

# Non-epistemic Values and Scientific Knowledge

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In *Science, Truth, and Democracy* Philip Kitcher presents arguments to the effect that scientific inquiry is value-dependent in so far as "scientific significance" is crucial to understanding the scientific enterprise and is analysable only in terms of human interests. He proposes a marriage between value dependence and moderate scientific realism, challenging thus a long-standing tradition of radically separating non-epistemic values and scientific knowledge. In my paper I want to make the rationale of that marriage more comprehensible and interpret it as a step towards a naturalized philosophy of science. In my first section I will make clear what I understand as "naturalizing" and what I take to be the substantial problem, i.e. the steering function of non-epistemic values in cognitive processes. The second section will identify the assumptions on which the separation of non-epistemic values and knowledge are based. In the third section Kitcher's arguments in favour of a marriage will be presented and evaluated. Finally, I will sketch a positive account how non-epistemic values steer cognitive processes.

I

Quine wanted us to naturalize epistemology by reducing it to descriptive psychology. Because, however, scientific knowledge production is so obviously normatively steered, only a few philosophers have been willing to follow Quine's radical strategy. On the other hand, Quine's second naturalistic claim that epistemology should study human knowledge as it is in our actual world has not lost its power. Kitcher places himself along this line of reasoning and characterises naturalized epistemology by four principles (Kitcher 1992):

- (a) Epistemology aims to understand the epistemic quality of human cognitive performance.
- (b) The epistemic status of a cognitive state is dependent upon the process that generates it.
- (c) Epistemology must make understandable those processes, which are reliable, i.e. lead to truths.
- (d) There is no a priori knowledge.

Kitcher's effort to convince us of his marriage position is based upon the assumption that the knowledge generating processes have been regrettably simplified especially within philosophy of science. What is missing is an analysis of the motivations for actions as an essential part within the scientific processes of knowledge production. As human actions and the values, which steer them, have an important function in cognitive processes the intended meaning of "naturalized philosophy of science" would be that scientific knowledge production has to be seen as embedded not only in theoretical but also in those practical activities that characterize human life.

In regard of human actions as a component in epistemic processes we face a rather strange situation. The internalists do not hesitate to take actions into consideration. By reducing cognitive processes to the fulfilment of epistemic duties, however, only cognitive actions are accepted. Science as an organised human endeavour for truth finding is value dependent insofar the goal of cognitive actions is truth and truth can be seen as an epistemic

value. Unfortunately, this line of reasoning about actions displays at least three shortcomings. First, the interesting debate focuses on non-epistemic values not on epistemic. Second, the internalist's reduction to epistemic values will be undermined by two well-known disadvantages of any purely internalistic account, namely that fulfilling one's epistemic duties is neither necessary nor sufficient for knowledge because it does not guarantee truth-conducivity, and that it faces Cartesian scepticism (Plantinga 1993). Third, the internalist analyses action in purely rational (ideal) not in procedural terms eliminating thereby any relevance of the context of discovery. If, however, non-epistemic values play a role within science then it will be within discovery processes.

If we want philosophers to look at actions in epistemic processes then externalism, not internalism, seems to be the right place to look. By allowing causal processes to play a warranting function externalism radically undermines the traditional separation between context of discovery and context of justification. Externalists, however, are mainly concerned with dispositions, capacities and causal processes (in an adequate environment) in order to avoid the shortcomings of internalism. They do not pay much attention to action in cognitive processes. The rationale for excluding actions from externalist's theories is not difficult to identify. First, because actions are not fully analysable from a third-person-perspective, externalists have tried to avoid any commitment to them. Second, they are often not only sceptic to subjective factors but also to attributor factors within the truth condition for 'A knows that p'. Eventually, realists tend to take a Humean stand towards values and to treat them in a fully subjective manner (cf. "Canberra Plan"-philosophers). Within science, however, knowledge attribution (whether or not standards are fulfilled) is as important as non-epistemic background conditions such as funding, problem-solving etc. And both, meeting standards for knowledge attribution as well as non-epistemic background conditions, are "action-laden".

Nobody who is aware on how research programs are normally set up can reasonably deny the relevance of non-epistemic values (interests) in science policy. More questionable is the epistemic role of these values. The strange situation we have vis-à-vis them within epistemology can be summarized as follows: Values steer human actions, i.e. our interaction with our environment. Those who are willing to consider actions in epistemology – internalists – treat them in a reductive manner by allowing only epistemic values. Those who are willing to consider human cognitive power in our actual world – externalists – often treat epistemic processes reductively too by not permitting any "subjective" components such as actions.

II

The ban on non-epistemic values in epistemology and philosophy of science has a long tradition. Science itself has given us enough reasons to be very careful regarding them. There have been many cases illustrating the problem of cultural, gender or economic bias in research. The critical and normative epistemological attitude towards non-epistemic values vis-à-vis knowledge is based on good reasons: if an acquired belief is to become accepted

as knowledge, then non-epistemic values are not allowed to play a justifying role. There is no point in challenging that.

There is, however, epistemologically more to the function of non-epistemic values in knowledge production. The ban against them is based upon four assumptions. The first is to look upon knowledge as basically mapping the natural world objectively whereas values are treated as subjective. The second amounts to the claim that the context of discovery and the context of justification can successfully become separated. The third – interestingly enough shared by both, instrumentalists and realists – is that value-dependence leads to instrumentalism. The fourth denies that non-epistemic values can be truth-conducive in whatever sense.

If you want - like Kitcher - to marry non-epistemic values with scientific realism you can do that in a weak or strong form. You can look upon their function within knowledge production either simply as compatible with realism or stronger as truth-conducive in some sense. Kitcher seems to favour the weaker form. He especially challenges assumption three without thinking about truth-conducivity. Kitcher's strategy to undermine assumption three aims at critically analysing the force of the instrumentalist's darling, the underdetermination-thesis. Because he sees no point in claiming that we always have to choose between equally well supported rival hypotheses, he concludes that "there is no basis for believing that value judgments inevitably enter into our appraisal of which of a set of rival hypotheses [...] is approximately correct" (2001, 41). I fully agree with him.

Unfortunately, the argument does not establish a positive epistemic function of non-epistemic-values. But if values are relevant because they help to "divide things into kinds to suit our purposes" (49) and that function is compatible with scientific realism, then a positive epistemic function must be demonstrated. Kitcher also implicitly rejects assumption two on the basis of his reliabilism. Because, however, the standard naturalistic arguments are causal and not axiological this will not add evidence in favour of the marriage-position.

### III

As a positive argument in favour of his weak "compatible-position" Kitcher presents what I call "the success argument". It has two components. The first is that much of scientific research is obviously interest-oriented (biotechnology, environmental science). It can simply not be denied that scientific knowledge production is dependent upon value-decisions and directed to value-laden human actions. The second component is that hypotheses and theories nevertheless lead to successful application in our interaction with the world. That argument relies on the hidden premise that success implies truth (Kitcher: "accuracy").

Kitcher's paradigm case for demonstrating the relation between interests (values) and success is the "motivational analogy" between science and cartography (chap. 5), since, in his view, maps are like belief-systems or theories and they potentially represent reality accurately and completely - relative to certain standards. A hundred philosophers meet each other in Kirchberg every year. Why are they successful in meeting there? They follow maps and timetables announcing when planes will depart at Y and will arrive in Vienna, which train one should catch at which station etc. Given normal circumstances (and a

properly functioning cognitive apparatus) philosophers succeed in reading the given information. Maps are more or less reliable within their domain. Why are they reliable? Because, Kitcher answers, they are designed to serve our purposes first of all. They are, however, not reliable because of the purposes. They are reliable, because they are produced with adequate methods and allow successful prediction based actions.

According to Kitcher, the "motivational analogy" should not be taken as an argument. The problem, however, is that the analogy makes even his weak position doubtful. He starts with the metaphor that nature is like a block of marble (p. 44), which is shapeable by a sculptor in infinitely many ways. The analogy then amounts to the following claim: because nature is like this (and is not, as realists usually claim, structured in itself) values can steer our cognitive interests such that it directs our epistemic focus in picking relevant parts out of a complex marble-like nature. Instrumentalism lurks behind such a picture. If we epistemically shape nature the way a sculptor shapes a piece of marble then, strictly according to the analogy, knowledge will be nothing more than an artefact - which is not what a moderate realist wants to be committed to.

With the alleged "marble ontology" instrumentalism will inevitable come back in through the back door. Even a moderate scientific realism needs the ontological presumption of a structured world because otherwise there would be no definite truthmakers (occurring states of affairs) available. Values can only have a positive epistemic function if they direct our epistemic focus to structured components of the world. Let us therefore use a structure-ontology and assume it to be true that all entities are composite and structured (systems). A system is constituted by its individuals (with their qualities), its structure (the relations holding between its individuals) and its environment (the interacting relations between the individuals within and outside the system). Suppose further that our world is a complex system of systems. The interesting epistemological question then will be how we draw the distinctions such that the truth-conditions for "A knows that p" become fulfilled where p is made true by a system (e.g. a tree), i.e. how the boundaries of that system should be drawn. Like Kitcher I believe that values can steer our cognitive processes by directing our epistemic focus in picking relevant parts.

What remains to be demonstrated is the positive epistemic function of non-epistemic values, I claim to exist. Apart from the weakness of his marble-ontology, Kitcher's "success-argument", won't be good enough to do the epistemologically demanded job. Newton's theory can still be successfully applied within its restricted domain. Nevertheless, it is not true. Success is an indication, can add evidence, but it can also display truth by pure chance – what no epistemology can accept.

### IV

As a prerequisite for my demonstration I need an account of values. Values, the old Humean story goes, have nothing to do with the structure of nature. Like Kantian categories they are looked upon as a part of our subjectivist clothes we dress nature with. And because values steer our actions, and actions should always be judged morally, values are not only treated subjectively (psychologically) but also morally. However, both treatments are overtly one-sided. On the one hand, the subjectivists ignore the qualities of entities as a material basis for the goods that values are directed to. As a consequence,

values become deprived from their objective component. On the other hand, the adherents of an exclusively moral understanding of goods ignore that there are moral as well as non-moral goods. The ability to write German according to the new rules for example may or may not be a good. If it is a good, then it will not be a moral but an instrumental good. If there are limited resources of clean air and fresh water, that could become morally relevant. Clean air and fresh water are goods but not per se moral goods. Accordingly, I take the following definition of values to be adequate:

For all  $Z$ ,  $Z$  is a value iff

- (1)  $Z$  is an intentional object for an individual  $A$ ,
- (2)  $Z$  refers to a state of affairs  $X$  and
- (3) it is the case
  - a) that  $X$  has certain qualities such that it is a good, and
  - b)  $X$  counts for  $A$  as a good  
(whether  $X$  occurs or does not occur).

There is certainly more to say about that proposal (cf. Lemos 1995). For the sake of the argument I will take it for granted and will base my analysis on it.

It is a reliability-account I have in mind. Some non-epistemic values steer some cognitive processes such that the conditional probability that these processes lead to truth is higher than it would be without such values. Although many believe that reliability asks for a third-person-perspective a semantic (deflationary) understanding of the truth-predicate will block much of what could be threatening for reliabilism here. Therefore and again for the sake of the argument, I will take it for granted that reliability is a worthy component within an epistemic theory.

Furthermore, there is the notion of scientific significance. Non-epistemic values can help to build what Kitcher calls "significance graphs" (chap. 6). "Scientific significance" has a double meaning, pointing to inner-scientific epistemic relevance and to relevance for human practice. My present concern is on the former. "Epistemic relevance" has a double meaning once again. It can mean "significant truths" or "something, which influences the contingent pathways of scientifically interesting questions". Unlike Kitcher, however, I have argued that the latter does not entail the former from a realist point of view. The marriage will only become comprehensible if some truth-conducive function of non-epistemic values in their influence on scientifically interesting questions is demonstrated.

My claim is then that non-epistemic values steer cognitive processes in three fundamental ways: (a) by co-determining the selection of objects for knowledge production, (b) by co-determining the selection of causal information; (c) by motivating individuals and groups to proceed according to epistemic norms and even to improve them inductively.

Imagine the following situation. A group of environmentalists wants us to protect a species  $A$  in a region  $B$ . They look upon  $A$  as an indicator for a healthy environment, presupposing that the latter is an important good for us. The hunters in  $B$ , however, reject the attempt to protect  $A$ . They point to their hunting rights and understand hunting  $A$  as an essential part of their social identity. Moreover, they can see no threat for the population  $A$  because of its reproduction rate.

Suppose now that region  $B$  is a complex system, constituted by a sum of individuals, the latter standing in structuring relations between them and between individu-

als from the systemic environment. Suppose  $B$  is a large forest and deer are the species in question. Within the large forest there are also regions of agricultural production and small villages. Where do we draw the boundary of the system? What is part of  $B$  or part of the environment of  $B$ ? What consequences do we face accordingly for the truth-conditions of statements like " $B$  is such-and-such"?

Non-epistemic values can have a steering function in such cases. From the point of view of the environmentalists  $A$  is an instrumental good regarding the more general good "healthy environment", for the hunters  $A$  is an instrumental good for "social identity". Furthermore, the valuing is based upon different hypotheses regarding the population of  $A$  (reproduction rate allows hunting – calls for protection). Let us now bring scientists (e.g. biologists and sociologists) into our picture.

Firstly, how do they get their research objects within the system  $B$ ? There is likely some scientific state of the art regarding the subject matter. The value dispute, however can steer a cognitive selection process towards picking  $A$  as research object out of number of alternatives (deer not mice etc). The important point here is that the value-dispute together with the underlying hypotheses brings in possible defeaters and there is quite a good agreement on their epistemic function.

Secondly, the value dispute can steer the selection process towards causal information in at least two ways. We want to understand the relevant causal interaction between  $A$ , the system  $B$  and its environment in order to decide between the competing hypotheses implied by the value-dispute. And it is causal relevance, which will normally enter into the truth conditions for " $B$  is such and such". Moreover, given the account of values I propose the scientists will also be directed towards an inquiry on the role of the goods in question. What qualities make a region a healthy environment? What causal impact can values have on a system like  $B$ ? Non-epistemic values can, therefore, co-determine the selection of causal information because values itself are based upon (causal) qualities and have causal consequences by steering our actions.

Thirdly, the disputing values may have a steering function towards methods. Because possible defeaters are involved, scientists can become motivated to think about adequate methods (cf. the case of forest deaths). Moreover, where a public debate on competing values takes place the public decisions to be made may be dependent upon the methodological reliability of the research processes in question. The public controversy on climate models for example has forced the scientists to improve such models.

These things considered we can say that the conditional probability that these value-steered processes lead to truths about  $A$  within  $B$  is higher than it would be without non-epistemic values. I do not claim that non-epistemic values steer human knowledge production in all possible cases or that they exclusively determine knowledge production. I rather defend the moderate claim that non-epistemic values can play an important role in scientific knowledge production. And because their truth-conducivity is based upon the purported (and defeasible) qualities of the goods values are directed to the steering function of values and moderate realism are authorized to celebrate their marriage. Moreover, the given defence of the marriage displays a much more adequate picture of science than the rationalists still offer us.

## Literature

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