

Commentary 08 on
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HOW DO PHYSICISTS BUILD REALITY?

By Herbert F J Muller

MATERIALISM AND REFLECTIVITY IN SCIENCE

by Paul Jones

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Abstract

The materialistic interpretation of the fundamental principles formulated by H.F.J.Muller makes them a sound basis for any science, preventing dogmatism and rigidity in the cases of essentially reflective study. These principles are thus reduced to the well known principles of dialectical materialism.

In my previous comment ["I Do Exist. Do You?"], I have spoken on the elements of ontological and epistemological idealism in H. Muller's article. This comment will be a natural complement, discussing the common opposite of idealism, metaphysical (vulgar) materialism. The five principles formulated by Dr. Muller could be easily reinterpreted in a materialistic way to specify the distinction between dialectical and metaphysical materialism.

The first statement that theory development is ad-hoc construction sometimes in response to difficulties with earlier constructions stresses the relative independence of the forms of reflection from the object reflected, which must be accounted for by any serious researcher. In the extreme, this independence may lead to abstract speculations devoid of relation to any object at all. Quite often, such speculations take the form of objectivity, hiding them under the mask of an object-oriented theory. There have been numerous examples of pseudo-sciences like astrology, demonology, ufology etc. The distinction between science and pseudo-science may be difficult to draw, and many people get seduced by the apparent rigor and scrupulosity of pseudo-science, including those involved in its development, who may sincerely believe in their doing something significant. There may be big institutes occupied in pseudo-science, academic journals and conferences discussing its «problems», numerous popular interpreters and refined methodologists – all that cannot make it more science, however.

Side note: philosophy is not a science, but neither is it a pseudo-science. Philosophy occupies its own place in spiritual culture, complementing science and art. However, when philosophers pretend to be scientists and develop their philosophies in a science-like manner (for instance, in a deductive style of mathematics), philosophy may degrade to pseudo-science. In the same way, certain directions in art and art criticism can transform into pseudo-science when pretending to be more than art. Similarly, one could consider pseudo-art and pseudo-philosophy, originating from the same tendency to identify form with the whole thing.

For vulgar materialism, everything in the mind is nothing but reflection of matter. However, such materialism does not account for the productive side of subjectivity, forgetting that people do not only reflect the world but also produce it, and the very reflection is a kind of reproduction. Vulgar materialism identifies the reflections of things with the things themselves, and the laws of reflection with the laws of nature reflected. Even in physics, this position is intrinsically inconsistent: the polarization of a target atom caused by a charged projectile cannot be considered as a projectile's property, and a crater in the wall caused by a bullet is different from the bullet itself. The first obvious difference is that an image and its prototype are often made of different materials; this is especially so for human reflection, when everything becomes subjectively reproduced in the form of a social process.

The first Muller's principle can hence be re-formulated as: people's knowledge about the world contains both objective and productive components, the forms of reflection being related to the way of discriminating the object reflected from the rest of the world. In other words, every object becomes what it is for the subject only when it is involved in some human activity; all one knows has already been "adapted" to the human ways, thus being a "cultivated thing" rather than a "thing in itself". However, this does not mean that there is any boundary between "perceptible" and "transcendental" things, since everything in the world is bound to be involved in human activity and become a part of culture; one can only speak about what has been already comprehended and what still remains to be learned.

Side note: there may be different levels of involving a thing in human activity, some of them being rather indirect. For instance, a distant star serving for orientation is in no way physically influenced by the act of orientation – however, it becomes quite different as an object; the same star could be made an object in many other ways (as a source of astrophysical data, a source of poetic inspiration, or an argument in philosophy dispute). For singular things, their objective integrity can only be limited, since their ability to represent certain objects depends on their interaction with other things; the world as a whole is the only thing that can manifest perfect integrity, and one the distinctive feature of human mind is that it can comprehend this integrity being physically finite.

The second principle formulated by H. Muller is that every theoretical construction originates from subjective experience, which makes it essentially recursive when it comes to studying subjectivity itself. In particular, the distinction between the subject and the object cannot be thought of as something existing prior to people's activity, which is restructuring the world. Consequently, there cannot be "given" objects or subjects, both forming themselves in the process of interaction. For a vulgar materialist, all things are "done" to a person, and all one has to do is to "study" and "use" them. However, since science is a cultural phenomenon, every science has to develop with the culture, and the limits of its applicability can never be known from the very beginning, being established in the process of the science's development. There can be no complete knowledge, and perfect understanding would mean no need in science.

One of the most common prejudices in science is the belief in the communicative power of the words and their absolute semantics independent of the cultural context. Much of conceptual arguing comes from mere misunderstanding, when people ascribe the others' words with the meanings they had never had, forgetting that every word has different meaning in different contexts, up to the opposite meanings in different texts. Like the same thing can be reflected in different ways, the same forms of reflection can be used to refer to different things.

When one has to describe consciousness in the forms produced by it, there may be much confusion about the sides of the science related to its form and those belonging to its content. One can never separate them in theory or experiment, but this does not deny the objectivity of the both. On the other side, the attempts to build a purely "objective" science of consciousness (or economy, or sociology, or any other humanitarian science) should be treated with caution, since the essential cultural dependence is an indispensable component of any adequate research in this field. Thus, one cannot expect deep penetration in human psychology from experiments preventing any interference between the experimenter and the examinee: such experiments could reveal some other interesting phenomena, but never those specific for conscious behavior. Similarly, neuroscience has nothing to do with studying subjectivity, since it does not include activity and communication of conscious beings in its methodology.

The third principle, that theory development does not mean approaching a pre-destined constructions, can be important to prevent metaphysical dogmatism, especially in social sciences, where the object studied does not exist before the study in a purely objective form, forming during the study along with it. In physics, the objects can often be created in time small comparable with its lifetime, so that study could be restricted to the object's existence rather than its formation. In social sciences, the situation is different, since social objects are rarely stationary, often developing faster than they can be comprehended. That is why the only scientific approach would be to account for non-stationarity of the object and the involvement of the scientist in its formation. However, in physics too, there may be

essentially non-stationary experiments, where the interference of the object and the experimenter is essential; traditional methods may become inadequate in such cases.

It should be noted that the results of an essentially reflective science cannot be verified in the ways usual for traditional science, employing repetitiveness and uniformity as the criteria; traditional binary logic cannot be applied here too, since its schemes are based on the stationary aspects of activity. Since there can be no ready formalism adequate for an object in formation, science needs ideas from art and philosophy, assimilating their language and style as well.

The fourth principle is that the conceptual reconstruction of the world has to be transformed into a picture of the world, which does not belong to the sphere of spirituality any longer, becoming a framework for any further activity. Science will pass its results to philosophy, which is to produce an ideological basis for practice, which is the only criterion of the adequacy of cognition. No science can be verified in itself, especially the science of consciousness and other humanitarian knowledge: one has to apply science to practice to make it adequate to the object studied.

The fifth principle stresses the essential openness of reflection, so that no adequate knowledge can be self-consistent and perfect. This is a natural consequence of the infinity of the world and its development revealing new aspects in the same thing, or new things able to become the same objects. Any recourse to logic is of limited importance in science, since the criteria of adequacy lie outside reflection. Nothing can be proven, in the traditional (metaphysical) sense. In social sciences, one has to always be aware of the object's development and the mutability of the situation during the same study; the conceptual apparatus must be flexible enough to allow for that.

Thus understood, the epistemological principles of Dr. Muller are nothing but the principles of dialectical materialism as opposed to any metaphysics, both materialist and idealistic. The world exists on itself, prior to any consciousness, but consciousness is a necessary stage in the world's development, and the necessity of assimilating all the world is one of the attributes of consciousness. People do not merely reflect the world, but reorganize it in a quite different way, and the forms of social motion can initiate production of any other material forms. Since everything is in development, no cognition can be absolute and static, and the new sides of the same phenomena can be revealed; however, the possibility of new cognitive forms depends on the level of economic and social development, and no idea can come without a cultural foundation. On the other side, it is only practice that can prove the adequacy of cognition, and science does not have monopoly in assimilating the world.

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