

Chapter 21

A Coherent Realism is a Comprehensive Realism

21.1 The Four Waves of Anti-Realism

A comprehensive form of realism, as exemplified by Plato, Aristotle, and Boethius, was the dominant school in Western philosophy from the time of Augustine until that of Scotus. Today, a comprehensive form of anti-realism, as exemplified by Rorty, Foucault or Derrida, is at or near dominance in the academy. The transition from the first state to the last took place in four great waves: Occam, Bacon, Hume and the post-modernists. These waves correspond to the dismantling, one by one, of Aristotle's four causes: formal, final, efficient and material.¹

Nominalists like Occam rejected the real existence of properties, types, and other universals. All that exists is individual: all predicates and other general terms refer distributively to their many satisfiers, not to a single universal entity. Thus, nominalists denied the reality of Aristotle's formal cause: form as such does not exist.

Although it took several hundred years for this conclusion to be explicitly drawn, it follows from the rejection of form that there can exist no real final causes. Final causation implies a real relationship between an individual and a form that is only partially or imperfectly realized in the present state of that individual. If forms are unreal, so are such relationships.

Descartes, Bacon and Galileo urged that final causation be banished from natural philosophy. This was to some extent justified by the over-

¹Students of Richard M. Weaver will recognize the influence of his analysis of modern history in *Ideas Have Consequences*. [178]

reliance of Aristotelians on final causation, especially in physics. Moreover, the concentration of scientific research on matters of efficient causation undoubtedly contributed to the rapid growth of physical and chemical sciences in the early modern period. However, the banishment of final causation to the realms of apriori psychology and revealed theology was unjustified and has done great harm to both philosophy and science.

Bacon and Descartes did not deny the existence of final causation absolutely, but they denied its existence within nature. All final causation was made dependent on the intentions of conscious agents, whether human or divine. Anything that is not a human artifact could have a proper function only by reference to the design intentions of God. This identification of final causation with Divine intention led to the subsequent confusion by many of teleological explanation with the attribution of perfection or optimization.

Once final causation was relegated to revealed theology, it was inevitable that a Hume would appear, who would attempt a thoroughly non-teleological account of the human mind. Epistemology thus became the study of the operations of the human mind, without reference to the proper functions of the human faculties. As Hume so clearly saw, the operationalist empiricism that results undermines the rationality of induction and renders causal connection inaccessible. Consequently, the third of Aristotle's causes, the efficient cause, went under. Kant attempted to minimize the damage of this loss by making causation an unavoidable projection of the finite understanding, rather than the accidental result of associations in this or that individual human being. With Hume and Kant representing the two alternative poles, one of individualistic subjectivism, and the other of universal, intersubjective anti-realism, modern philosophy has sought out many devices for reconstructing epistemology and ethics without the use of either final or efficient causation, without notable success.

Post-modernism has been the natural response to the evident failures of modern philosophy. Without final or efficient causation to tie human ideas to objective reality, the materialistic story of modern scientific philosophy becomes merely one story among many equally legitimate alternatives. Since truth is impossible, reason becomes optional.

Post-modernism will turn out, I believe, to be a transitional episode, and not a permanent condition. The absolute indifference to intellectual discipline that post-modernism fosters will inevitably provoke a reaction in the opposite direction. Indeed, the reaction has already begun, as evidenced by the Australian materialism of David Armstrong, Frank Jackson and others, and the teleological naturalism of Millikan, Dretske and Papineau. A coherent and viable alternative to the failures of modern philosophy and the vacuity of post-modernism must, and I think will, be built on the restoration of all four of Aristotle's causes. By recognizing that our cognitive

faculties are objectively ordered to the end of truth, and by recognizing that universal types are every bit as real as particular instances, we can successfully depend on the possibility of both truth and knowledge. Moreover, since our volitional faculties are also objectively ordered to a systematic end – human eudaemonia – we can close the infamous fact/value gap and restore ethics to its rightful place among the sciences.

21.2 A Prolegomenon to any Future Critique of Metaphysics

Since the work of Hume and Kant, the work of metaphysics has taken place under a cloud of suspicion. Empiricists and positivists have held metaphysics to be unscientific because it postulates entities, causal connections, substances, universals, numbers, etc., that are not directly verifiable by the senses.

Metaphysicians have not been alone in this predicament. Scientists who insist on interpreting the theoretical entities of science realistically fall under the same suspicion. Locke was skeptical, not only about scholastic metaphysics, but also about Newton's mechanics, and van Fraassen rejects, not only universals and causal connections, but also electrons and magnetic fields.

The central dogma underlying the positivist critique of metaphysics is the privileged status of sense perception. Whatever can be justified can be justified (according to the positivist) in terms of sense perception, or sense perception plus deductive logic. The positivists owe the rest of us an explanation of why we should grant this exclusive privilege to one or two modes of knowing, at the expense of all others.

The basis for the privileging of sense perception seems to be the matter of reliability. There are two reasons for thinking that our knowledge of our own sensory surface stimulations (to use Quine's phrase) is more reliable than our knowledge of other facts: causal distance and inferential distance. The process conveying information to me from a rock or an electron is much longer than the process conveying information to me from the immediate environment of my sense organs. Similarly, the process carrying information to my own sense organs is much shorter than the process by which natural selection conveys information to the innate structures of my natural kind. A longer process is more susceptible to malfunction, *ceteris paribus*. Hence, the shorter process is more reliable. Similarly, any knowledge gained by inference from sensory knowledge involves additional steps, during which additional errors can occur.

However, *ceteris* is not always *paribus*. As Fred Dretske has pointed out, our knowledge of distal facts is often much more reliable than our knowledge of proximal stimulations. I am much better at learning the pattern of the distribution of furniture in my office than I am at learning the pattern of stimulation of my retina. My innate knowledge of arithmetic is more reliable still, and much of our inferential knowledge, for instance, our knowledge of the power of gravity, is more reliably formed than our knowledge of the results of any single experiment.

Where the positivists and empiricists are right is in insisting that there be the possibility of some kind of causal connection, either direct or indirect, between us and any postulated entity. In the absence of such a causal connection, there can be no reliability, and where there is no reliability, there can be no knowledge. Where they are wrong is in insisting that this causal connection take one specific form.

A philosopher who is empirical in spirit rejects *a priori* certitudes in philosophy as bad methodology. This must include rejecting the *a priori* certitudes of Empiricism.

21.3 Causalism, Yes! Materialism, No!

On the questions of the philosophy of mind, analytic philosophers have tended to divide into two camps: the naturalists and the mysterians. The naturalists hold to some form of the mind/brain identity thesis, insisting that all the facts there are can be accommodated within materialism. The mysterians insist, to the contrary, that there is a subjective, introspectible aspect to consciousness, and perhaps, that there is a phenomenon of basic and undervived intentionality, that cannot be accounted for by materialistic theories.

I am by and large sympathetic to the strategy undertaken by contemporary naturalists: (1) to explain the phenomenal character of conscious experience in terms of intentionality, (2) to explain intentionality by means of information and proper function, and (3) to give a causal account of both information and proper function. This strategy, however, is available to non-materialists as well. The resulting account of the mind is better termed the “causalist theory of the mind,” rather than the “materialist theory of the mind.”

A non-materialist causalism has one major advantage over the materialist account of the mind: explaining the causal efficacy of mental states. On the causalist account, a token mental state consists of two parts: one supporting certain physical and physiological types relating to the central nervous system, and one supporting higher-order causal connections be-

tween those states and their intrinsic purposes (the carrying of information or the execution of behavior). Since a materialist is committed to the dogma that only spatiotemporally located tokens can be causally efficacious, he must hold that only the physical component of a mental state causes behavior; the teleofunctional component is causally otiose. On the causalist account, in contrast, higher-order tokens can interact with tokens whose functions are themselves higher-order in nature, i.e., second-order tokens can be causally efficacious in interactions with third-order tokens.

In any event, there are several good reasons for rejecting materialism that are entirely independent of the issues in the philosophy of mind.

- The causal efficacy of modal facts, and through them, of logical and mathematical facts (Chapter 15).
- The constructibility of metrical space-time as a simple approximation to the qualitative relations determined by the causal network (section 4.10.2).
- The existence of an extra-spatial First Cause of the cosmos (Chapter 8).
- The existence of a cause of the simplicity of the causal structures underlying many observable phenomena, as required for a realistic interpretation of scientific theory (section 17.5).
- The refutation of the principles of materialistic compositionality and causal locality by the failure of Bell's inequalities for quantum phenomena (section 18.5).

In Part I, I demonstrated that modal and causal facts, that are themselves not spatially or temporally located, can act as causes of concrete events. In Chapter 12, I used higher-order causation to give an account of the teleological connections we find throughout the biological and human worlds. In Chapter 15, I argued that such an account of higher-order causation is needed if we are to have an account of the possibility of logical and mathematical thought, in particular, in order to solve Benacerraf's problem of the indeterminacy of reference in mathematics. These non-spatiotemporal facts are counter-examples to materialism, which is committed to the view that only entities located in space and time can be causally efficacious.

In section 4.10.2 of Part I, I indicated that a mereotopological approach to qualitative, commonsense spatial and temporal relations could be based on the theory of causation. I further suggested that the metrical space-time of physical theory is based on a much simplified picture of these qualitative

spatio-temporal relations. Consequently, it is unreasonable to assume that spacetime is a universal receptacle, into which all situation-tokens must be fit. The most we can ask of the spacetime of physics is that it provide a very simple, useful framework into which many tokens and their relations can be fit with at least approximate success.

In Chapter 8, I argued that considerations based on the apparent universality of causation should lead us to the conclusion that there is a necessary fact that is the uncaused first cause of all wholly contingent states. This necessary fact most probably involves no entities that are material or spatiotemporal in character, since any fact involving such entities would be at least partially contingent.

In section 17.5 and in a forthcoming article ([99]), I argued that a realistic interpretation of scientific theory depends on the objective reliability of our inductive methods, including our preference for simplicity. This objective reliability in turn depends on the existence of a cause that explains why many observable phenomena are the product of relatively simple causal structures. This cause of the uniform simplicity of observable phenomena must itself be non-physical in nature.

Finally, I have argued in Chapter 18 that the failure of Bell's inequalities strengthens the case for rejecting the ontology of materialism. The attractiveness and plausibility of materialism depends on the principle of materialistic compositionality: the thesis that any fact about any composite entity can be explained (without remainder) in terms of intrinsic facts about its parts and their spatio-temporal relations.

Materialistic compositionality is analogous to compositionality in linguistics. The meaning of complex expressions in a compositional language can be deduced from the intrinsic meaning of the parts of the expression, together with their spatiotemporal relations. This means that the meanings of complex expressions are never strongly emergent, so we do not have to resort to some non-recursive faculty of interpretation to explain our understanding of novel sentences. Similarly, materialistic compositionality means that we can explain any novel physical phenomenon on the basis of a classification of its parts by their intrinsic characters, an account of their spatiotemporal relations, and the use of a finite number of functions. The connection between materialistic compositionality and materialism lies in the assumption that the only relations that matter are spatiotemporal relations. If we permit other relations between parts to figure in our canonical explanations, we open the door to ghostly and mysterious relations, like being neurons in the relation that carries the intrinsic meaning *red*.

Both Democritean atomism and Einsteinian field theory satisfy the principle of materialistic compositionality. In the case of field theory, the number of parts of a material object is non-denumerable, since each point in

spacetime constitutes a part of the field. However, given the field strengths at each point, and the spatiotemporal relations between the points, we have all we need to explain every physical phenomena, according to general relativity.

However, materialistic compositionality is demonstrably false, thanks to the falsification of the Bell inequalities by quantum results. The failure of the Bell inequalities leaves us with only four options:

1. Reject the thesis that quantum objects have spatiotemporal relations (the Copenhagen interpretation).
2. Allow for superluminal influences (pilot waves or Everett-style world-splitting).
3. Allow for backwards causation (the influence of present experimental settings on past events).
4. Recognize the existence of irreducibly non-spatiotemporal relations among distant physical parts (holism).

Of these, only (2) and (3) are compatible with materialistic compositionality. Both (1) and (4) explicitly contradict compositionality: (1) because it denies that all of the parts of a physical system have spatiotemporal relations to one another, and (4) because it requires that relations other than spatiotemporal ones play an irreducibly real role in physical causation. Options (2) and (3), however, still undermine materialism, since they entail that no two physical systems can be causally isolated from each other. This means that the resolution of complex phenomenon into simple parts gets us no closer to a complete explanation of the phenomenon, since each of those parts can interact with an unlimited number of remote factors.

The Bell inequalities force us to recognize strongly emergent properties in each classical system, i.e., properties that do not supervene on the intrinsic characters (stable states) plus the spatiotemporal relations (if any) of their quantum-level parts. If we adopt, as seems most reasonable, some variant of the Copenhagen interpretation (such as Heisenberg's), we are left with the conclusion that position and velocity themselves are such strongly emergent properties. Our quantum-level parts have no position, although we may attribute something like position to them when they interact with a classical measurement system. This attribution of intermittent position to quantum particles should be thought of as only analogous to the attribution of position to the measurement device itself. Quantum-level phenomena are unimaginably strange. The principle of no-action-at-a-distance simply does not apply to them, since they do not really stand at a distance from one

another or from us. My own actual position in space is not determined by any feature of my quantum-level parts, since compounding quantum systems yields only more complex probabilistic wave functions, never definite spatiotemporal properties.

Consequently, there is no reason to assume that my psychological state is determined by the physical features of my body's parts. Since the physical world is itself divided, home to strongly emergent properties, respect for physics provides no reason to rule out the possibility of properties that are strongly emergent relative to both the quantum-level and classical-level physical attributes of the body.

I have discussed strict materialism, rather than "physicalism," because physicalism is too vague and indeterminate a doctrine to serve as the topic of a coherent philosophical discussion. If "physicalism" means that science will eventually be unified, with a single set of laws and concepts, then no one today defends such a doctrine (to my knowledge). If physicalism means that everything that exists and every actual causal explanation has a "complete" description in the "ideal physics of the future," then the doctrine is so vague as to be essentially meaningless. Does this doctrine entail the spatiotemporal contiguity of causes and effects, or mereological compositionality? Does it exclude the existence of an uncaused first cause? Who knows? Who can tell? The history of physics over the last one hundred years gives us reason to believe that the physics of the future will be unimaginably different from today's theories.

If "physicalism" means that a complete and sound description of all causal connections can be given in terms of today's best physical theories, the doctrine is, besides being wildly implausible, still seriously underdefined, since today's physics includes quantum mechanics, which is subject to a wide variety of metaphysical interpretations. Metaphysical theory is radically underdetermined by an austere mathematical formalism like quantum mechanics. For these reasons, instead of criticizing physicalism, I have chosen to criticize a precise metaphysical position, that of strict materialism.

21.4 Anti-Realist Obscurantism

Arguments for anti-realism typically take the following form:

1. It is difficult to account for our epistemic access to facts about X.
2. Therefore, we have no epistemic access to facts about X.
3. Therefore, either (1) there are no facts about X, or (2) the facts about

X are merely projections of our own judgments about X, when made under ideal circumstances.

For many domains (ethics, mathematics, theory of universals, causation), premise (1) is clearly true, and the inference from (2) to (3) seems correct. However, the inference from (1) to (2) is clearly a weak point. Anti-realism is simply a strategy for dodging the hard problems of epistemology, for taking by theft what ought to be earned by hard toil (in Russell's phrase).

The difficulties referred to in premise (1) are due to inadequacies in our models of causation and of knowledge itself. In this book, I have begun to develop a conception of causation that is flexible enough to accommodate real causal connections between concrete events and timeless conditions, such as modal constraints. I hope that I have at least provided some basis for hope that the difficulties the anti-realist points to are not insurmountable.

21.5 Is The Theory Naturalistic?

Naturalism is all the rage these days, so it is natural to wonder whether the theory I have sketched in this book qualifies as naturalistic. There seem to be three characteristics shared by most who consider themselves naturalists:

1. The rejection of a scientifically inaccessible realm of subjectivity; causal relevance as the criterion for knowability.
2. The continuity of philosophical method with the methods of natural science.
3. A physicalist, or at least materialist, ontology.

By these standards, my theory is two-thirds naturalistic, since I fall in line with the first two characteristics. I am very resistant to acknowledging the existence of subjective facts that are accessible only from a first-person perspective. Reality (insofar as we can know it) consists of a causally connected network. The very notion of reliability has no application to an irreducibly first-person mode of knowing, as Wittgenstein argued in *Philosophical Investigations*. Since knowledge entails reliability, this means that such a concept of first-person knowledge is incoherent.

I also follow the same method in philosophy, namely, inference to the best explanation, that characterizes good methodology in science. There

may be some difference between my use of this method and that of many philosophical naturalists, since I take the data of philosophy to include more than sensory observation. Non-inferential knowledge of logic, mathematics, and ethics also counts as legitimate data for philosophical theorizing.

As I have already made clear, I reject physicalism and materialism. Causal efficacy is not limited to space and time. Modal facts can be causally effective, despite that fact that they are timeless and placeless. Moreover, there are genuine instances of higher-order causation, in which timeless causal facts impinge upon the concrete events of spacetime. Metrical space and time are constructs that merely approximate the richness and complexity of the world's causal structure. The failure of Bell's inequalities in the case of quantum phenomena provides decisive evidence against the principle of metaphysical compositionality that forms the core of the materialist's research program.²

²For further arguments against the objectionable sort of naturalism, see the forthcoming volume, *Naturalism: A Critical Appraisal* ([33]), edited by William Lane Craig and J. P. Moreland.