# NATURALISM RELOADED: HOW DO WE CONSTRUCT OUR WORLD?[1]

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**Review** of Joseph Rouse, *Articulating the World. Conceptual Understanding and Scientific Image*, University of Chicago Press, 2015, 416 pp.[3]

In the second half of the 20th century, naturalism became one of the main points of view embraced by philosophers in multiple fields, from metaphysics to philosophy of mathematics and philosophy of science. In philosophy of science, naturalism was often associated with the endeavor to scientifically explain our capacities for doing science and, at the same time, the epistemic normativity involved in sciences.

Joseph Rouse's book makes a step further by trying to eliminate the last remaining bastions of a transcendental, metaphysical or theological point of view regarding conceptual normativity. His book is hardly the only comprehensive attempt to articulate a naturalistic image of the world. He comes from a tradition which can be said to have started by Sellars's distinction between the manifest and the scientific image, which gave birth to different attempts to explain how the

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[3] Unless otherwise noted, the page references below are to the book being reviewed.

scientific image can be reliably constructed as an objective way of describing the world, including us as epistemic subjects, starting from our standpoint as biological and historical beings. At the same time, naturalism received critiques from empiricist philosophers like Bas van Fraassen, but also from the so called "left-Sellarsians" like McDowell, Brandom, or Haugenland, who could not make sense of the conceptual normativity of the sciences (or, more accurately, could not make sense of how scientific authority can be justified and how humans, as rational subjects, could be held accountable to such norms). In order to make easier for the reader the understanding of the most important issues addressed in this book, let's expose a bit the meanings of "manifest image" and "scientific image". The first refers to us, as humans, as biological organisms constrained by our cognitive apparatus and biological purposes and as members of a society, embedded in social interrelations, and our ways of making sense of the world through knowledge and skillful manipulations of objects. The second one, the "scientific image", refers to the picture resulting from an accurate scientific description of the world (including ourselves, as subjects of knowledge), let's say, from a "God's point of view". The way this distinction is articulated is one of the main issues of this book.

*Articulating the world. Conceptual understanding and the scientific image* is divided in two parts, complementary to each other and proceeding from opposite directions. The first part proceeds from the scientific image and tries to explain our development as language-using rational beings capable of conceptual understanding, and the second part goes on from our standpoint as knowers and tries to explain the normativity involved in sciences. These two parts are complementary to each other, which may seem to be one of the faults of this book. One who wishes to attack naturalism as articulated by Rouse may reason in the following way: if in order to explain our status as beings capable of conceptual understanding we need to appeal to evolutionary biology and anthropology (which belong to the "scientific image"), the explicative power and normativity of which are to be explained starting from our capacities of conceptual understanding, then the entire project is stuck in circularity. While Rouse doesn't address this problem directly, and I think this is one of the reasons for us not being

constrained to accept his conclusions, I think he manages to show how this circularity is not as vicious as it may seem to be. Each of the two complementary parts makes sense on its own, and is consistent with our practices. Furthermore, circularity is not always avoidable: often, when we are trying to define a term, we are using other terms which are themselves definable through the *definiens*. What is important in this case, I think, is to avoid our conceptual construction to be a "frictionless spinning in the void", as Rouse often quotes McDowell while criticizing various attempts to account or scientific normativity without grounding it in the material world and actual practices.

One of the first questions Rouse tries to answer concerns how intentionality is coupled with conceptual normativity in humans. There are four main types of attempts to deal with this problem. One of them is encountered in authors like Husserl's structures of consciousness and Carnap's logical structure of language, who saw intentionality as being an operative process regarding ungiven or nonexistent objects. The second one takes intentionality to be operative, but about given objects. Here we have Dennett, Millikan or Dreyfus. The third one takes it to be rather normative, but regarding nonexistent objects (here we have Rorty of Davidson as representatives, with their views of linguistic meanings and normative rules as not being accountable to the world). Finally, the fourth one, that Rouse defends, views intentionality as being normative and about given objects (more precisely, given to intentionality, as anticipated or foreseeable in the future).

To understand the difference between operative and normative accounts for intentionality, take one of the most used examples in the book: chess games. A chess player knows the rules of the game and also which moves are better and give more advantages in the game. Ordinary players usually have to actually think about these rules and principles of the game while playing, but a grandmaster makes many of the moves automatically, without actually thinking about rules and principles. If we take intentionality as operative, then in many cases our actions fail to be able to be taken as accountable to rules and principles,[4]

[4] Rouse, Joseph. *Articulating the world. Conceptual understanding and the scientific image.* Chicago: University of Chicago Press, 2015 (47-48, 63-64).

even if they were not actually propositionally formulated in the players' minds. In this second sense, conceptual normativity applies to actions as well as it applies to rules and principles.

Rouse spends much of the first part of the book attacking the second and the third accounts of intentionality. I will not enter into every detail regarding how he establishes his point of view as the most accurate one, but some critical steps should be highlighted.

The question that arises, Rouse says, is how our kind of normativity is constituted and how we differ from other animals from which we evolved. To be normatively constrained means to be able to make mistakes or to be wrong about something. That's why objects are not normatively constrained: they cannot make mistakes (they can only make mistakes as *our* instruments, regarding *our* goals). Do other animals make mistakes? Are they wrong about things? The example Rouse uses the most is taken from Haugeland:[5] imagine a bird which avoids catching only yellow butterflies, which happen to be poisonous. If, for example, there is one species of yellow butterflies that are not poisonous, but the bird still refuses to hunt it, can it be said that the bird is wrong about that? The answer is no, because to be wrong about something means to be able to take it *as* something. The bird doesn't take the non-poisonous yellow butterfly as poisonous simply because it avoids yellow butterflies only due to a visual cue, with no knowledge about "poisonousness". The conclusion from this step is that, in order to be normatively accountable, something has to take things *as* being in some ways.

The other extreme is that of being able to take things *as* being somehow but not being able to hold them accountable to objects. That may be the case with Davidson's or Rorty's account of societies formulating rules as "frictionless spinning in the void": without being grounded in objects, the rules cannot have normative power, because in such a case we don't know when a rule is followed or not and also we don't seem to be *normatively* constrained by them (Rouse 2015, 68-69).

That being said, the first part ends with sketching a view which does justice both to how we take things *as* being somehow and to the objects themselves. Rouse (2015, 82-83) makes a distinction between

[5] *Ibidem.*

what is at stake and what is at issue within a practice. What is at issue refers to how that practice is continued when some obstacle or problem arises, and what is at stake refers to what it means for the issue to be solved in some way (or, in other words, what is at stake refers to the larger goal of a practice). If we take an organism as being analogous to a practice, we can say it has the goal of maintaining its existence and its way of life in an environment, and in this regard it can be successful or not, but it can't be held accountable to norms regarding "mistakes" it cannot make: the bird which doesn't catch yellow butterflies might have had a more developed apparatus allowing it to distinguish between different yellow butterflies, but that apparatus might have been too costly in other ways with respect to survival.

The other main problem of the first part is that we seem constrained by a dual normativity: both by what is at stake and what is at issue. The trait that seems to do the job is language. Not only language, of course: using equipment, dancing, painting or singing are manifestations of conceptual understanding too. It can be argued, though, that the acquisition of language was the crucial step, and, it seems, a very difficult one. Rouse (2015, 91) gives the example of a bonobo, Kanzi, who could understand and even compute expressions remarkably well, which is a "proof" of the fact that maybe the brain was "ready" for language acquisition in our ancestors, but who could not use those expressions to communicate anything other than things connected to their immediate surroundings. The formation of the capacity for "symbolic displacement", that is, for the ability to use clues (gestures, sounds, graphic symbols) in order to express something disconnected from the surroundings (for example when I say "I found some source of fresh water) is very unlikely. That's why biologists are talking about a cognitive trade-off: we had to "give up" some capacities in order to be able to use symbols to communicate abstract information. Symbolic displacement is, in most cases, something very costly in terms of survival, unfavorable and counter-selective, because it makes immediate responses to the surroundings more difficult.

Our species most probably acquired symbolic displacement once our ancestors had to work in groups in order to avoid predators and find sources of food, after they left the forests for the savannah. You can find a more comprehensive explanation in the third chapter of the book.

The second half of the book, as I said earlier, proceeds from our standpoint as beings capable of conceptual understanding in order to show how we are constructing the scientific image. Well, it may be improper to talk about a scientific "image". A scientific image presupposes a unitary picture and, moreover, it seems to presuppose a representationist schema of science as a set of propositions. Rouse questions all of these assumptions. There are a few things which must be said in order to sketch Rouse's characterization of science. Firstly, science is not retrospective, as philosophers of science often describe it, but prospective: it doesn't consist in a set of sentences already established which form *the* body of scientific knowledge. Rather, previous scientific discoveries and established knowledge stand for future discoveries and are so understood by practitioners. The relevant scientific facts are those which allow for the discovery[6] of new facts. Secondly, scientific practice matters: as conceptual understanding is normative, not operative, it is involved in all sorts of actions, and is not a property of mental activity only. Skills can succeed or fail in being in accordance with conceptual norms.

An important problem which needed to be solved is that of the applicability of scientific models. For other philosophers of science as Ian Hacking or Nancy Cartwright, scientific models or scientific laws apply only in very specifically determined cases. As Ian Hacking observes,[7] phenomena which are studied by scientists do not exist in nature as such, but must be created in the laboratory. If the theoretic model is constructed in order to explain or describe the phenomena, then there is a sort of fitting between them such that the model does not apply outside the range of phenomena which were especially designed for the model. Or, according to Cartwright, it applies to other phenomena only if they are in accordance to the model constructed for the laboratory-

[6] The term "discovery" may be problematic if it is seen as a commitment to scientific realism. Rouse is neither a realist nor an anti-realist in the classical sense of these terms. He doesn't presuppose that there is a set of facts ready to be discovered, because the facts depend not only on "the world" but on our interests and our practices too: science goes on some path depending on many factors (that is, what is "at stake"), including what is "interesting" or "important" for the practitioners.

[7] Hacking, Ian. *Representing and Intervening*. Cambridge: Cambridge University Press, 1983.

created phenomena.[8] But in this case, as Rouse says, the model (or concept, or law) applies only when it applies, which is a tautology. Of course, tautologies are hardly interesting when it comes to describing how science works.

According to Rouse, a scientific concept applies, let's say, inductively. It is designed from the start to apply in various cases, but it comes down to our skillful manipulation of experimental equipment to decide whether a new phenomenon can be modelled through a concept or not. In other words, concepts are articulated in such a way as to allow further articulation through observation, experiment and theoretical work. Consequently, experimental skills and theoretical modelling are mutually accountable: scientific practices are theoretically driven and are held accountable to norms prescribed by concepts, while concepts are accountable to nature, such that every theoretic model is defeasible. Of course, theoretic models or theories are revisable and resilient at the same time, such that the further acceptance or rejection of a theory after recalcitrant phenomena are observed depends of a holistic schema and depends of what is seen as being at issue and at stake in a science.

That being said, what remains to do is to explain how science is constituted and what kind of patterns in nature are tracked by scientists. As anyone can observe, there is not a single science, but many sciences, and some of them, as most branches of physics, are called "fundamental", while others are called "special sciences". Usually what makes a difference is the supposed fact that fundamental sciences have laws, while special sciences exhibit only regularities (even if they are very strong regularities). This view was challenged in various ways: some philosophers, like Cartwright, attacked the concept of law, while others tried to show that even special sciences have some kind of laws. Of course, laws can be understood in many ways, from principles governing the nature to counterfactual invariance. Rouse, following Lange, adopts the latter view. Laws are described as counterfactual invariance, that is, facts which would remain constant if other facts were changed. Of course, this definition is not sufficient, because there may be contingent regularities which keep their constancy across possible worlds to a

[8] Cartwright, Nancy. *The Dappled World*. Oxford: Oxford University Press, 1999.

greater extent than some laws. Since a detailed account of how to define laws to answer these issues would depart from the purposes of my review, I advise the interested reader to check Chapter 8 of the book. The main idea Rouse wants to propose is that every science has its "relevant context", and what is invariant in a science, once some facts are accepted, constitutes a law in that particular science. For example it would make no sense to say that had we evolved in another way, such and such facts about our bodies would have been different too. If we accept some facts about our evolution and the constitution of our bodies, then we can find the invariance required so as to be able to talk about laws.[9]

The last thing about the second part of the book that I want to highlight is that sciences cannot be otherwise but subjective in a specific sense. To talk about a "scientific image", according to Rouse, is a mistake because there is not such a global unity within sciences: every scientific domain is created by constructing theoretical concepts which can be further applied and held accountable to nature such as to produce interesting knowledge. The comprehensibility of sciences is limited by our context as biological entities on Earth with specific needs. That doesn't mean that Rouse is an advocate of the disunity of sciences either: there is always the possibility of creating new sciences at the boundaries of already existing sciences, using concepts from both.

After exposing the main claims and arguments of the book we may ask what constitutes epistemic normativity in science. Why should we believe what physicists are saying about such and such phenomena? If we were to accept the conclusions of the book, the answer would be that scientific practice and knowledge are not just a product of our way of life, but they are producing it by changing our environment and interrelations within our societies. Our practices are bound together, and science has no special status in this respect. It has a special status because it is held accountable to nature, and for our practices to continue (this is what is at stake) we should decide what is for science to continue

[9] Here it might be said that in special sciences such as biology the proportion of "noise" across the supposed regularities is greater than in the case of physics. And, of course, what counts as "noise" in developmental biology or physiology is regular fact in evolutionary biology, which studies variation, while ordinary regularities in physiology are less interesting.

as a practice. And, as I already said, for sciences to continue is for us to accept results which are produced in specific ways as accountable to nature. I find the entire construction strong, without a little (or maybe not so little) exception: Rouse did not exert himself enough with respect to the normativity of logic and mathematics. If they are just greater counterfactual invariances, as Lange and Rouse seem to suggest, this needs a justification, because of their supposed apodictic character (if there is no apodictic necessity in logic and mathematics, and they are inductive and revisable instead, that has to be shown too).

Another complaint we might have is that Rouse accounts for a kind of normativity restricted to epistemic contexts, although he did not limit his pretentions explicitly. He rejected normativity as it was conceived by philosophers like Rorty, as being derived from socially accepted rules, because socially accepted rules do not bind us not to violate them. If we were to accept Rouse's account, then normativity binds us because we are engaged in some practices, and in order for a practice to continue we might make norms which are to be respected. This account, in my opinion, is a good justification for an instrumental normativity, or reducible to, as Kant would put it, an hypothetical imperative. Even in this last case, his account doesn't seem to be much stronger than Rorty's. Rouse doesn't claim that he limits himself to account just for that kind of normativity, but also he doesn't account successfully for stronger versions, such as moral normativity.

As a conclusion, despite the fact that some issues remain unsolved here and there, the entire project is well articulated, comprehensive, scientifically informed and strongly defended argumentatively. In my opinion, even though I have my personal reserves with respect to naturalism, the fact that Rouse pays a special attention to scientific practices and biological evolution makes his project to be the starting point of a promising path for successfully defending a naturalistic image of the world.

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