappropriating scientific conclusions. Suppose an economist wanted to establish a correlation between a person's class and their lifetime savings rate. But 'class' is an ambiguous concept because it could refer to the person's type of occupation, their family background, or their self-identification. Suppose our researcher prefers the self-identification measurement because it is easier to determine and because she wants to respect an individual's personal classification. When reporting her findings, she could either present her conclusion as an appraisal or estimation judgement:

Appraisal judgement	*There is a strong correlation between class and lifetime saving.*
Estimation judgement	*If class is understood as self-identification, then there is a strong correlation between class and lifetime savings*

Because the estimation judgement is more specific, it reduces the risk that other researchers (or even the same researcher) would confuse these findings as applying equally to other understandings of the term 'class'. Science is interactive, and research findings are often used to justify later research. Confusion would cause misappropriation if a later economist, who understands class as tied to occupation, tried to use our initial researcher's findings as a justification for his own work. But because the self-identification and occupation definitions of class are not perfectly aligned, this could result in inaccurate or false conclusions being drawn by our second economist. Appraisals require the categorical acceptance of an arguable definition, and when kept implicit blinds other scientists to the results' specificity. Thus, by clarifying that the initial research findings were established using a self-identified measure of class, our initial economist reduces the risk that her findings will be misappropriated later.

In addition to the above, estimation judgements expose further research opportunities for scientists to explore. After formulating her conclusion as an estimation, our economist could then test whether a similar correlation holds using occupational or family-background measures of class. By not asserting that 'class' is adequately captured by her initial results, further research is prompted to test whether the findings apply to other definitions of class. Not only does this help rule out misappropriation (as per the above), but discovering how alternative definitions of class correlate more or less with lifetime savings should provide insight into why a person's class correlates with their lifetime savings in the first place. If our economist finds that occupational class has a stronger correlation than what was found in her initial findings, for example, then it might suggest that the relationship is more likely to be explained by factors tied to a person's type of employment and workplace environment rather than self-classification or experience during one's formative years. Thus, estimation judgements invite further research that can offer more scientific clarity on the factors explaining correlations and causal relationships.

Consequently, converting appraisals into estimation claims would benefit science epistemically.[153] The aim of science is to expand human knowledge, so scientists should adopt practices that offer epistemic benefits. This justifies the second premise of the argument, and so our conclusion in favour of Nagel's Proposal follows.

Objection (1a): Discrediting Normative Knowledge within Science

To strengthen my argument for Nagel's Proposal, I shall consider two objections that Alexandrova could raise. These objections are not explicit in Alexandrova's own work, since her chapter conflates the rejection of Nagel's Proposal with rejecting the claim that it results in value-free science – a matter I return to in section IV. In her chapter she offers only two objections that actually confront Nagel's Proposal, and only one of these has any argumentative substance.[164] This argument is drawn from her claim that Nagel's Proposal "ignores or devalues scientists' knowledge about values" (Alexandrova 2017, 92). According to Alexandrova, scientists are sufficiently qualified in their field to offer legitimate appraisals about what constitutes the important concepts within their research. When formulating their judgement on what should constitute a child's well-being, for example, non-scientists should incorporate the expert advice of scientists. However, by forcing scientists to reformulate their judgements as estimations rather than appraisals, Nagel's Proposal symbolically rejects the ability of scientists to offer their own views on how we should define these important terms.

On the surface this objection seems plausible, yet it can easily be challenged by arguments Alexandrova offers elsewhere in her chapter. I agree that scientists do possess normative knowledge that should not be ignored, and also that formulating research findings as estimation judgements might suggest that controversy exists over definitions when there is actually consensus. But Nagel's Proposal does not block scientists from expressing their normative knowledge. When justifying her particular choice of the 'class' estimation judgement she uses, our economist remains free to offer a normative account within her article outlining why she decided to adopt this particular definition in her research. Nagel's Proposal does not prevent scientist from voicing their normative views whatsoever: it only removes these appraisals from their research conclusions.

Moreover, Alexandrova overlooks the argument that allowing scientists to test appraisal judgements risks cases of imposition, a danger which she herself is especially keen to avoid. Imposition arises when those being studied can legitimately reject the scientist's appraisal choice. Suppose a community believes that an individual's welfare is determined by the satisfaction of his or her preferences. If a researcher decided to measure welfare within the community by recording the level of actual enjoyment experienced rather than preferences satisfied, then this imposes a hedonistic definition of welfare that the community itself would reject. To avoid imposition, the normative knowledge of scientists should be incorporated as part of an inclusive and accountable procedure determining which estimation judgements scientists pursue in their research. Such a procedure might reflect Alexandrova's own sketch later in her chapter, one which involves scientists, philosophers, policymakers, and a sample of the public. This procedure could be relied on to ensure that scientists' normative knowledge is not devalued, and at the same time mitigate any risks of imposition. Thus, Alexandrova's objection here seems opposed to the other arguments she presents in her chapter: it cannot be used to reject Nagel's Proposal.

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3 There may be further non-epistemic advantages to a science that applies Nagel's Proposal. By establishing the value-laden nature of definition-choice, this justifies a greater role for accountable and inclusive procedures in determining science's value-laden choices.

4 The first of her objections is presented as (1a). The second is alluded to in her comment that Nagel's Proposal would push the decision involving non-epistemic values back to an "arguably less appropriate stage" (Alexandrova 2017, 90). However, she offers no justification for this passing comment. Since I lack the grounds to fairly reformulate this claim into a proper objection, I have decided not to consider it in the main body of this paper.

Objection (1b): Impossible to Eliminate All Appraisals

The second objection I will consider is raised by Ludwig (2016). According to this argument, it is impossible for researchers to eliminate all appraisals within their research due to the interconnected nature of our thick concepts. Suppose a sociologist wants to measure how a person's religiosity affects their number of friends. According to Nagel's Proposal, they would have to clearly specify what definition of 'religiosity' and 'friend' their research assumes. But this creates a regress problem, because both definitions rely on further ambiguities that are impossible to define without making other appraisals, and so on. Indeed, there is no shortage of contested definitions in philosophy.[175] Thus, if scientists must eliminate all appraisals from their research, then Nagel's Proposal would effectively prevent scientists from offering any conclusions at all.

Whilst this objection is interesting, it does not pose a serious risk to applying Nagel's Proposal. The epistemic benefits justifying Argument (1) derive from the use of estimation claims when stating overall research findings. Because of this, there remains a strong case for eliminating the appraisals that scientists make within their central hypotheses. It may be true that some appraisals will always remain within a scientific paper, but this does not reject an argument in favour of eliminating appraisal judgements when and where possible. Analogously, failure to discourage all instances of burglary does not provide good reason against any laws criminalising theft. Nagel (1961: 494-495) himself acknowledges that practicality dictates that some appraisals may remain within scientific research. Indeed, it might be useful to do so when there is universal consensus on what a scientific term means. His arguments instead apply to cases where converting appraisals into estimations is both possible and sensible. So the objection misses its mark.

This may indeed be an interesting problem for philosophers to consider, but I believe that the threat this objection poses to science is overstated. Many scientific definitions are adequately self-contained, and even when they are not scientists are free to work with philosophers to help clarify the meaning of their concepts. Incorporating multiple estimation judgements within a scientific conclusion is entirely feasible as well (e.g. *If 'religiosity' is classified as X, and 'friendship' classified as Y, then religiosity's effect on friendship is Z*). Thus, the objection fails to significantly challenge the justification to convert appraisal judgements into estimation judgements when possible, especially in cases when there exists disagreement over the meaning of key scientific terms used. Nagel's Proposal remains standing.

3.

Argument (2): Science is Value-Laden

Now we turn to the second philosophical problem to address: is Nagel correct that non-epistemic values can be excluded from science? I argue that Nagel's Proposal does not eliminate these values from science, and in doing so I defend the account offered by Alexandrova in her chapter. In short, my argument is that forming estimation judgements necessarily involves non-epistemic values. If so, then scientific conclusions are based on non-epistemic values too, and science is not value-free.

How so? Because deciding which estimation judgement a scientists should adopt in their research is itself a decision involving non-epistemic values. Epistemic values, by themselves, cannot determine which estimation claims we should prefer. Consider our economist correlating class with lifetime savings, who chooses the self-identification measure of class because of her prudential and ethical concerns. There is continued disagreement among political sociologists over how class should be defined; our economist lacks the epistemic grounds to prefer any one definition outright. So even if she phrased her conclusion as an

5 This argument reflects earlier appeals to a 'Hermeneutic Circle' as a key distinction between the natural and social sciences (Taylor, 1994). Other authors are right to note that this problem affects both types of science (Martin, 1994).

estimation judgement, her choice of *this* estimation necessarily appeals to her particular non-epistemic values for justification, namely the pragmatic ease of measurement and the normative grounds for preferring self-classification. Rather than eliminate non-epistemic values, Nagel's Proposal just pushes them one step back to the question of which non-epistemic standards one should use when deciding on estimation judgements.

Could our economist rely on epistemic values alone when making her choice? Perhaps she could just defer to common folk theories of definitions instead? It seems not: there remains wide disagreement over non-epistemic values within – let alone between – communities. And the decision to trust in folk understanding is again normative, however this 'folk' is identified. Consequently, our economist's research findings are still based on non-epistemic values. This prevents value-free science, contrary to Nagel's claim.

Objection (2a): Undermining Scientific Objectivity

I shall consider two objections to my argument. First, one might be motivated to reject the conclusion that science is value-laden because of what this implies about scientific objectivity. As is commonly believed, science may only be objective if value-free. If scientists necessarily appeal to non-epistemic values in their research, then the public's trust in science might wither (Schroeder 2019). This effect would be dangerous, especially in a time when the epistemic authority of science is already being questioned by partisan groups. Thus, we have grounds to instead deny an earlier premise from the argument in order to reject the overall conclusion that science is value laden.

In response, we should reject the narrow definition of 'objectivity' as arising *only if* science is value-free. Whilst this is a popular understanding of the term, it is neither the only nor the most sensible definition. There are other alternative renderings of 'objectivity' in the literature, but to save space I shall only address the appeal to 'procedural objectivity' as offered by Alexandrova. This form of objectivity focuses on a process of scientific inquiry that is "transparent, legitimate, and resistant to hijacking by specific individuals or groups" (Alexandrova 2017, 98). Not only has procedural objectivity become a favoured rendering of scientific objectivity within the philosophy of science literature, but importantly it does not require complete value-freedom. Science is worthy of public authority when it ensures that we have firm grounds to believe that research findings are not the product of controversial personal bias or weak inference. Thus, the presence of non-epistemic values within scientific research does not necessarily threaten procedural objectivity if these values are incorporated as part of a deliberative process. Even if procedural objectivity is not the only rendering of the term possible, objection (2a) relies on the implausible claim that value-freedom is necessary for scientific objectivity. Once we acknowledge the other challenges to value-free science from the literature beyond mixed claims (Brown 2013), we have strong grounds to dismiss the objection.

Regardless of how one defines objectivity, however, the objection is unconvincing. Even if the public's image of science were tarnished by accepting that non-epistemic values play a role in research, this does not make science value-free. Whether science is value-free or value-laden is determined by the scientific process itself, not how that process is understood by regular citizens. Since objection (2a) focuses on the role of science in society rather than the scientific process itself, I find this argument unpersuasive. This leads me to address the final and most significant objection to this paper's argument.

Objection (2b): Values are Pre-Science

This second objection is the most plausible case Nagel could offer against Alexandrova. As articulated by Peters (2020), this objection argues that science can be value-free if the choice of which estimation claims to adopt occurs outside the realm of science. The Nagelian might concede that non-epistemic values are essential when deciding on which estimation judgements our economist should prefer. However,

Alexandrova's conclusion is only correct if this decision occurs within science. The Nagelian can argue instead that this decision is made at a pre-scientific stage, regardless of whether it is the choice of scientists, philosophers, or someone else entirely. Science, on this account, is a process of reasoning that occurs only once the definitions have been agreed. Deciding on estimation judgements sets the initial definitions and hypothesis for the research. The subsequent science remains value-free.

This objection opens up an important debate on what constitutes 'science' – a debate which I cannot hope to resolve in the (increasingly-)limited space of this paper. My initial response would point to the literature on values in science to argue that there are plenty more cases of non-epistemic values arising within scientific research. Values have been shown to play a role in cases of underdetermination (Longino 1990) and epistemic risk (Rudner 1953, Douglas 2000). There are many places where non-epistemic values enter science: the formation of estimation claims represents just a minority of these cases. Thus, even if the decision of which estimation judgement to use is relegated to a pre-scientific stage, it does not entail that science can be value-free.

But this response would not convince everyone. Perhaps the Nagelian claims that *all* these other value-laden decisions occur at a stage beyond science. So a better reply to objection (2b) directly challenges this narrow understanding of what constitutes 'science'. It is a shame that Alexandrova is not more explicit in what she means by the term. Defining science is a contentious and somewhat overwhelming matter, but for the purpose of this paper I argue that it means an epistemic institution encompassing the systemic study of the structure and activity of the natural and human world through observation and experiment. Using this definition, I argue that decisions concerning which estimation judgement to study does occur within science. Scientists themselves choose which questions to test, and such decisions are essential to their scientific work. To study something means to interact with it to gain understanding, and developing research questions by formulating estimation judgements is essential to this interaction. The value-laden decision of which estimation judgements to study is therefore an essential part of this interactive process as well, and so should be recognised as occurring within science.

Conversely, the Nagelian conception severs us from regular understandings of the term 'science'. It does so by relegating the choice of research question, balancing of evidence, the assertion of conclusions, and the publication of results as all beyond the narrow confines of science. The Nagelian would be forced to accept that scientists deal with value-laden choices in their regular activities, but that this is somehow in a role other than being a scientist. But this is an odd conclusion to reach: currently, there does not appear to be anyone making these choices other than scientists. If science requires one to make a number of value-laden decisions tied to one's work *as a scientist*, why not accept that science includes such value-laden choices? Resolving these challenges remains a problem for the Nagelian definition of science, weakening objection (2b). A broader understanding of 'science' should be preferred.

4.

The time has come to combine the conclusions from previous sections and reveal my overall argument. As shown in II, Alexandrova's case against Nagel's Proposal is unconvincing: scientists have good grounds to eliminate mixed claims by converting appraisals into estimation judgements when possible. While definitions for all thick concepts do not have to be fully self-contained within scientific work, adopting a principle where scientists ensure that their central hypotheses are framed as estimation claims would result in epistemic benefits. This is especially important when there exists disagreement over the meaning of the key terms used.

Combining this conclusion with the arguments in III, we see that Alexandrova's account fails to recognise the important distinction between Nagel's Proposal (as formulated in this paper) and the claim

that this establishes a value-free science. By focusing her argument against the latter, Alexandrova cannot effectively reject the former. Defending an account that relies on the distinction between these two claims, I have revealed an alternative position she overlooks in her chapter: scientists should convert their appraisal judgements into estimation judgements, even if science remains laden with non-epistemic value.

This position, I argue, would strengthen Alexandrova's own account by further reducing the risk of scientific inattention to non-epistemic values. To add to this, the procedural measures she outlines against the danger of imposition could also be incorporated when deciding on which estimation claims scientists should adopt in their research. To achieve procedural objectivity, we must ensure that scientific value-choices reflect a deliberation involving a broad arrange of parties, including scientists, philosophers, policymakers, and the public. Thus, if we combine Nagel's Proposal with Alexandrova's recommendations for procedural objectivity within science, we provide stronger protections against Alexandrova's two concerns about scientific normativity: inattention and imposition. Misunderstanding the nuance that can be drawn within Nagel's position, Alexandrova's oversight represents a notable shortcoming within an otherwise interesting and important chapter of her book.

But what broader conclusions can be drawn for scientists themselves? There is more to offer than a mere commentary on Alexandrova's chapter. Indeed, my defence of Nagel's Proposal indicates how philosophers can help scientists in their research. Scientists, I have argued, should adopt a new practice of formulating their conclusions as conditional statements tied to the particular definitions assumed for key research terms. To navigate the contentious or complicated definitions, these scientists should turn to philosophers for guidance on how to formulate their estimation claims precisely. Offering advice on precise definition is a service that analytical philosophers are already well-trained to provide (the stereotype of philosophers as picky over definitions still retains a degree of truth). In addition to this, philosophers can help scientists defend their choice of estimation claims according to the scientist's own non-epistemic values. Whether these are moral, political, prudential, aesthetic, or otherwise, philosophers have considerably more experience than scientists in constructing arguments to defend claims made according to non-epistemic values. This is another area where the involvement of philosophers can greatly benefit the scientist in their work, as well as establish a procedurally objective science open to reasonable disputes about non-epistemic values.

Thus, I conclude my paper on a far more ambitious claim: philosophers can and should play an active role in scientific research. They should help scientists formulate their research questions as precise estimation judgements, and they should support scientists when defending the research choices made according to their non-epistemic values. Mixed claims, I assert, should be addressed with a mix of expertise: that of philosophers and scientists combined.

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