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ارزش‌باریِ علم و طبیعت‌گراییِ اخلاقی

میثم محمد امینی*

چکیده

هدف این مقاله دفاع از این ادعا است: اگر استقلال علم از ارزش‌ها را رد کنیم، آنگاه باید استقلال ارزش‌ها از علم را هم انکار کنیم، و بالعکس. به بیان دیگر: علم ارزش‌بار است اگر و تنها اگر ارزش‌ها هم علم‌بار باشند. اگر چنین باشد، آنگاه نشان خواهیم داد که استدلال‌هایی را که علیه خنثی بودنِ علم اقامه می‌شوند می‌توان در دفاع از واقع‌انگاری اخلاقی نیز به کار گرفت. دو استدلال برای دفاع از این ادعا ارائه خواهد شد. استدلال نخست مبتنی است کل‌گرایی تأییدی، و این واقعیت بهره می‌جوید که با مفروض گرفتن ساختاری کل‌گرایانه برای رابطهٔ میان نظریه و شاهد می‌توان پذیرفت که هر معیاری در مقام شاهد برای نظریه بالقوه بتواند مفید باشد در معرض تأیید و رد با شواهد تجربی دیگر قرار دارد. استدلال دوم مبتنی است بر ماهیتِ ضدجزمیِ علم. اگر ارزش‌ها بتوانند در نقش شواهد عمل کنند، پس باید به طریقی نسبت به واقعیت حساس باشند. نهایتاً استدلال می‌کنم که در میان شکل‌های مختلف واقع‌انگاری، این طبیعت‌گرایی اخلاقی است که با این ملاحظه بیشتر تقویت می‌شود.

کلید واژه‌ها: طبیعی‌گرایی، ارزش، علم، اخلاق.

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Value-ladeness of Science and Ethical Naturalism

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Abstract

"This article aims to defend a conditional proposition, or to be more precise a biconditional, one: if we reject that science is value-free, then we must also reject that values are independent of reality, and vice versa. In other words: science is value-laden if and only if values are science-laden. Therefore, arguments proposed against neutrality or value-freedom of science may also be applied in defending moral realism. Two arguments for this claim will be provided. The first argument is based on conformational holism, and uses the fact that by assuming a holistic structure for the relation of theory and evidence one agrees that every criterion which is potentially useful as evidence for theories be subject to confirmation and disconfirmation by further empirical evidence. The second argument is based on anti-dogmatic nature of science. If values can play an evidential role, then they should somehow be sensitive to reality. I will then argue that among different forms

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of moral realism, ethical naturalism is the one that is better vindicated.
Key words: Naturalism, Value, Science, Ethics.

1. Introduction

A sharp distinction between "is" and "ought", or between "fact" and "value", which is usually seen as Hume's legacy, was in a great part of 20th century popular among philosophers. On the fact side, this legacy was revived in the form of the Value-Free Ideal of science (VFI), which announces any influence of values on decisions concerning epistemic evaluation of scientific theories illegitimate. On the value side, commitment to the same distinction led to flourishing of non-cognitivist views like expressivism and emotivism, and undermined realistic ones in meta-ethics (Gorski, 2013).

But in the second half of the twentieth century we see a kind of naturalistic turn in the philosophy of science, in the sense that instead of paying much attention to formal norms of science and prescribing methods for doing scientific work, scholars are more concerned with describing and giving an exact account of scientific work as it is actually done by its practitioners. Serious works in areas such as the history of science and the sociology of science showed some fundamental shortcomings of the positivist view in philosophy of science. Closer studies of various episodes in the history of science revealed that scientific activity, and especially the decisions that scientists make about rejecting and accepting theories, are not subject to specific formal rules independent of background considerations and contextual factors.

By the end of the twentieth century, therefore, mainly because of gaining a better understanding of the social nature of scientific enterprise, belief in fact/value distinction and value-free science gradually weakened and forms of fusion and influence of the two domains were accepted. The literature, developed mostly in past three decades, on "science and values" bears witness to the emergence of a much more reasonable approach to exploring the relation of science and society. Extravagances of 1970s in not acknowledging any role for moral and social factors in the practice of science, or in announcing all scientific theories to be totally the constructions of society, fortunately have given way to a more fruitful discourse. An important part of it is the debate between proponents and opponents of the so-called Value-Free Ideal of science (VFI).

2. The Value-Free Ideal of Science (VFI)

Adherents of the VFI admit that non-cognitive[1] values play important roles in scientific enterprise. They are a key factor in determining the subject of enquiry, in the first place. Secondly, there may be values, especially ethical ones, which restrict the choice of methodology by scientists. For example, certain experiments on animal or human subjects, despite their clear epistemic benefits, might be viewed impermissible. The requirement of informed consent of research subjects in clinical researches is another example (Douglas, 2009). As for the applications of scientific theories, it is also obvious that non-cognitive values inevitably play a major role, and there is no dispute about this role being unharmful to the objectivity and reliability of the inquiry. One good reason for this is that the mere application of a theory for technological uses or even for developing further theories, does not change its content or its justificatory status.

The main issue, however, is the epistemic evaluation of scientific theories. According to the VFI, only cognitive values can have a legitimate role in epistemic assessment of theories. Justification of scientific theories should be essentially independent of non-epistemic factors. This is usually called the *impartiality* thesis (Lacey, 1999; Anderson, 2004). Impartiality should be distinguished from *autonomy* and *neutrality*, which have been sometimes defended by the advocates of value-freedom of science. Autonomy of science requires that the conduct of science be independent of contextual factors like social, cultural, religious, and especially political influences. Neutrality, however, claims that scientific theories do not presuppose any value judgment, and moreover, no value judgment can be logically derived from a scientific theory. These two components of neutrality thesis are called presupposition neutrality and implication neutrality respectively (Anderson, 2004). The relation between them will be later in the section 3 more thoroughly examined.

2.1 Roots of value-freedom

Generally, two main, arguably plausible, motivations underlie the emphasis on value-freedom: an epistemic motivation and a political one. First, the worry was that the influence of non-cognitive values might lead astray science and in the extreme case make us believe what we *want* to be true as what *is* actually true. Clearly, there are some meta-ethical assumptions beneath such view. It seems that some form of moral anti-realism is taken for granted. Science supposedly deals with facts of nature, which are fully

[1] These are alternatively called "non-epistemic" or "contextual" values by different authors to indicate values that are not directed toward truth or any other epistemic goals (Biddle, 2013). In this article, I use these terms interchangeably.

expressible in an objective framework, completely independent of human desires or preferences. But allegedly values represent subjective phenomena, and are heavily influenced by social and historical factors. On this view, anything of value has its value in virtue of its relation to human affairs. So our preferences, utilities, and desires are somehow constitutive or determinant of value judgments.[1] Such judgments are normative propositions which determine the way that the world ought to be. They cannot provide us with any reliable evidence about the way that the world is (Haack, 1998). Therefore, drawing on such factors when deciding about accepting or rejecting scientific hypotheses leads to the problem of wishful thinking and endangers the objectivity of science.

The second important motivation behind the value-freedom thesis is a social and political concern. Scientist are experts on matters of fact, not on the moral, social, or political values. Value judgments, whether they are purely subjective or somehow related to factual reality, belong to an independent realm in which scientists do not have any expertise. Any value judgments on the part of scientists that is reflected in the content of scientific theories, and consequently in determining public policies may impinge on democratic ideals and the right to fair representation (Peilke, 2007; Betz, 2013).

Democracy can be described as "a system of governance in which rulers are held accountable for their actions in the public realm by citizens, acting indirectly through the competition and cooperation of their elected representatives" (Schmitter & Karl, 1991: 76). It is clear that scientists or scientific institutions are by no means representative of any group of people in society, and despite the fact that their professional decisions affect the lives of different groups of people, they are not usually accountable for their decisions to the public.

Thus, even if we put aside the worries about the integrity and objectivity of science being compromised by the influence of values, or admit that the influence of values is in a way inevitable, as for example proponents of inductive risk argument do, there still remain some qualms about the

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[1] Despite the fact that advocates of value-freedom of science are almost always anti-realist about values and defend views such as non-cognitivism or error theory, they do not have to. A defender of non-naturalist moral anti-realism will also contend that epistemic evaluation of scientific theories should be completely independent of non-cognitive values, since she believes that natural and moral facts belong to two completely separate and distinct realms. This is clearly related to the main argument of this paper to the effect that if we accept that values are not mere subjective factors and that there is genuine value-dependence of scientific theories, then we should also accept some form of moral naturalism and that values are also science-dependent.

rationality and legitimacy of invoking value judgments in the assessment of scientific theories. To sum, the problem is that scientists have neither the expertise nor the authority to make value judgments that somehow influence the lives of citizens.

2.2 Objections against VFI

VFI has been influential in shaping science policy in the second half of 20th century (Douglas, 2009), nevertheless serious objections have been recently raised against it. The most compelling is the Inductive Risk Argument (IRA), which based on underdetermination of theory by evidence, rules appealing to non-epistemic values in accepting a scientific hypothesis, at least in some cases, necessary. IRA is originally put up by Rudner (1953), has been revived by Douglas (2000, 2009), and accepted by others like Steel (2010), Elliot (2011, 2013), and Winsberg (2012).

The main line of this argument from inductive risk reads as follows: inferences in scientific investigations are almost always of an inductive nature, so there is always a degree of uncertainty to all scientific findings. Or put differently, theories are underdetermined by all logical qualifications and empirical evidence, so there is always a gap that should be leaped over without any epistemic stick in hands. What guide scientists' conclusions in this gap are value considerations regarding the inductive risks that are taken. These judgments should help scientists weighing the potential hazards of accepting a wrong hypothesis against the consequences of rejecting a right one, when they are reckoning the sufficiency of evidence gathered or the decision to accept or reject a hypothesis.

Inductive risk argument can be summarized as follows (Levi, 1960):

1. Whether dealing with policy relevant science, or just having epistemic goals in mind, scientist *qua* scientist rejects or accepts hypotheses.

2. Scientific hypotheses are always underdetermined by empirical evidence.

3. So, a probability threshold must be set in advance for accepting or rejecting the hypotheses.

4. The scientist's decision to set this threshold is made partly based on how grave are the consequences perceived, should any mistake be made in accepting or rejecting a hypothesis.

5. Therefore, the scientist *qua* scientist must make value judgments.

Some authors believe that: 1) this argument is successful, and 2) makes the value-free ideal implausible (Douglas, 2000, 2009; Steel, 2010). But even if successful, it seems that inductive risk argument cannot fully undermine the VFI. If we admit that it is impossible in science to avoid making value judgments altogether, this does not necessarily undermine the claim to the usefulness of this ideal or regulatory norm. As an Ideal, the VFI may be

unattainable, but to conclude from this that the VFI is a worthless or misguiding ideal seems rather hasty. The defender of the VFI can claim that the VFI is about the conditions that scientific theories need *in principle* to meet to be evaluated as reliable knowledge, and we need an ideal exactly because the real situation is very unideal.

Therefore, to effectively discredit the VFI, one should show that appealing to non-epistemic values is not only inevitable, but also desirable. The VFI, as a regulatory norm, urges us to avoid using non-epistemic values in epistemological evaluation of scientific theories as much as possible. So to challenge it, it is not enough to show that in some cases where we have to decide on a theory, having no other choice, we have to resort to non-epistemic values.

As de Melo-Martín and Intemann (2016) have discussed at length, the core idea behind the VFI is the rejection of any legitimate role for non-cognitive values in determining evidence. Indeed, what is at the hearth of the VFI is the idea that non-epistemic values cannot function as evidence. Interestingly, many opponents of the VFI (like (Douglas 2000, 2009; Steel 2010, 2017) admits this much.

So, holding that science is value-laden amounts to believing in some evidentiary function for values. de Melo-Martín and Intemann (2016) try to give some concrete examples of the cases where values have such a function. They point to two types of cases: 1) cases where the subject of research or the content of scientific theories includes some normative concepts, and 2) cases where the concepts in question are descriptive but the choice of conceptual and ontological framework of research is influenced by non-cognitive values. Below I will explore these two type of cases in more detail.

2.3 Thick Concepts

Scientists choose the subject of their research influenced by various types of interests and curiosities they may have. Some are aroused by a pure curiosity to know the unknown, some are looking for money and power, and still others are eager to help their fellow human beings in solving society's problems. It is not surprising, then, that moral, social, religious, economic, and political values may influence their decision to choose research questions. As mentioned earlier, no one considers this form of influence of values on science destructive. But it often happens that in the social sciences and even the life sciences, we come across cases in which the subject of research includes normative concepts or "thick concepts." A thick concept is a concept that has both a descriptive and a normative component. For example, violence, love, dogma, rape, danger, and harm are examples of thick concepts. Bernard Williams, who first used the term thick concept in *Ethics and the Limits of Philosophy* (1985), believes that thick concepts are only

a guide to action, while thick concepts are both a guide to action and influenced by the world (Kirchin, 2013).

In natural language, there are many terms that can be viewed as denoting thick concepts; That is, they are both evaluative and descriptive. The reason for the frequency of such words is clear: "Evaluative language expresses our interests, which, unsurprisingly, are things we are interested in expressing. When we describe things, it is often, perhaps usually, in terms that relate to the relevance of things for satisfying our interests" (Dupré, 2007: 30). So it is quite natural that thick concepts are usually among the things that arouse the interest and curiosity of scientists. Dupré believes that science should not and cannot ignore the evaluative power of thick concepts. The inevitable presence of these concepts in science has also been the main idea of one of the well-known arguments against the VFI (Dupré, 2007; Biddle, 2013).

De Melo-Martín and Intemann (2016) claim that when thick concepts are among the main concepts of a research project, non-epistemic values may play evidential roles. For example, research that seeks to assess harms and risks clearly deals with normative concepts and assumptions about the well-being or interests of humans and even other living things. Studying such issues requires answering questions like: "What is considered harm or loss and what is worth protecting?" For example, if the subject of research is to examine the effects of climate change and global warming, then what counts as a harm depends entirely on the set of values that the researcher respects. For example, the disappearance of diverse cultures and languages as a danger is clearly based on certain normative judgments. Similar cases are common in the biological sciences, and especially in ecology. Conservation of species diversity and natural habitats, which is an important concern in research in this field, has inevitable value assumptions. Another example is research in the medical field on the "side effects" of drugs and treatments. What and in which age group, gender, race, etc. we consider as a complication will inevitably be based on value judgments.

2.4 Conceptual and ontological framework

Another objection to the VFI is based on the claim that non-epistemic values can influence decisions about the choice of ontological frameworks. There are cases where the concepts in question are descriptive, but the choice of conceptual framework may depend on contextual values. Ludwig (2016), who defends this claim, cites two premise for his argument: 1) the truth value of scientific propositions depends on ontological choices, and 2) ontological choices often depend on non-epistemic values. Based on these two premise, he concludes that epistemological evaluation of scientific propositions is neither possible nor desirable without the involvement of non-epistemic values.

There is little controversy about the first premise and it is not directly related to the evidential role of non-epistemic values. In order to justify the second premise, however, Ludwig points out that scientists' explanatory interests usually play an important role in choosing the ontological framework. Different explanatory goals lead scientists to choose different ontological frameworks (Ludwig, 2016). He gives many examples, mainly from biology and psychology, in which different interpretations of concepts such as "species", "memory", "intelligence", "obesity", "sadness", "depression" etc. change the truth value of scientific statements. For example, statements about the number of species in a habitat, or the average IQ of a population, or short-term memory capacity, or the prevalence of obesity in a population.

Assuming that non-epistemic values play an obvious role in shaping the explanatory interests of scientists, Ludwig concludes that the truth value of scientific propositions (i.e, the content of scientific theories) is influenced by non-epistemic values, and this is exactly the opposite of what VFI advocates say.

2.5 Some Objections against Evidential Role of Non-epistemic Values

Indeed, there may be some controversies about the plausibility of the case for evidential roles of non-epistemic values which was briefly discussed in the last two sections. For instance, about the prevalence of thick concepts, it may be argued that when the research subject inevitably includes normative or thick concepts, scientific research becomes *conditional*. Acceptance of the results of such research is conditional on acceptance of the value assumptions that have been involved in defining the research problem. For example, in the case of research on the side effects of drugs, if you agree with the assumptions that have been relied on to determine the incidence of adverse effects, you can also accept the result of research that a drug has this and that side effects. Otherwise, such a result will not be valid for you. There is no independent empirical evidence which can convince you to accept a given delineation of the concept of "adverse effect". Thus, it seems that non-epistemic values in such cases do not really play the role of evidence, rather they determine where to look for evidence. Or, to put it more clearly, they determine which facts to look for as a witness. This function of non-epistemic values is very similar to the role they play in determining the research problem.

Or about the choice of ontological frameworks it has been claimed that the truth value of scientific propositions may change, depending on which non-epistemic values we hold. But the point that is seemingly ignored here is that there is in fact no definite scientific proposition whose truth value has changed with the change of the ontological framework. Rather,

changing the ontological framework changes the meaning of the sentences under discussion, and they imply different propositions under different frameworks, even if they apparently use exactly the same terms. Consider one example of Ludwig: "In Indonesia, at least forty species of orchids became extinct during the twentieth century." Depending on our notion of the concept of species and what ontological framework we choose, the number of species that became extinct at the time and place mentioned in the sentence can vary. But so will the meaning of the sentence under discussion, and consequently the propositions it implies. It is not the case that we choose an ontological framework depending on our explanatory interests, which are influenced by our non-epistemic values, and this choice changes our perception of the matters of fact. Rather, the choice changes our desired aspect of reality and the perspective which we take of reality.

The important point to note, however, is that even if we do not agree that the given examples show that contextual values can legitimately play some role in determining evidence, it is still the case that rejecting the VFI leads to accepting evidential roles for conceptual values. As discussed, the main idea defended by advocated of the VFI is that non-epistemic values are normative claims which merely express something about the way the world ought to be, and hence cannot provide any evidence about the way the world is. So, to reject the usefulness of the VFI as an ideal guiding scientific conduct, it should be established that non-epistemic values may acquire evidential roles.

3. Value-ladeness of Science and Science-ladeness of Values

In this section, I want to show that if we accept that values can be evidence for empirical theories, then empirical theories can also be evidence for our value judgments. For this, two arguments will be put up, one by invoking confirmational holism and the other by pointing out to the anti-dogmatic nature of science.

Frist, I appeal to confirmational holism. Assuming a holistic structure for the various theories and evidences that confirm each other makes it the case that every criterion which is potentially useful as evidence for theories or in determining evidence for theories be subject to confirmation and disconfirmation by further empirical evidence. This is evident if we examine the relation of evidence and theory more closely.

Suppose that if we judge *x* valuable then this value judgment has some roles in confirming theory T. Suppose further that theory T will be confirmed by some independent resources (for example some new empirical evidence are gathered, or it becomes clear that theory T can unify different fields, or make way for proposing new useful theories). In such a situation, it seems that although *x* is essentially a non-epistemic value, but incidentally

it is instrumental in gaining knowledge. This can be interpreted as having some empirical evidence for *x* being valuable. This is also the case that if some independent resources disconfirm the theory supported by *x*, then *x* is somehow undermined.

Also, scientific theories, by revealing causal relations, can provide empirical evidence for value judgments. If we assume that judging *x* valuable has some roles in determining evidence for theory T, and it is further revealed that *y* causes *x*, then we have some empirical evidence that *y* is (instrumentally) valuable.

Anderson (2004) argues exactly for the same point when she claims that presupposition neutrality implies implication neutrality, and vice versa. If two proposition P and Q entails each other, then their negations (i.e. ~P and ~Q respectively) also entail each other. The claim that non-epistemic values can play evidential roles can be viewed as the negation of presupposition neutrality. So, the statement that presupposition neutrality and implication neutrality entail each other is equivalent to claim that if we accept that values can serve as evidence for empirical theories, then our value judgments can also serve as evidence for empirical theories.

The second point in defense of fact-dependence of values pertains to anti-dogmatic nature of science. A scientific theory is supposed to be something sensitive to reality and at the same time completely indifferent to our wishes, emotions, passions and desires. As I pointed in the section 2.1, one of the main concerns behind defending value-freedom of science is that value judgments are usually viewed as some dogmatic commitments that, whether grounded on our subjective mental states or on some supernatural reality, are always the same no matter how the world is, and what we perceive of it. But if value judgments are quite insensitive to nature, then it will be very unlikely that they can play any roles in determining evidence. Evidence should be responsive and sensitive to the way the world is (Anderson, 2004). Therefore, if evidential role of some non-epistemic values is acknowledged, then it should also be acknowledged that they are somehow constitutively related to nature.

4. Value-ladeness, Moral Realism, and Moral Naturalism

I this section I will try to argue that the fact-dependence of values that results from value-ladenness of science may be counted as an argument in favor moral realism. We may not agree that science is value-laden. But as discussed, when we genuinely admit that science is value-laden, this amounts to embracing evidential roles for values, and that, in turn commits us to science-ladenness of values. To remind again, all that I am arguing for is the relation between value-ladenness of science and science-ladenness of

values and I am not taking any position on the issue that whether science is in fact value-laden or not.

Thus far I have argued that admitting that science is value-laden leads to the conclusion that value judgments are somehow linked to reality, and are influenced by facts of matter. The last claim seems to be like the view advocated by the moral realists. They believe that there are moral facts, and that value sentences, when true, report some objective features of the world.

There are different kinds of moral realism. Some realists believe that moral facts belong to a realm distinct and separate from natural facts. These are non-naturalistic moral realists. Clearly, any kind of theory that supposes supernatural basis for values is not relevant my argument. There is also another strand of moral realism which is non-naturalistic, but does not necessarily appeal to the supernatural. Such theories only contend that moral properties are identical with, or cannot be reduced to, any set of non-moral properties. But realists who support moral naturalism believe that moral facts are somehow related to natural facts. This relation can be reduction, supervenience or something else.

Of course, there is a lot of controversy on the exact characterization of ethical naturalism, but one very helpful point concerning our present discussion is this: "Very roughly, non-naturalism in meta-ethics is the idea that moral philosophy is fundamentally autonomous from the natural sciences" (Ridge, 2019). Hence, it seems that ethical non-naturalism entails that there is no regularity between natural and moral properties. And if this is the case, then there can also be no evidential relation between these two sets of properties. But naturalistic versions of moral realism deny such autonomy of moral facts from the natural ones, and assume some forms of dependence between these two types of facts.

Accordingly, it seems that if we assume that science is value-laden (and consequently values are not science-free), then, among the different versions of moral realism, ethical naturalism is the one which is better supported. So, any argument in favor value-ladenness of science, if successful (i.e. if it can establish some evidential role for non-epistemic values), then it can also be invoked to defend moral naturalism.

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